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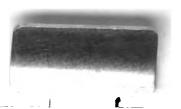
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American journal of psychiatry







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AMERICAN

THE

JOURNAL OF INSANITY

PUBLISHED UNDER THE AUSPICES OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION

EDITORS

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VOLUME LXIV

"The care of the human mind is the most noble branch of medicine,"-GROTIUS

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AMERICAN JOURNAL OF INSANITY

PRESIDENTIAL ADDRESS.⁴ By CHARLES G. HILL, M. D., Attending Physician Mount Hope Retreat, Baltimore, Md.

Gentlemen:

"Chords that vibrate sweetest pleasures, Thrill the deepest notes of woe."

So said Burns, and he never had the experience of being honored by the Presidency of this Association for a year, with the one discordant note ever ringing in his ear, that there must, forsooth, be forthcoming a Presidential Address. The Wayside philosopher spoke truly when he said that a genius is one who knows everything without having to learn anything. After consuming most of the year in angling for a suitable theme for such an occasion, I finally concluded to devote what was left of the time, and myself, to the discussion of a subject, always old and always new, "How can we best advance the study of Psychiatry?" This is a broad question, but don't be frightened, as I will make only a few general suggestions and not enter into lengthy details. My first proposition is that our clinical pictures of the varied forms of insanity are too technical and not sufficiently explicit. Though our classifications are so numerous that there is little room for addition, unless we add "the classifying mania of medical authors," as was suggested many years ago by Shepard, they are so imperfect and incomplete that leading alienists publicly differ as to the category in which to place certain groups of symptoms, and occasionally find it necessary to coin new terms to describe them, such as Brain-Storms or Dementia Americana. With all of our complex divisions and subdivisions how often does

¹ Delivered at the sixty-third annual meeting of the American Medico-Psychological Association, Washington, D. C., May 7, 1907.

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it occur to us in admitting a patient undoubtedly insane, that we are at a loss to know under which classification to place him. Insanity is simply mental unsoundness, and though no one can point out the fine line that separates it from the normal mental condition, with all the latitude of the latter, and it is on that ground that battles will necessarily be fought by men honest in their opinions but viewing it from different standpoints, have we not so complicated the matter as to confuse the lavman and the lawyer, and to the public mind reflect discredit on ourselves? The older writers were far more graphic in their clinical pictures and seemed to grasp the subject more clearly. The following few well-penned lines from Maudsley express so fully and comprehensively the whole matter, and incidentally indicate so strongly the responsibility of the insane, that a most exhaustive dissertation would not add one jot to its completeness. Speaking of the patients as seen in an asylum taken collectively he says: "For the most part, they are very unlike. Of the inmates of an asylum, some few might present noticeable peculiarities of appearance, demeanor, and conversation; more would strike the observer by their dull look and listless attitude, as if they had no interest in anything in the heavens above or in the earth beneath, while others would not show, either by their looks or by what they said or did, that they were not as other men are. So much would the casual observer see. The skilled observer would see more, but even he would not find a new world and a new race of He would find man changed, indeed, but not transbeings. formed. He would meet, as Esquirol has remarked, with "the same ideas, the same errors, the same passions, the same misfortunes. It is the same world, but in such a house the traits are stronger, the colors more vivid, the shades more marked, the effects more startling, because man is seen in all his nakedness, because he does not dissimulate his thoughts, because he does not conceal his defects, because he lends not to his passions the charm which seduces, nor to his vices the appearances which deceive."

This description differs very materially from the popular idea of a madhouse which is more in the line of Hogarth or Charles Reade. It differs too from the law-made insanity that is framed by statutes and interpreted by courts. Quoting from Maudsley again, on the responsibility of the insane: "Were the observer,

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whether casual or skilled, to reside for some length of time in an asylum, and thus make himself practically acquainted with the ways, thoughts, and feelings of its inmates, he would certainly discover how great a mistake it is to suppose, as is often done, that they are always so alienated from themselves and from their kind as not to be influenced by the same motives, as sane persons, in what they do or forbear to do. When an insane person is on his trial for some criminal offence, it is commonly taken for granted by the lawyers that if an ordinary motive for the act, such as anger, revenge, jealousy, or any other passion can be discovered, there is no ground to allege insanity, or, at any rate, no ground to allege exemption from responsibility by reason of The ideal madman whom the law creates is supposed insanity. to act without motives, or from such motives as it enters not into the mind of a sane person to conceive, and if someone who is plainly mad to all the world, acts from an ordinary motive in the perpetration of an offence, he is presumed to have acted sanely and with full capacity of responsibility. No greater mistake could well be made. Much of the success of the modern humane treatment of insanity rests upon the recognition of two principles: first, that the insane have like passions with those who are not insane, and are restrained from doing wrong, and constrained to do right, by the same motives which have the same effect in same persons; secondly, that these motives are only effective within limits, and that beyond these limits they become powerless, the hope of reward being of no avail, and the expectation or infliction of punishment actually provoking more unreason and violence. By the skillful combination of these principles in practice it has come to pass that asylums are now, for the most part, quiet and orderly institutions, instead of being, as in olden times, dens of disorder and violence, and that the curious sightseer, who visits an asylum as he would visit a menagerie, sees nothing extraordinary, and comes away disappointed." If we have accomplished so much by applying in our hospital management this practical result of our observation and experience, why could not so large and influential a body of men as this Association embraces so impress the legal profession as to bring about a modification of their illogical and impractical rulings and definitions and sweep aside all the cumbersome technicalities that so often pervert the ends of justice instead of aiding them. Then we would be spared the spectacle, too often witnessed, of one insane by common consent and common sense and yet not insane by law, of one insane in one State and sane in another, or sane by the edict of one court and insane by the ruling of another.

As to the special forms of insanity, the poet with his genius has not only anticipated us but surpassed us in vivid description. Centuries before Paresis had been differentiated as a distinct form of insanity Shakespeare saw and grasped its salient features as pictured in Troilus and Cressida.

> "Things small as nothing, for request's sake only, He makes important, possessed he is with greatness, And speaks not to himself, but with a pride That quarrels at self breath. Imagin'd worth Holds in his blood such swoll'n and hot disease, That, twixt his mental and his active parts, Kingdom'd Achilles in promotion rages, And batters down himself. What should I say? He is so plaguy proud that the death tokens of it Cry 'no recovery.'"

In these few lines not only did he seem to observe the most prominent symptoms, but in the last words, "no recovery," pointed out with wonderful accuracy the prognosis of the dis-The writings of Kipling abound in vivid pen pictures of ease. various forms of mental alienation. The "Phantom Rickshaw" gives a better description of an illusion than any medical book. A type of neurotic subject, a high-strung nervous organization in a weak body, he describes as one "over-engined for his beam" and predicts his breakdown, which did occur with acute aphasia, which is described in the "Conversion of Aurelis Mc-Groggin." The madness of "Private Otheries" cannot be equaled as a description of acute melancholia from nostalgia. Locomotor ataxia, delirium tremens, and many other diseases are dealt with in the same vivid manner, and in a short sketch entitled "To be Filed for Reference," there is a description of the psychological condition of a drunkard that surpasses anything in our medical literature. In the character of McIntosh Jellaludin, a drunken vagabond, he lifts the curtain and gives us an insight into the condition of a type so familiar to all of us, a man of education and refinement who, by dissipation, has become cal-



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lous to every natural instinct and though he tramples under foot everything that makes life worth living, health, home, friends, property, and all rational happiness, makes no effort to extricate himself from the mire into which he has fallen. His acquaintance with this character was made when he helped him, too drunk to rise, from the horses and camels of a Sultan's caravansary where the horse traders and best of the blackguards of Central Asia congregate, and in subsequent conversations we get a keen insight into the motives and sensations of one in that condition. "Man." said he, "when you have reached the uttermost depths of degradation little incidents which would vex a higher life are to you of no consequence. Last night my soul was among the gods, but I make no doubt that my bestial body was writhing down here in the garbage. I was drunk, but consider how lightly I am touched. It is nothing to me, less than nothing, for I do not even feel the headache which should be my portion. Now in a higher life, how ghastly would have been my punishment, how bitter my repentance. On the Soul which I have lost and on the Conscience which I have killed I tell you that I cannot feel, I am as the gods, knowing good and evil, but untouched by either. Is this enviable or is it not? I tell you it is good and most enviable. Think of my consolations."

But in addition to the improvement of our clinical descriptions we have other work to do. We are charged by the Neurologists with a lack of accuracy in our diagnosis, and while paranoia, dementia præcox, or Korsakoff's disease do not admit of the conclusive tests by which we would diagnose a locomotor ataxia, a polio myelitis anterior, or a hemiplegia, and while it is not our fault that mental diseases are not associated with these gross disturbances of motion and sensation that can be so easily measured and estimated, there is still room for great improvement in our delicacy of differentiation. But this defect will not be remedied by the accumulation of histories overflowing the office and packed away down in the cellar or some remote store-room and never read again. We must approach it by other and more direct methods. Thanks to the discovery of Robertson in England and the researches of Langdon and his co-laborers in America, the Bacillus Paralyticans seems to offer as definite an indication in paresis as the organisms of typhoid fever or diphtheria. Other forms of

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insanity may or may not owe their origin to a special organism but there are other indications by which their diagnosis may be rendered more certain and accurate. Has the use of the microscope in our asylums kept pace with the laboratories of the general hospitals? Where can patients be kept more closely and continuously under observation than in large and well-equipped hospitals for the insane? Our opportunities for scientific research are unsurpassed. The recent advances in the differential blood-count are most interesting. Already we can detect by this method anything from an inflammation to an intestinal parasite, but where could one find any extensive tabulation of the differential bloodcounts of the insane? Give us a bacteriological discovery in your research among the insane and science stands ready with a most practical weapon to meet it. The opsonic treatment, the most interesting and infatuating of modern therapeutic advancements. only awaits to do our bidding as soon as we pave the way. The quantitative chemical analysis of the urine, when systematically followed, gives a better insight into the physical condition of the patient and offers a better indication for successful treatment than any test that has been applied, and yet there is nothing in our literature that sheds a ray of light on this subject and one must grope in the dark until he can formulate his own standard of health and disease as revealed by this method. A systematic study of the blood-pressure in the insane would give us invaluable information. If the effects of drugs were carefully studied with a sphygmometer the common abuse and misapplication of such remedies as Strychnin, Digitalis, the Nitrates, Supra Renals or Thyroids, and many others would at least be corrected. Where is a better opportunity offered for a study of the action of drugs in health and disease? This would present a most inviting field, for with all our boasted scientific advancement, our therapeutics is simply a pile of rubbish. While a few hobbies are literally ridden to death more rational plans of treatment based on the principles already worked out for us are but scantily utilized. The diet, the digestion, the chemical composition of food stuffs, the metabolism of water, the cause and treatment of constipation not by purgatives but by rational and natural methods, the physiology of sleep and the pathology of insomnia, all need to be especially studied in relation to their application to the insane. Where can we find a

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practical application of mental therapy to the needs of our alienated population? I do not refer to hypnotism and kindred influences in the abstract, as they are of but limited value to us, but to that common and subtle force that the most successful alienists and the most successful nurses draw upon so freely in their management of the insane. This is no ideal dream. We should encourage those who have the genius for this work, to a more extensive use of the now wasted opportunities afforded by our State hospitals. This should be entered into, not for the purpose of proving a theory or arousing the applause of the gallery but in the abstract and for the mere love of science. Pasteur, who gave to the world a discovery of such inestimable value, did not start out to develop the germ theory. It came from his interest in crystallization, which seemed then of no practical value. On learning that the naturally-formed crystals of tartaric acid polarized light to the opposite direction of those formed synthetically, he set out, like the true scientist he was, to discover the cause. When he put a little grape juice under his microscope to watch the formation of crystals he found that it was teeming with vital organisms and that it was these agencies that broke down the chemical structure of his material and formed new compounds. To prove this he destroyed the organisms by heat and stopped up his flasks with cotton, and the fluid was indefinitely preserved. Then came the suggestion and easy demonstration that other organisms caused the decomposition of animal matter and it was but a short step for Lister to apply the knowledge thus gained to the practical use of surgery. And thus the germ theory, the brightest star in the galaxy of medicine, sprung full-orbed into its circuit to shed its beneficent light as long as civilization shall endure.

To accomplish such results we must offer inducements to those who possess the genius for this kind of work, and these are rare. In the line of chemical pathology in which I have taken an interest I have found only an average of about one out of a hundred graduates in medicine who showed that particular taste or aptitude without which such labor would be a failure. "Poeta nascitur non fit." And so is the successful laboratory man.

We should, in order to advance this work, establish a special order of business in the program of our annual meetings for the

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report of original investigations, and if necessary give prizes out of our growing treasury, or medals of distinction for meritorious work. Then we might change our journal to a monthly and make it a bond of closer union and more ready exchange of views among our members and of more general interest to our whole profession. And lastly, we must educate our chiefs to a better appreciation of laboratory work. It is very discouraging to a young pathologist or an old one either, to have his superior offcer ignore his carefully worked-out results, and use remedies or pursue a treatment in direct opposition to his deductions. I am convinced that the dead-house has had its day, and that pramortem, rather than post-mortem studies should engage our attention. The revelations of the autopsy avail us little in the treatment of our patients and the study of the living is far more profitable than the study of the dead. We must get away from the growing of pumpkins, the rearing of pigs, and the planting of potatoes, close up our old text-books, always ten years behind the times, and study the latest clinical diagnosis, physiological and pathological chemistry, bacteriology, toxicology, and metabolism. If we grow tired of these and cannot find solace in Benjamin Rush, Esquirol, or any of these old writers, let us improve our diagnostic acumen by reading Shakespeare, Sherlock Holmes, and Kipling; and lastly, to broaden our philanthropy, ennoble our aims, quicken our sympathies, and gild the edges of the volume of useful knowledge we have accumulated, let us take down from our shelves that priceless little gem, The Bonnie Briar Bush, and read and reread the story of Wellum MacClure.

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AFTER-CARE OF THE INSANE.'

By WILLIAM MABON, M. D.,

Superintendent and Medical Director, Manhattan State Hospital, Ward's Island, New York City.

At the last meeting of this association, the following resolution was unanimously adopted:

WHEREAS, The State Charities Aid Association of New York has recently established a Committee on the After-Care of the Insane, to work in cooperation with the State hospitals for the insane in that State, and to provide temporary assistance, employment and friendly aid and counsel for needy persons discharged from such hospitals as recovered, and

WHEREAS, In the opinion of the American Medico-Psychological Association, it is very desirable that there should be carried on in connection with all hospitals for the insane such a system of after-care, therefore,

Resolved, That the American Medico-Psychological Association expresses its gratification at the inauguration of this movement in the State of New York, and its earnest hope that similar work may be undertaken for hospitals for the insame generally.

In offering this resolution, attention was called to the fact that as early as 1893, Dr. Wise, a member of this association, presented a paper on this subject, and in the following year, and again in 1905, Dr. Dewey, also a member of this association, discussed the subject in papers read before the National Conference of Charities. Furthermore, Dr. Henry R. Stedman, as chairman of a committee of the American Neurological Association on the After-Care of the Insane, appointed in 1894, submitted and published a report in 1897. He collected much information of value from those interested in the care and treatment of the insane, particularly from superintendents of State hospitals, which, with the discussion of Dr. Dewey, is worthy at this time to be touched on at length.

My purpose in going into the discussion on the after-care of the insane is due to the fact that, although we have had at various meetings of this association since 1893 numerous references made

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¹Read at the sixty-third annual meeting of the American Medico-Psychological Association, Washington, D. C., May 7, 8, 9, 1907.

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to the need of the indigent insane who are discharged as recovered from institutions no steps were taken in this country to inaugurate any systematic plan of after-care, such as has existed in certain European countries for over fifty years, until Miss Louisa Lee Schuyler, who has done so much for the insane, initiated this new branch of philanthropic work through the agency of the State Charities Aid Association of New York.

From the report of Dr. Stedman's committee, I quote as follows:

The work of the committee was begun by issuing a circular letter to certain prominent alienists and neurologists in the States of Massachusetts, New York, and Pennsylvania. This number was afterwards increased in order to ascertain the sentiment of the authorities on the subject in other parts of the country. The letter ran as follows:

At a meeting of the American Neurological Association held at the last Congress of American Physicians and Surgeons in Washington in 1894, a Committee on the After-Care of the Insane, consisting of Drs. H. R. Stedman, Boston; Charles L. Dana, New York; and F. X. Dercum, Philadelphia, was appointed. Its purpose was to investigate and report to the association upon some feasible plan for the aid and supervision during the first month after their return from asylums to public life of discharged pauper insane patients who are recovered or improved.

Asylum physicians often hesitate, you are aware, to set at liberty certain patients whose condition seems to have so far improved as to make it useless to keep them longer under treatment, for fear that thus thrown suddenly upon their own resources, without oversight, or perhaps means of support, they will fall back into the old habits of life which gave rise to their insanity. This applies also to patients who have recovered. These unfortunates are also distrusted and prevented from obtaining employment simply because they have been inmates of an asylum.

These considerations led in France to the founding by Dr. Falret, in 1841, of an association for providing protection, assistance and homes for this class. It was, however, restricted to the Department of the Seine. Its efficient operation has led to the recent establishment throughout that country, under the auspices of the French government, of societies *de patronage* (aid societies) for such discharged patients. Similar societies are in operation in England and Switzerland.

The office of the after-care society is to find for such discharged patients, according to their individual needs, suitable homes and places of employment; to provide gifts of money, clothing or tools; to redeem articles on pawn; to advance payments for rent, etc., and finally to have them under supervision for the first month or two after their discharge.

We are of the opinion that the same need exists in this country, and that the work within our institutions for the insane should be supplemented by the same measures of outdoor relief, on their discharge, that

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have proved advantageous elsewhere. As this is an undertaking that has for its object the diminution of insanity by attempting if possible to prevent a relapse, it seems to be called for, both in the interests of humanity, and public economy.

The committee would value your opinion on the subject and respectfully asks replies to the following questions:

I. What are your views as to the practical utility of such an undertaking, generally speaking?

2. In your opinion, should such an association be entirely a private charity, or would the cooperation of the State in this work be practicable?

3. Do you think it probable that benefit to a sufficient number of patients would result from the establishment of convalescent homes as departments of, and at a distance from, our State hospitals for the insane?

This inquiry is suggested by the proved usefulness of convalescent homes as adjuncts to general hospitals, and summer cottages in connection with private institutions for the insane.

4. Will you kindly give a rough estimate of the probable number of patients who have been discharged during the past year from the hospital under your charge, whom you would consider deserving, or likely to be benefited by such a charity, mentioning any special instances that may occur to you?

The result of this inquiry was as follows:

There were fifty replies received, being scarcely half a dozen less than the number of letters sent. Thirty of these were from superintendents of hospitals for the insane, and for the most part, they were comprehensive, and as might be expected from the practical experience of the writers, threw much light on the question. Thirteen were from neurologists, but in view of the apparently unanimous sentiment at the meeting in favor of the general adoption of after-care provision for the insane, it did not seem necessary to extend the inquiry further in this direction.

Of the entire number of correspondents, six were either doubtful of the desirability and practicability of after-care societies for the dependent insane, or were decidedly opposed to such a step. The reasons given by them were that the number of cases likely to be benefited by such aid was too small to make it advisable; that while such a step might be desirable, it was inexpedient; that while excellent in theory, it would probably be found impossible in practice.

The majority expressed, and in many cases in the strongest terms, their decided belief in the great advantages likely to result from properly organized and conducted societies of this kind.

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Regarding the auspices under which such associations should be conducted, it was the general opinion that they should by all means be begun under private philanthrophy, and so continued until their utility was demonstrated.

Regarding the advisability of establishing State homes for convalescent patients, as part of the general policy of the State toward the insane, there was more diversity of opinion, but at the same time, there was some degree of interest and careful consideration of the subject. Scarcely a member of the Neurological Association wrote in opposition, and of the twenty-nine hospital superintendents and other alienists, nineteen favored it as an accessory provision, five were doubtful and five were opposed. Of four members of lunacy and charity boards, one was in doubt, and the others thought it would be an unnecessary and useless experiment.

To show the careful consideration given to this subject by the committee, I again beg to quote from their report:

As a result, therefore, of their inquiries on the after-care of the insane, your committee reports the following conclusions:

I. It is the general and well-nigh unanimous sentiment of those who are conversant with the needs of the insane in this country that measures should speedily be inaugurated for the temporary relief of discharged recovered, convalescent and improved insane patients of the dependent class, by organized outside societies.

2. As a preliminary step, inquiry should be made of all such patients before they leave the hospital, regarding the mode of life, surroundings and occupations to which they are returning, and proper advice given by the medical officer of the hospital. This is a precautionary measure, as we believe, often neglected in large institutions for the insane.

3. The legal provision, whereby an allowance of money is made in some States to each patient on his discharge, should be adopted by all.

4. Outside assistance can best be provided, we believe, through the medium of an after-care association, which, until its utility can be proven, should be entirely a private undertaking, and should be organized like most existing charitable associations depending upon voluntary subscriptions. Obviously, a large city offers the best field for starting and developing such a system.

5. The special methods of after-care relief by such an association should be those employed by similar organizations in other countries; or a selection of the best methods of each. Such relief, at first at least, should be extended only to the class mentioned, and be understood as temporary, covering only the first month or two of the patient's discharge. The work may best be done by associates or agents appointed for the move-

ment, who shall find suitable homes and situations for all proper cases. There should also be a systematic supervision of the homes by agents for the time specified, or until the patient seems to be in good condition for taking up life and work again. This applies also to patients returning to bad surroundings in their own homes. Reports should be made and records kept of each case.

6. Regarding convalescent homes, there is abundant evidence of the most authoritative kind of the advantages to follow from their establishment, but, in our opinion, the first reform in the order of precedence should be the general recognition of the necessity of the hospital treatment of insanity in its early stage, and the actual adoption of special provision for the acute insane, as an indispensable step in the hospital treatment of public insane patients.

The valuable paper read by Dr. Dewey before the National Conference of Charities in 1905 is worthy of notice. Dr. Dewey said :

It is a subject whose vital importance has not been appreciated in this country, and yet a moment's consideration would show that of the large number of recovered who go out into the world from our insane hospitals, there must be a great proportion for whom the renewal of the struggle for existence is peculiarly difficult, and for whom temporary assistance would make all the difference between a more or less speedy relapse and prolonged and permanent good health.

The objects which suitable assistance and after-care would secure are: 1. The permanent restoration, of many cases that relapse, to self-support instead of public support for many years, or a lifetime.

2. A return to useful activity of many who remain permanently in the hospital who would care for themselves, if they could get a start.

It is evident that convalescence from insanity, as much as from any severe disease, is difficult and needs to be promoted. If, therefore, the value of convalescent homes is recognized in connection with our general hospitals, it certainly should be for our insane hospitals, and for the increasing numbers who under modern enlightened methods of treatment, recover from mental maladies. Not only is there a critical period of weakness for such patients when discharged, but there is also an added difficulty in the fear and prejudice of the public in general, which (however needless and ignorant) nevertheless, has to be reckoned with. In this latter respect, the patients suffer as much, though innocently, as one who has been an inmate of a penal institution, and if aid societies for ex-convicts are commendable, still more so would be any aid extended to one who has regained health in an asylum.

After referring to the work as undertaken in European countries. he continues:

Considering now this work with reference to our own country, it would appear that as yet scarce a beginning has been made, and that the first

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duty is to bring it before the community and to make clear to every one the great value of the work for the recovered and convalescent insane. Work on this line of great use and importance is being done in an unsystematic way constantly. Every superintendent of every hospital for the insane has to constitute himself a "committee of one" to bring suitable conditions for the return of his patients to the world. Even patients who have means and homes and friends can only return after a great deal of work has been done in providing conditions, as so much depends upon environment and employment in preventing a relapse, and often the friends and families show a disposition to keep the patients permanently in the asylum rather than to lend him a helping hand. This is all the more true of public authorities, who have sometimes to be strongly reasoned with to be convinced that the patient is able to leave the hospital, and under suitable conditions will be permanently, or for a long time, a selfsupporting citizen.

Dr. Victor Parant of Toulouse, France, in a letter to the AMERICAN JOURNAL OF INSANITY for July, 1894, refers to the great work already accomplished for the indigent recovered insane patients in France. Dr. Parant said:

Stated precisely, this question is that "of the protection to be afforded to the indigent insane discharged as recovered from the asylums." In fact, assistance is not the only object, and these societies should not limit themselves to merely saving these persons from want. That is the least important part of their mission. Their object is rather to protect the discharged patients from the manifold causes which may lead to their relapse; from the moment they are brought in contact with the outside world, it is needful to guard them from the troubles that will assail them.

The causes of the relapse of the individual recovered from insanity, are indeed numerous. They may be divided into those pertaining to the disorder, and those due to his social surroundings.

In a large number of cases, a patient had before his attack a trade by which he made his living; a position perhaps, a few effects, some savings and resources; modest, it is true, but enough to enable him to live at home, to possess a certain independence, and be able to meet the needs of his wife and children. The disease seizes him; his wife and children are scattered to seek support; his resources are exhausted, his business is gone, and we know how difficult it often is for a healthy man to reestablish a business. The difficulty is greater for the ex-lunatic, against whom arises obstacles of every kind, due to deeply rooted prejudice. They are distrusted, their recovery is discredited, and the lack of confidence is in some cases only masked by the fear they inspire.

Up to within recent years, only three departments outside of Paris have taken the initiative in forming societies of patronage. But to tell the truth, these societies are not so indispensable in the agricultural districts as in the large cities.

In his letter Dr. Parant states:

That the Minister of the Interior in 1889 recommended that the Superior Council of Public Assistance adopt plans for the creation of temporary asylums and the organization of aid societies. He further recommended that the individuals to be admitted into these institutions should have their freedom during certain hours of the day, thus gradually permitting them to adopt habits of freedom. The Superior Council of Public Assistance, for financial reasons, dismissed, for the time, the idea of temporary asylums, but favored the multiplication of the aid societies, one for each department, and connected with each other by some common bond.

One of the questions that offered itself and should be answered definitely, according to the locality, is that whether the society ought to be independent or not, in connection with the asylum with which it works. The two plans have their advantages and their inconveniences, and are not altogether equally impracticable. According to the first, a society is altogether independent of the management of the asylum; takes its habitation near it and creates a sort of intermediate hospitalization between the confinement of the hospital and the return to freedom; it devotes itself chiefly in finding situations for the convalescents, and after a manner, as they need it, direct protection.

In the other system, the society is intimately connected with the administration of the asylum, which continues after a patient is outside and at a distance. It is the relief at the home that predominates in this system, as the convalescents return to their residences, the society exercises its control, and gives its assistance through the medium of trustworthy agents. The two systems correspond to different needs, and we call the one the system of large towns, and the other that of the rural districts.

The general interest felt in after-care for the insane has extended to Japan, and in the report of the Psychiatric Clinic of Tokio University, it is stated that the wives of the alienists in the city and physicians in the community organized in 1902 the Tokio Ladies' Aid Society for the Insane.

This organization is entirely independent of any other charitable body. It seeks to take care of insane patients and their families, and to attract public attention to the subject. From a translation which Dr. Matsubara has kindly made for me, I learn that it is doing the following work:

I. For the purpose of helping and entertaining the patients, the society furnishes the State and private insane hospitals with materials for special occupations which are not provided in most hospitals for the insane. (Artificial flower making and other fine work.) It sells the articles thus made and pays the patients for them.

If individuals outside the institution want suits or other articles made, they send the materials to the patients through the society and pay for it. The money thus earned is saved by the superintendent of the hospital and returned to the patients when they are discharged. The patients also are permitted to spend a certain proportion of it during their stay in the hospital for newspapers, magazines and delicacies.

2. They arrange for parties of twenty patients each, to be accompanied by a physician and nurses, to visit the green-houses, zoological gardens, parks and music halls, the institutions providing the refreshments and the other expenses being met by the society.

3. It provides entertainments at the institution at its own expense, in addition to those furnished by the hospital.

4. Music and games are contributed.

5. It pays part of the expenses of needy patients in private institutions for the insane.

6. The agents of the society visit and give advice to the patients, and secure when needed, positions for those discharged as recovered or improved from the hospital.

7. Their agents visit and give financial aid to the families of patients who are in need.

8. They recommend to the out-patient department of the institution those who are in need of medical treatment for the early symptoms of insanity.

9. They arrange for public lectures to which prominent speakers are invited for the purpose of enlightening the community in matters of mental hygiene.

10. The society publishes a monthly magazine which is distributed among the public.

11. They also publish and sell souvenir postal cards.

12. They place large contribution boxes at the principal railroad stations.

The income of the society is as follows:

I. From dues of members, which are placed at one to two dollars.

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2. From contributions from members in addition to their regular dues.

3. Contributions from the public.

4. From a garden party given in the spring and a concert given in the autumn, they clear from one to two thousand dollars each.

That the State Charities Aid Association of New York has a sub-committee on the After-Care of the Insane, of whose work I am able to give some account, is due entirely to the interest taken in that line of philanthropic work by Miss Louisa Lee Schuyler. While the needs of this work were being discussed at National Conferences of Charities, and at the meetings of the Neurological and American Medico-Psychological Associations, Miss Schuyler was quietly investigating the successful continuance of the work in England, and getting ready to interest the public of New York State as soon as she believed the matter was ripe.

At a conference of the State Hospital Superintendents with the State Commission in Lunacy on November 18, 1905, Miss Schuyler reported the investigation she had made and suggested a plan for practical after-care work in the State of New York. She said:

For many years I have been interested in the subject of after-care for the insane. While in England, last summer, I visited the London office of the Society for After-Care of Poor Persons Discharged Recovered from Insane Asylums-a society established twenty-five years ago, which does most excellent work. Its methods, in brief, are as follows: The secretary of the society visits the asylums and works in close cooperation with the medical superintendents, and is notified by them when there are patients to be discharged cured, who are poor, and who have no homes nor friends to go to. For such cases, boarding places (in the country for the women and in the city for the men) have been arranged for. These are small "cottage homes" or, as we would call them, boarding houses where a man and his wife are willing to board these after-care cases. There are now about twelve of these cottage homes in different parts of England. The board of both men and women is paid for by the society, for, from one to six weeks usually until employment is found for them. The society keeps in communication with them often for years, until they are absorbed into the community as self-supporting, self-respecting men and women. Conditions in England differ from those we have here, but the need of a helping hand to be extended to poor and friendless convalescents and those discharged cured, upon leaving our State hospitals, is just as much needed here as there, and this is what we ought to do. We

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need no new society because we have the machinery ready at hand; nor do we need to establish a new institution, or to own buildings, or incur large expense.

I have thought that, with the concurrence of the medical superintendents, of two or three members of the re-established boards of managers of our State hospitals, and of some of the local visitors of the State Charities Aid Association—those living in the respective State hospital districts that, with this combination, a working joint committee to provide aftercare might be formed for each State hospital. The experiment might be tried first on a small scale with one State hospital to see how it would work.

Being deeply impressed with the suggestions made by Miss Schuyler, it was decided that the subject be presented in the form of a paper at a later conference, and, therefore, at the next conference of the State Commission in Lunacy with the managers and superintendents of the State hospitals, held in Albany, January 30, 1906, Dr. Adolf Meyer, Director of the Pathological Institute of the New York State hospitals, read a paper on "The Problem of After-Care and Organization of Societies for the Prophylaxis of Mental Disorders." Among other things, Dr. Meyer said:

For a successful movement, it is necessary that there should be a harmonious cooperation between all the elements concerned, and that everything should be done to help the hospital physicians who are most intimately confronted with the great problem.

In large institutions a great deal has been done to give a more and more concrete form to the interests of the physicians in the families and environments of the patients. The demand of a thorough study of each case has led quite naturally to an attempt to visit the home of the patient, or have it visited by some one, and the results have been decidedly interesting. Contrary to what was expected, the non-professional visitor, who kindly cooperated with us, is received with uniform cordiality and confidence. The people appear just as they are, free from the constraint of the hospital; the environment can be sized up more adequately, and the family's desire to be politic, which so often vitiates the account to the hospital physician, is reduced considerably. A link is established of as much benefit to the patient as to the friends, especially where the visitor is able to set the patient too, and to bring reports, relieve doubts, fears and suspicions, and to clear up misunderstandings.

It is quite natural that in mental disorders, and in the period of convalescence and of danger of relapse, we should regulate the mental diet, the environment, in addition to what we may be able to do for the organism. In all chronic diseases, the physician realizes that to be successful with the patient, one must have a chance to obtain the cooperation of the family; to get the patient away altogether is of course a convenient thing in order to give a good start, but what about the return to the conditions that have led to the failure before? The importance of this point is plain enough where we deal with alcoholism as the chief cause, as is the case in at least 20 per cent of our patients; there we deal with a social evil which we all find extremely difficult to handle, whether we have to deal with it from the point of view of criminal issues or police regulations, or the health and prospects of entire families or actual alcoholic insanity. The hospital can enforce abstinence during the patient's residence; what will become of the patient on discharge is generally left to chance. Hospitals for the insane ought to be in some way in close contact with all organizations that militate against alcoholism, so that patients might be referred to them since we know that company is the most important factor in keeping newly formed habits from yielding again to old tendencies. The same holds for many habits, especially the inability of many individuals to get adequate forms of recreation and enjoyment, which might replace abnormal cravings or pre-occupations. For this we should have contact with clubs and with movements by no means exclusively looking out for persons who have been insane, nor even bodies that try especially to prevent insanity, but movements which bring together a wholesome environment for any individual in need of it. Many patients can be recommended to churches. In large cities we might appeal to settlements; in towns we might obtain means to open schoolhouses to public utility, to add to them a gymnasium, or perhaps a bowling alley. Even patients in tolerably satisfactory home surroundings profit from a few casual visits by one who has gained their respect and gratitude during the illness; a timely advice and the mere feeling of responsibility carried by the realization that somebody takes an interest has proven to have a decided influence in pulling former patients out of discontent, and the healthy members of the family out of a harmful attitude of suspicion of relapse and lack of confidence in the patient.

The following resolutions were adopted by unanimous vote of the conference:

"Resolved, That in the opinion of this Conference, it is desirable that there shall be established in this State, through private philanthropy, a system for providing temporary assistance and friendly aid and counsel for needy persons discharged, recovered, from State hospitals for the insane, otherwise known as 'After-Care for the Insane.'

"Resolved, That the State Charities Aid Association be requested, by this Conference, to organize a system of after-care for the insane in this State, and to put it into practical operation.

"Resolved, That the representatives of the State Commission in Lunacy and the managers and superintendents of the State hospitals for the insane, here present, hereby pledge to the State Charities Aid Association their earnest and hearty cooperation in the establishment and maintenance of a system of after-care for the insane in this State."

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Immediately after this conference the committee on the insune of the State Charities Aid Association appointed a sub-committee on the after-care of the insane to carry into effect the above resolutions; and on the 9th of February, 1906, at a meeting of the Board of Managers of the State Charities Aid Association the first report of the sub-committee was presented and approved. The report outlines the plan of organization as follows:

We propose that after-care committees for each State hospital shall be appointed by the State Charities Aid Association, which shall work under the immediate control and direction of the "sub-committee on after-care of the insane" of our standing committee on the insane. These hospital district committees shall consist of the present visitors of the association to the State hospitals, or such of them as may be willing to serve, with others added as the need may arise, all residents of their respective hospital district; and with them as *ex-officio members* of the committee, two or more managers to be appointed by each hospital board, and the superintendent of the hospital.

The chairman and secretaries of the committee are to be members of the State Charities Aid Association. The committees are to receive the names of their respective hospitals, viz., Manhattan After-Care Committee of the State Charities Aid Association; Willard After-Care Committee, etc.

In regard to expenses. Fortunately, there is a humane provision on the statute books of our State, which makes it mandatory for superintendents of hospitals to supply to each patient leaving the hospital, who may require it, clothing suitable to the season, and money, not to exceed twentyfive dollars, for travelling and other necessary expenses until he can reach his home or find employment.

That section of the Insanity Law reads as follows:

"Sec. 75. Clothing and money to be furnished discharged patients.—No patient shall be discharged from a State hospital without suitable clothing adapted to the season in which he is discharged; and, if it cannot be otherwise obtained, the steward shall, upon the order of the superintendent, furnish the same, and money not exceeding twenty-five dollars, to defray his necessary expenses until he can reach his relatives or friends, or find employment to earn a subsistence."

It is expected that money advanced by the committee for the temporary assistance of needy discharged patients, as defined by the statute, will be repaid by the hospitals upon the presentation of proper vouchers. For our part, we have offered to pay the entire administrative expenses; more especially for the employment of an agent, whose duties, under our direction, will be to help local committees requiring assistance in different parts of the State. This means a salary, travelling and other after-care expenses. For these purposes, and for the assistance, if needed, of patients beyond the

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twenty-five dollars allowed by the State, we must depend upon voluntary contributions.

On April 15, 1906, the "Manhattan After-Care Committee of the State Charities Aid Association" was appointed, this being the first hospital district after-care committee to be organized in this country. Shortly afterwards an agent trained and experienced in work among the poor in their homes, Miss E. H. Horton, was engaged as after-care agent of the association, and was immediately assigned to the duty of assisting the Manhattan After-Care Committee.

After-care committees were subsequently appointed as follows: For the Willard State Hospital, April 10, 1906; for the Hudson River State Hospital, May 22, 1906; for the Binghamton State Hospital, November 8, 1906; for the Central Islip State Hospital, February 5, 1907. These committees have done very valuable work for the patients discharged, recovered, from their respective State hospitals and have presented interesting reports to the subcommittee.

A few of the individual cases assisted by the after-care committees are given to illustrate the aims, methods and results of the work:

A. B.—A middle-aged woman, discharged from the hospital May 14, 1906. She was too weak to work, and the after-care agent arranged to send her to the country to board on a farm. While there she gained steadily and upon her return, a situation was found for her.

C. D.—While in the hospital her husband died, and her only child, a girl of twelve years, had to be cared for by strangers. The mother worried about the child, and the ward physician asked the agent to see the child and report. She found her well and happy, and the man and wife, with whom the child was, were much attached to the little girl. The agent found a place with this family, at low wages, for the mother upon her discharge from the hospital. She has visited her several times, and finds her very happily settled with her child.

E. F.—Discharged September 8, 1906. Agent visited her relatives several times, but found them unable to assist her in any way. She finally found a place for her as ward helper in Bellevue Hospital, purchasing for her the necessary clothing. When calling to see her two weeks later, learned from the nurse that her work was satisfactory, and that she was doing well.

G. H.—A married man, about 40 years old, who had broken down from overwork as bookkeeper in a large firm. After a few months at the hospital, he completely recovered, and a position was found for him in a bank,

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where he had formerly worked, and where he was given employment of a less responsible and exacting nature, but at a very good salary.

The plan of cooperation between the Committee on After-Care of the State Charities Aid Association and the Manhattan State Hospital is as follows:

I The hospital is to notify the agent of the committee of cases likely to be discharged, preferably from a week to a month before the patient is allowed to leave the hospital, and to furnish the committee at that time with a summary of such facts in connection with the history of each patient recommended for supervision as will be of assistance in the investigation of the case. This information is to include the name, age, nativity, creed, occupation and civil condition, date of admission, previous admissions, form of insanity, character, the habits and tendencies, previous history, and circumstances of the patient, so far as known; also the names and addresses of the relatives and friends; the character and condition of the home, and the number in the family, so far as known.

2. The hospital is to notify the committee of the parole or final discharge of every patient within forty-eight hours of such discharge, and to furnish at that time such particulars regarding the case as were not previously furnished.

3. The hospital is to notify the committee of information received of the possibility of a former patient relapsing, with a request for such assistance or advice as may be helpful in preventing a relapse on the part of such former patients when they are on parole or have been discharged.

4. The After-Care Committee on its part undertakes to visit through its members, or its agent, the homes and friends of patients about to be discharged and to report immediately to the hospital such facts and recommendations as may be helpful to the hospital when making a discharge as to when and to whom the patient should be discharged.

5. The committee undertakes to visit in their homes all paroled patients, who in the opinion of the hospital, may need supervision, and to report to the hospital before the expiration of their parole such facts as may be of service to the hospital. The committee also places at the disposal of the hospital its services to investigate the circumstances of former patients, who have been discharged recovered, but who may be considered by the



hospital authorities to be in danger of a relapse, and to require assistance and advice to maintain their physical and mental health.

Aside from the relations existing between the institution and the committee, other assistance can be rendered by the physicians of the hospital to patients paroled, or discharged, who may need medical advice, and to meet this need there was prepared by me, as the medical superintendent of the Manhattan State Hospital, the following circular addressed to the friends of patients:

The superintendent begs leave to offer the following advice for the benefit of the patient who is leaving the hospital, with the view of preventing, if possible, a return of the mental attack:

Those conditions and surroundings which operated in bringing about the first attack should be avoided, and, as far as possible, remedied. Where the surroundings were objectionable a change should be made in residence. Bad associates should by all means be avoided. In order to effectually change the surroundings and associates, it is frequently necessary to move to another section of the city, or even leave town and take up life in another community.

Oftentimes it is embarrassing to the patient to have the subject of the former residence in the hospital discussed. See that the patient avoids all forms of dissipation; endeavor to keep the patient occupied and establish regular hours for meals and for retiring. During the summer months, where it is possible, it is well for the patient to go to the country for a short time at least. The home life should be made as pleasant as possible, and friends should endeavor to encourage and help in every way.

Inasmuch as it is the practice of this institution to parole for a period of thirty days before discharging a patient, it should be considered a duty on the part of relatives to encourage the patient to return to the hospital once a week during the parole period to consult with his former ward physician in reference to the progress of his convalescence, and to seek from him advice as to the best mode of living. The patient, at the same time, should have instilled into his mind that the idea of these regular visits to his physician is not for the purpose of his possible return to the institution, but rather to prevent a recurrence of his disease, and hence the necessity for a recommitment.

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Whenever a paroled patient declines to return to the institution, it is well to keep him under careful observation, and in case of any illness, or a suspicious symptom of his former malady, the family physician should be immediately consulted, and then if advice is desired, a letter addressed to the superintendent will receive a prompt answer.

The State Charities Aid Association reports that the expenses of the work thus far average about one hundred dollars per month only, this being due to the fact that the association is able to avail itself of the many existing charities in New York City, and their willingness to cooperate with the after-care agency.

In conversation with Miss Mary Vida Clark, secretary of the sub-committee on after-care, I learned that from the point of view of the State Charities Aid Association, the experiment was working well. The committee had but little experience in the line of preventive work, but it believed that here also much might be done. One case was referred to which had been called to the attention of the committee last summer by one of the ward physicians. By sending this patient to the country, it was thought that a breakdown had probably been prevented.

It is the opinion of the committee that, in undertaking aftercare work in other States, representative, public-spirited citizens should be appealed to, who already have experience in charitable work. In a city, work of this kind could probably be best undertaken by a committee of some existing charitable organization. In smaller cities, a combination might be formed with some of the existing voluntary relief societies and thus ensure more efficient work than by accepting volunteer service from individuals.

I recently asked several of my assistants for their conclusions as to the usefulness and shortcomings of the After-Care Committee, and Dr. Evarts, the first assistant physician, reported that the agent had usually visited the hospital once a week to see and become acquainted with patients about to be discharged. She was uniformly well received by the patients, even after their parole or discharge from the hospital, also by their friends. Through the work of this committee, the hospital physicians have in several instances visited patients in their homes and given counsel as to the best course to be pursued. A number of patients for whom positions have been found belong to the alcoholic class, who usually make fair recoveries. As a class, however, they are not fully appreciative of the work of the committee, and some of them soon returned to their old habits. In several instances, the committee has found a boarding place for patients who were perhaps not quite equal to engaging in independent work, and have maintained them in the country for several weeks at a time. In one instance, Dr. Evarts distinctly recalls a former patient who was provided with a sewing machine, so that she might be able to support herself. The committee advanced the money for this machine, allowing the woman to make small payments at intervals to reimburse the committee, so that the burden of paying the debt was light.

Our experience is that the work of the After-Care Committee has been helpful to a large number of patients and also to the hospital. Were it not for their work, many patients would necessarily have been discharged to the care of the Department of Public Charities, as was formerly done. The circumstances of their going out into the world are far better under the present arrangement than they were at any time previous when the Department of Public Charities took charge of them. Under the previous conditions, they were either sent to the almshouse, or allowed to go directly on to the streets of the city to seek friends or work without assistance from any one, except such as might have been provided by the hospital. At the present time they are assisted and protected when they leave the hospital. During the past year, since the practical work of the After-Care Committee began, a number of patients have been substantially assisted by the committee. These cases were classified as follows:

Imbecility with maniacal attack, manic depressive insanity, alcoholic psychosis, dementia præcox, acute depressive hallucinosis, depressions not sufficiently differentiated, manic depressive insanity with constitutional inferiority, paranoic condition and drug psychosis.

Of these cases, 18 left the hospital recovered and 5 improved. Of this number, one case of imbecility with maniacal attack, has been re-admitted during the year.

An analysis of the views expressed in the report of Dr. Stedman, in the papers of Dr. Dewey and Dr. Meyer, in the letter of

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Dr. Parant, and in the remarks of Miss Schuyler, shows clearly the necessity for establishing after-care committees.

The opinions of all who have contributed to the literature of the subject indicate very clearly that the greater field for aftercare work is in cities and large towns, and less in rural districts.

Some very useful methods have been outlined in this discussion, but a suggestion made by a member of the staff of the Manhattan State Hospital seems particularly applicable to cases in large cities. It is that members of the staff of the State hospital for the insane should be connected with several of the large dispensaries, so that they could easily keep in touch with such former patients who had been discharged recovered, and with a great many other cases in which there was a prospect or necessity for special treatment.

The establishment of the After-Care Association in New York City has tended to increase the confidence in the administration of the metropolitan State hospitals. Relatives of patients, as a rule, welcome visits from outside parties familiar with the work, and yet not part of the hospital organization. They feel in that way that they get an unbiased report on the standard of care maintained in the hospital. By means of this association the ward physician oftentimes gains the confidence of a patient who has been paroled or discharged, and he is then in a position to point out the dangers of illness, privation and overwork, and to enlighten him as to premonitory symptoms which, unless relieved, might lead to a relapse. The patient having these symptoms should be encouraged to come and see his ward physician, talk over the case with him, take his advice, and such medical treatment as in the physician's opinion was called for.

During the past year, the members of the After-Care Committee of the Manhattan State Hospital have had under observation 258 patients; they have made 821 visits; assisted substantially 26 patients; and have had 19 under prolonged observation.

The physicians in the State hospitals who have cooperated with the State Charities Aid Association in the work of the after-care of the insane see in this new branch of philanthropy a promise of valuable results in the prophylaxis of the disease which afflicts more than 27,000 persons in New York State alone.



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WILLIAM MABON

If this movement affords such a prospect of relief in one State, why should it not be undertaken in all States? The organizations may differ, but the work to be accomplished is the same. The fact that it has been continued so long and successfully in France, Switzerland, England, and other countries of Europe, and that it has been adopted by the Japanese, should be an incentive to our taking it up with vigor, and pushing the work to its utmost.

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AFTER-CARE OF THE INSANE.'

BY ROBERT M. ELLIOTT, M.D.,

Superintendent Willard State Hospital, New York.

Mr. President, Ladies, and Gentlemen: The Willard Aftercare Committee was organized in May of last year. It is composed of eleven members, three of whom are also members of the hospital board of managers and the superintendent is a member ex officio. The hospital district embraces nine counties in the west central part of New York. Auburn, a city of thirty-two thousand, is the largest city, and Geneva, Ithaca, Corning, and Hornell come next, with from twelve to fourteen thousand each. The total population of the nine counties is something like 385,600. and the annual admissions to Willard average about 220. The residences of the members of the committee are so situated as to cover the district with the least inconvenience to themselves. and in or near the larger centers. When a patient is paroled or discharged who is considered in need of special after attention on the part of the committee, a description of the case and such other information as may be of value is submitted to the secretary, who in turn notifies the member residing nearest the patient's home. The committee meets at the hospital semi-annually. During the year it has been in existence, twenty cases-fifteen women and five men-were referred to the secretary; the total number discharged from the hospital during the same period being 134. Three of the cases-two women and one man-had no home or friends and situations were provided for them; these are doing well at the present time. The others had relatives and homes, but the circumstances and surroundings were such that we believed advice and moral support on the part of a member of the committee would prove beneficial; two of these, howeverone an alcoholic and the other a manic case-were returned to the hospital within the year. It is our practice at the hospital to

¹Read at the sixty-third annual meeting of the American Medico-Psychological Association, Washington, D. C., May 7, 8, 9, 1907.

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have all patients whose discharge is contemplated presented at a staff meeting (of the resident medical officers), where they are questioned about their family relations, circumstances, and plans for the future in the event of their leaving the hospital. Advantage is taken of the legal provision whereby an allowance of money not to exceed twenty-five dollars may be made in such cases as require it. This is in brief an account of the progress made with respect to after-care at Willard. It is noteworthy that the two localities to be first provided with an after-care system in this country represent the two extremes of environment, the one (the Borough of Manhattan, New York City), preeminently metropolitan, with a population of over 2,350,000, the other essentially rural and scattered, with a population of approximately 386,000. There is no paid official connected with the system at Willard as is the case in New York City, and so far, I believe, it has not been necessary to seek financial assistance from the State Charities Aid Association, under whose auspices the committee was created. In a district like Willard, where there is comparatively little to do in the way of merely handing out money to needy and friendless patients and obtaining employment for them, the committee can work on broader lines than is possible in a great city, and some of the members are anxious for a larger number of cases, believing that sympathy and a friendly hand may, in themselves, do good. Medical officers have never been able to keep track of discharged patients. In my experience the most that has been done is to ask relatives to report on the patient's condition at the end of the parole period which, in our State, is thirty days. For years in our annual reports we have called attention to the importance of moral treatment in insanity. which embraces employment, recreation and cheerful company and surroundings; we also give a list of alleged moral causes which include adverse conditions such as family bereavement. business troubles, mental strain and overwork, religious excitement, and love affairs. In recent years there has been a tendency in some quarters to question the rôle played by purely mental or moral influences, and attach more importance to bodily or physical conditions, but I believe that insanity is frequently precipitated by mental causes. Admitting this, and the necessity of moral treatment during an attack, their importance with regard to aftercare will be apparent.

The question of what the scope of such work should be is one, on which opinions differ. In England and France the function of after-care societies is to find for discharged patients in needy circumstances suitable homes and employment; to provide gifts of money, clothing or tools; to redeem articles in pawn; to advance payment for rent, etc., according to their individual needs and to keep them under supervision for a month or two after their discharge. Comparisons with regard to poverty and social conditions have been made between European countries and America, and it has been held by some that there is not the need for such work on this side of the Atlantic. We have undoubtedly less pauperism and there is not the host of unemployed here which is to be found across the water, but there is nevertheless considerable poverty, and to be convinced of this one need only glance at the transactions of the various philanthropic and charitable organizations apart from our purely public charities. The insanity law of New York State provides that the father, mother, husband, wife, and children of an insane person if of sufficient ability, shall assume the costs of support of inmates of State hospitals, in whole or in part. The regular reimbursing rate is \$3.50 per week, but in not more than 8 per cent of the 26,000 insane in the thirteen State institutions is anything being contributed toward their maintenance. There is an agent in each district whose business it is to investigate the family circumstances, so that compliance with the law may be enforced. At the Manhattan State Hospital, Ward's Island, which takes patients from New York City exclusively, the proportion of reimbursing cases is less than half of I per cent, which indicates a greater prevalence of poverty among the insane than anywhere else in the State. An interesting fact in connection with this is that 60 per cent of the insane committed from New York City are of foreign birth, the proportion for the entire State being about 48 per cent. According to the records of the Immigration Department, 34 per cent of all immigrants who arrived at the port of New York last year settled in New York State, and the vast majority of these remained in New York City. This has an important bearing on the subject under dis-

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cussion. In a large number of cases it is the bread-winner who is committed, who, before the attack began, was able to maintain in a modest way his wife and children, but poverty follows in the wake of the calamity, the home is frequently broken up, and should the patient be fortunate enough to recover he is obliged to re-establish himself in the community under the most adverse circumstances. Stress, about which so much has been said in recent years as a factor in the production of mental diseases, is often intensified. There is also public prejudice to contend with, although I do not believe that this exists to the extent in America that it does in England and other European countries. Mrs. Milo M. Acker, a member of the Willard Board of Managers and the After-care Committee, has been deeply interested in this subject and last year took occasion to obtain the sentiment of nine representative housekeepers and three business men who owned mills and employed a large number of women and girls. Four of the nine housekeepers said they would be willing to take into their homes as domestics, persons discharged from hospitals who were said to be cured by the physicians; two said they would employ such persons after a lapse of six months; two said they would not have them under any circumstances and one was non-committal. Of the three mill owners one said that he would not employ anyone who had been insane under any condition nor after any lapse of time; two were broad-minded enough to say that they would take directly into their employ from the State hospitals any women whom the physicians guaranteed as cured, and while they did not think it would be wise for their companion workers to know that they had been insane. they could promise them, if they needed it, their sympathy and that of their fellow operatives. On the whole this was considered encouraging from the standpoint of after-care.

Dr. Adolf Meyer, in a paper which he read at a meeting of hospital superintendents and managers with the New York State Commission in Lunacy a year ago, dealt at some length with the necessity for improving social conditions which so often precipitate mental breakdown, such as the correction of family habits, the providing of amusements and recreation and all those things which pertain to social and mental hygiene, a work which he thinks after-care associations can interest themselves in with

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profit, which involves not only recurrent insanity, but the entire question of prophylaxis before there has been an attack. This is indeed a great problem and success in any degree can only be attained by a process of evolution. Conditions vary in different communities; in cities the facilities for entertainment and recreation are very different from those of rural districts, while it must be admitted that residents of the latter have a greater measure of fresh air and light, also better food. We are all familiar with the fact that certain types of mental disease are more frequent in metropolitan districts than in the country; compare, for instance, general paralysis and alcoholic psychoses with melancholia; the former are much more prevalent in cities, while a considerably higher percentage of the latter is found in rural districts.

The influence of environment and training upon young adults of the poor class is strikingly illustrated at the "George Junior Republic," an institution situated at Freeville, in Central New York, founded by William R. George, in 1895. The age for admission is fourteen years, and residence at the institution may continue until the age of twenty-one. The average period of residence thus far is about three years and a half, and there have been over 600 citizens. Of this number only one boy developed insanity; he was eighteen years old and on admission to Willard had symptoms resembling dementia præcox, but improved to such an extent that he was able to return to the Republic in the course of six months. Mr. George informs me that in many instances there is a history of insanity in the family, usually the father or mother. The "citizens" are practically self-governing and the method is based on the Constitution and the laws of the United States and New York State. It is a miniature village identical with any other village, the only difference being the age of its citizens; the voting age is reached at fourteen instead of twenty-one. They elect from their own number a president, judiciary, and various officials comprising the government. There is a school conducted by paid teachers, and a number of industries, such as a bakery, laundry, carpenter shop, furniture shop, garden and a farm of three hundred acres. They have their own currency and each citizen is obliged to support himself in some way. There is also a good library, gymnasium, and chapel. Nothing without labor is the key-note of life in the Republic; there is no opportunity for moping. The subsequent careers of the ex-citizens have been followed in almost all instances and the results are found to be most gratifying. None of them have been committed as insane. Most of these boys and girls come from the worst surroundings and ancestry, with criminal and immoral tendencies, and it would seem that many of them must have a predisposition to mental disease, particularly dementia præcox. It appears to me that the mental effects of the life and training at this institution are of much interest to alienists, and I have thought it appropriate to refer to it here.

The Empire State, containing, as it does, approximately onetenth of the population of the United States, and having the chief port of entry for immigrants, affords a good field for starting and developing a system of after-care. To insure its success there must be cordial co-operation between the hospital physicians and the committees, and the hospital authorities in New York pledged this in a resolution adopted at a conference of superintendents with the Lunacy Commission held in January, 1006, when Miss Louise L. Schuyler, representing the State Charities Aid Association, undertook to organize an after-care department. The real requirements to meet fully the object in view can only be determined by experience. The committees should be able to do something to enlighten the public and disabuse the minds of many who, in their ignorance and superstition, still labor under the same prejudices toward the insane and institutions for the insane as their forefathers did generations ago, which is perhaps not surprising when we think of the lack of insight and interest regarding lunacy matters displayed by the average practitioner of medicine. Moreover, the progress made in medicine and surgery during the last twenty years has been applied in the management of our hospitals; the nurses are better trained than formerly, and the standard of care generally is higher. All this has conduced to the betterment of our patients, and the deteriorating process may have been checked in many instances, but it is an open question whether there has been any actual increase in the recovery rate. This, combined with the apparent increase of insanity, brings out more strongly than ever the need and importance of prophylactic measures.

THE TRIAL OF THE INSANE FOR CRIME: A HISTORICAL RETROSPECT.

By JAMES HENDRIE LLOYD, A. M., M. D., Neurologist to the Philadelphia Hospital.

The history of the medical jurisprudence of insanity has not yet found a pen worthy of so great a subject, although able pens have essayed it, especially that of Morel.¹ It has numerous aspects, any one of which would serve in this age of research for a copious monograph. The subject indeed reaches far back into antiquity, and Roman law especially dealt, often wisely and well, with all the various questions that concern the insane. From so vast a field the mere essayist may well turn in despair.³

The object in this paper is merely to present some rather curious matters concerning the evolution of trial by jury in English law, and especially as these matters affected the insane. It is the trial of the insane for crime in olden times that will occupy us; for this is a subject fraught with great interest, and one that has a bearing on what we see almost daily in our midst; that is, the defence of insanity in our criminal courts. And yet so large is even this limited subject, that in these pages I shall hope merely to trace out the very gradual growth of the right of an insane man, on trial for his life in an English court, to be represented by counsel, and even to have his witnesses called and sworn.

It doubtless seems now such an inalienable right for an accused man, on trial for his life, to have counsel, and to call his witnesses, that probably few persons are aware that these rights have only been acquired after centuries of struggle, and only within comparatively recent years; and that in former times the

¹Traité de la Médecine Légale des Aliénés, Paris, 1866.

¹The Institutes of Justinian contain many provisions for the insane, and these were copied almost verbatim by Bracton in his De Legibus et Connetudinibus Angliæ, about 1265, and thus found their way into the English common law.

spectacle was sometimes displayed in the English courts of an insane man being called on to make his own defence before a jury, and to prove his own insanity, without the aid of counsel or of sworn witnesses.

According to the old common law of England a man on trial for either treason or felony was not allowed counsel; neither was he allowed to call witnesses. In this latter respect the common law followed the civil law, or law of the Roman Empire. Sir Fitzjames Stephen^{*} says that the right to call witnesses under the Roman law was doubtful, and that even trial by jury in its original form dispensed with witnesses altogether; that under the civil law as administered all over the continent down to recent times, the prosecutor only could call witnesses; and that in England the prisoner's right to call witnesses upon equal terms with the Crown was not established till the reign of Queene Anne. On this subject Blackstone' says that as counsel was not allowed to any prisoner accused of a capital crime, so neither should he be suffered to exculpate himself by the testimony of any witnesses; and it is to the credit of "Bloody Mary" that on one occasion she instructed her chief justice that the prisoner should have his witnesses the same as the crown. Nevertheless when the courts at last grew ashamed of the old law, and admitted witnesses for the defence, it was only on condition that they be not sworn; hence their testimony was given less credit than the witnesses for the crown, a fact which brought a protest from Coke," who said there was not a scintilla juris in favor of such tyranny; and at length by the statutes 7 Will. III c. 3 and I Ann. St. 2 c. 9, it was allowed that in all cases of treason and felony all witnesses for the prisoner should be examined upon oath in like manner as the witnesses against him.

The effect of this old common law on the trials of the insane must have been disastrous. In fact, the records of the English courts before the reign of George I, so far as I can find, are almost barren of well reported instances of such trials. This could not have been because there were no such instances. Insane men must have come to trial, for the insane have been with us always, but the knowledge of insanity was so imperfect, that

⁴ 4 Com. 359. ⁵ 3 Inst. 79.

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^a History of the Criminal Law of England, Vol. 1, p. 46.

without the right to call witnesses and to have counsel, the lunatic on trial for his life must have had such a poor show that he usually left not even a trace in the annals of early English jurisprudence. His trial indeed could have been little better than a farce. Short indeed must have been his shrift. Let the modern expert, who consumes whole days on the witness stand in full view of an admiring public, pause and reflect on the comparatively recent progress in civilization which has called him into existence.

The right of an accused man, hence of an accused lunatic, to have counsel was even longer denied to him than the right to call his witnesses, and, as we shall see, was not assured to him in England until the year 1836. This hardship led to curious episodes in English practice, which will be described briefly in this paper.

According to that great oracle of the common law, Lord Chief Justice Coke,[•] the reasons for the old law were curious and two fold:

"First, for that in case of life, the evidence to convict him should be so manifest as it could not be contradicted.

Secondly, the court ought to see that the indictment, trial, and other proceedings be good and sufficient in law, otherwise they should by their erroneous judgment attaint the prisoner unjustly."

In plain English the theory of the common law, as here given by Coke, was that the judge was also the counsel for the prisoner, and it was his duty to see that no injustice was done him, and that he was not convicted except on evidence that was unmistakable. This became a pet theory of text-writers, and was thought to proclaim the inherent nobility and grandeur of the common law. Come, said the law to the prisoner, I will try you and see that no injustice befalls you; but you must have no counsel and call no witnesses, even if you hang for it.

Blackstone' attempts to apologize for this rule of law, but only makes matters worse; he applauds "that noble declaration of the law, when rightly understood, that the judge shall be counsel for the prisoner." But all the same, the learned commentator did not approve of the law, and he attempts to explain it away.

'3 Inst. 137. '4 Com. 355.

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When a reader of to-day tries to imagine the notorious Judge lefferies acting as counsel for a prisoner on trial before him for treason to the house of Stewart, he gives up the attempt in vain. See, for instance, the report of the trial of Lady Alice Lisle before this same Jefferies," in 1685. She was, indeed, not insane, but aged and infirm, and so deaf that she could not hear what was taking place at her trial. Her "crime" had been entertaining a nonconformist minister who was said to have been in Monmonth's rebellion. Jefferies, who in the theory of the law was "of counsel for the prisoner," told the jury, after the verdict, that he himself, if on the jury, would have voted to convict her, "if she had been my own mother." James II refused to pardon her, although he graciously allowed her to be beheaded instead of being burned at the stake. By special act of Parliament, long after her execution, her attainder was removed, and Jefferies denounced. This woman, physically and mentally infirm, had stood her trial before a monster of injustice, without sworn witnesses on the stand or counsel at her side.

In the case of Bateman,[•] an insane man, of whom it was said even at that time, 1685, that he ought never have been tried. much less executed, the prisoner's son only was allowed to help him in his defence; but in those days it was held to be a misdemeanor to help a prisoner on trial, even by whispering a word to him.

The only exception in favor of the prisoner was in case some point of law arose proper to be debated." This was a matter within the discretion of the court; and the court itself appointed the counsel for this special purpose, in some instances naming the barrister whom the accused man himself chose." But the law denying counsel the right to examine witnesses or to address the jury, was so unjust that Blackstone himself exclaims, "upon what face of reason can that assistance be denied to save the life of a man which yet is allowed him in prosecution for every petty trespass?" In other words, a man had the right to have counsel in petty cases, but not in cases of treason and felony wherein his life was at stake. Such were the inconsistencies of



[•]4 Hargrave, State Trials, 106. [•]Hargrave, 4, State Trials, 206.

¹⁰ Coke, 3 Inst. 137. Blackstone, 4 Com. 355.

[&]quot; Case of Rosewell, Howell's State Trials, X, 147.

the English criminal law, which condemned prisoners, sane and insane alike, without allowing them to be properly heard. But Blackstone further tells us that by his time the judges had become so sensible of this defect that they did not scruple to allow a prisoner counsel to instruct him what questions to ask or even to ask questions for him. Hence, it was not until well on in the 18th century that this injustice began slowly to be rectified. Nevertheless it was not entirely corrected for nearly a century later, for counsel were not allowed to address the jury, and men continued to be tried for murder without being properly defended.

In the case of treason, however, the abuse was corrected earlier, for by statute 7 Will. III c. 3, persons indicted for some forms of treason were allowed two counsel, and the reason assigned by Blackstone was, lest their cases should be prejudiced by "higher influence," meaning the influence of the King and the government. But on the subject of insanity and high treason the English common law had formerly been cruel and unjust, for Coke tells us in the Beverly case " that " non compos mentis may commit high treason; as, if he kills or offers to kill the King;" and Lord Chief Justice Hale, referring to this passage in Coke, says: "This is a safe exception, and I shall not question it, because it tends so much to the safety of the King's person."" And so intense was this prejudice against the insane regicide that by the statute, Henry VIII, Chap. 20, it was provided that if a person, being of sound mind, should commit high treason, and afterwards fall into madness, he might be tried in his absence, and executed as if he were sane. That is, the lunatic had neither the right to call witnesses, to have counsel, or even to be present at his trial. But this infamous statute was too much even for the olden times; it was repealed by statutes I and 2, Philip and Mary, Chap. 10; and it has been condemned by all the best authorities."

As a part of the barbarous injustice of the old common law, the prisoner was not allowed even to have a copy of the indictment before trial; and a serio-comic scene was enacted in the case of Rosewell," on trial for high treason, when the prisoner, a religious monomaniac, after being refused counsel, demanded

¹⁰ 4 Coke, 124. ¹³ I P. C., Chap. IV, p. 37. ¹⁴ Blackstone, 4 Com. 25. ¹⁶ Howell, State Trials, X, 147. every once in a while in open court that the indictment be read to him, now in English, and again in Latin. As the indictment was interminably long, this process consumed much time and sorely tried the patience of the lord chief justice.

Neither was the court satisfied in the olden times with exercising a parental control over the prisoner merely; it did the same thing for the witnesses and the jury. Witnesses were abused and menaced from the bench. Some of the harangues of Jefferies while presiding at state trials are almost incredible; he accused and railed at witnesses, calling them opprobrious names and hurling blasphemous maledictions at them.³⁶ The lot of the iurv was no better; in fact it was sometimes even worse. In the case of Sir N. Throckmorton, tried for high treason in 1554, the jury, which acquitted the prisoner, were fined and imprisoned for the verdict. Eight of them had to pay 220 pounds each, and the other four got off, having apologized." A recent English writer " says that to go back even to the beginning of the 10th century, is to return to an age of barbarism; and another writer" says that formerly judges browbeat these defenceless prisoners, jeered at their efforts to defend themselves, and censured juries who honestly did their duty. Thus it was when the judge was " of counsel for the prisoner."

There is a curious account of legal procedure in criminal cases in a book written by Sir Thomas Smith, secretary of state to Queen Elizabeth.³⁰ From this book it appears that before the English civil war, in the 17th century, the accused man before trial was kept in close confinement and could not prepare for his defence. He had no notice beforehand of the evidence against him, and he was obliged to defend himself at his trial as best he could, with no counsel to help him, and with no witnesses in his behalf. There were no strict rules of evidence as there are now; everything was left to the discretion, or caprice, of the court; and the procedure often degenerated into a mere wrangle between the prisoner and the witnesses for the crown.

- ¹⁶ See Hargrave's State Trials.
- ¹⁷ Stephen, op. cit., Vol. 1, p. 326.
- ¹⁶ Sir S. H. Poland, Century of Law Reform, p. 42.
- ¹⁰ Odgers, ibid., p. 41.
- Commonwealth of England, Ch. XXV, pp. 183-201.

How an insane man would fare in such a trial, may easily be imagined.

In spite of its defects, however, the old common law of England was in theory absolutely just to the insane; and no code of law in any nation ever threw such safeguards about the lunatic. Thus an insane man was not only exempt from the penalties of crime, but it was also a part of the law that he should not even be put on trial for his alleged offence so long as his insanity endured. All the old authorities, such as Coke,^m Hale,^m Hawkins,^m and Blackstone^m are agreed on this subject. Hale says that if a man of sound mind commit a capital offence, and before his arraignment becomes mad, he ought not to be arraigned; and if after his plea, and before his trial, he becomes insane, he shall not be tried; or if after his trial, he becomes insane, he shall not receive judgment; or if after judgment, he becomes insane, his execution shall be spared. Surely nothing could be more humane than this.

But while in principle the common law was thus benign and enlightened, in practice, as we have seen, it was harsh and unreasonable. And that the practice of the courts, as it stood in those days, was a most effectual deterrent to the plea of insanity, is evident from an occasional writer of the times. Thus an old commentator on the state trials, in the time of Charles II, says that the defence of insanity had sometimes been tried in capital cases, but with so little success that in his time it was scarcely heard of." This is not much to be wondered at when the same writer tells us that in one case the prisoner's wife was threatened with being thrust out of court for merely whispering to her husband what jurors he should challenge; that in another case the prisoner's wife was only by special permission allowed to take a few notes for him; and that in still another case, that of an insane apothecary on trial for high treason, the prisoner's son only was allowed to be with him and give him a little help. although the accused man was dragged into court after ten weeks of solitary confinement, in such a mental state that even the court saw plainly that he was "moped mad." These men were

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^a 3 Inst. 4. ^a I Pleas of the Crown, 34, 35.

¹ I P. C., Chap. 1, §3. 1 Chitty, Crim. Law, 761.

^{*4} Com. 24, 395, 396. *4 State Trials, 205.

all tried without being allowed legal counsel or sworn witnesses, and the apothecary was hanged.

According to this same writer, it was no trifling thing even to advise a man *before* his trial, and a solicitor had once been indicted for high misdemeanor for merely giving advice before trial to a person accused of high treason.

The extraordinary spectacle was thus sometimes presented of a lunatic conducting his own defence. We see a man in jeopardy of his life, trying to prove himself insane by the acumen with which he examined and cross-examined the witnesses. The prisoner, in order to prove that he was insane, was obliged to reveal the fact that he had sufficient reason to conduct his own case. If he did this—and it was his only chance—with some show of coherence and insight, this very fact was seized upon by the crown lawyers to prove that he was sane. In other words, his predicament was such that the more he tried to prove by witnesses that he was insane, the more he proved by his own display of logic that he was not insane. Never was a man placed between the two horns of such a dilemma.^m

Let us take for instances the case of Edward Arnold, one of the causes celebres, in medical jurisprudence." Arnold was tried in 1724 for shooting at Lord Onslow with intent to kill. The prisoner was a delusional lunatic, and believed himself persecuted by Onslow, who, he thought, sent evil agents to annoy him, and even got into his belly; he imagined also that he was bewitched by the noble lord, and that the latter in some mysterious way was responsible for most of the evils of the times. There were marked aural hallucinations, insomnia, inability to work, and the whole paranoiac outfit. When this man was brought to trial an effort was made to have the judge permit a solicitor to be at the prisoner's side "to call his witnesses only;" but it was most vehemently fought by four lawyers for the crown. They contended that the judge was "of counsel for the prisoner," and that the attempt to prove him a lunatic "was a design to forestall justice." This was before a word of testimony had been heard. "And the man to my sight," said the leading lawyer for

"Wharton & Stillé, Med. Jurisprudence. From the author's chapter on "Insanity and the Law," p. 525.

" 16 Howell, State Trials. 465.



the crown, "seems as sensible as myself or any person in court." Justice Tracy decided against allowing the prisoner any counsel, but said he himself would give him all the assistance in his power. He told the prisoner, "as all the witnesses come, if you have any question to ask, put it to me, and I will ask your question for you." Also at the close of each witness's examination the crown lawyer would say, "Arnold, would you ask this witness any question?" To which the prisoner once replied : "I don't know. Ask him yourself if you have a mind." His usual answer was, "I don't know what to say." And truly he did not. He was allowed a solicitor for part of the time; but there was no proper cross-examination of the crown witnesses, and the examination in chief of the witnesses for the defence was conducted by the judge and the lawyers for the crown. It was clearly proved, nevertheless, that the man was a delusional lunatic : but the evidence made no impression on the minds of either court or jury. No medical experts were called; and, no counsel being allowed for the prisoner, his evidence was not properly marshalled, and no address was made for him to the jury. All his evidence, in short, went for nothing. When the poor wretch attempted to ask questions of the witnesses, he was badgered by the crown lawyers; and the judge, instead of acting as counsel for him, as he had promised, told the jury, in a charge which was destined to be forever famous, that a man could not be acquitted on the defence of insanity unless he was "totally deprived of his understanding and memory, and doth not know what he is doing, no more than an infant, than a brute, or a wild beast." The prisoner was promptly convicted and sentenced to be hanged; but to the credit of the crown his sentence, at the request of Lord Onslow, was commuted for imprisonment, and he spent the remaining thirty years of his life in jail.

Perhaps the most dramatic and spectacular trial of a lunatic that ever took place was that of the Earl Ferrers.²⁰ This English nobleman was arraigned in 1750 for murdering his steward, Mr. Johnson. The tribunal that tried him was not an ordinary criminal court, but no less angust a body than the House of Lords, because, according to English law, every man is entitled to a trial before a jury of his peers; therefore an English earl.makes his

* 19 Howell, State Trials, 886.

defence, when he commits a crime, before the upper House of Parliament. The trial was conducted with great pomp and ceremony. The court was presided over by the lord high steward, one of the highest offices under the English Constitution, but usually in abeyance, and only filled for special occasions, such as the coronation of a king or the trial of a peer for murder. The details are too voluminous for quotation, or even for judicious condensation, but every modern alienist, who feels an interest in the history of his specialty, should read the highly entertaining report of the proceedings as given in the 19th volume of the State Trials.

Lord Ferrers was allowed no counsel, but was obliged to conduct the whole defence himself, not only against the attorneygeneral, who was one of the ablest lawyers of his time, and afterwards lord chancellor, but also with such eminent jurists as Lord Mansfield and Lord Hardwicke present and ready to trip He was evidently carefully coached for the occasion. him up. and conducted the examination and cross-examination of witnesses with remarkable skill. It is very evident that the impression he made upon his jurors-the whole House of Lords-was highly unfavorable to his case, because the very skill with which he conducted his defence was taken as evidence that he was of sound mind: and the counsel for the crown were nothing loath to take advantage of this point, and drive it home. The proceedings of the trial read almost like a burlesque. Lord Ferrers' case was evidently one of alcoholic insanity, engrafted upon a hereditary stock. It was shown that he often began his day by drinking brandy in his tea for breakfast, and he drank steadily and in He had the delusions of persecution which are common excess. in alcoholic insanity, and he was probably drunk when he killed his victim. After the tragedy he sustained a siege for many hours in his own house, and when finally taken was "armed with Sometime a blunder-buss, two or three pistols and a dagger." before the murder a commission in lunacy had been thought of for him, but unfortunately it had never been taken out. His uncle and immediate predecessor in the earldom had been insane, as had also a paternal aunt. All these facts were brought out in the evidence. The irony of the trial consisted in the fact of a man in jeopardy of his life trying to prove his own insanity

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by examining and cross-examining witnesses. He frankly deplored the need of doing this, and told the lords naively that this plan of defence was forced upon him by his family; intimating that he took not much stock in it himself. The effect can readily be imagined. The questions and answers are often amusing. "In what light did you look upon me?" he asked one of his "Rather turned in your head," was the answer. witnesses. "Have you seen any instances of anything like insanity in me?" was another question. To one question: "Do you look upon me as affected with any and what distemper?" the witness replied very frankly: "Indeed, I have looked upon your lordship as a hunatic for many years." The accused man even made an attempt to propound a hypothetical question (the first instance probably in any court) but it was not allowed. When he came to sum up, he frankly protested that he was not able to do it, but he obtained leave to read a statement which he had prepared, or which had been prepared for him, in writing, in which, with pathetic helplessness, he said: "I have been driven to the miserable necessity of proving my own want of understanding; and am told, the law will not allow me the assistance of counsel in this case, in which, of all others. I should think it most wanted." Earl Ferrers, like other insane persons, was opposed to making a defence of insanity, and said it was forced on him by his family. His defence and speech were remarkable; the evidence was clear; and yet this lunatic conducted his own defence by trying to prove what he said he was mortified to have to acknowledge. The natural result followed. He was promptly convicted by his peers, and hanged. It is probable that his confinement in jail before his trial had partly at least restored his mental balance by depriving him of his accustomed libations.

Such a travesty of justice is sad to contemplate. At the present time a strong defence could be made in such a case, and a verdict in the second degree probably obtained without difficulty. The present-day critics of our legal procedures should reflect upon the advances that have been made in medical jurisprudence.

The case of Hadfield is also a celebrated one and serves to illustrate some of the peculiarities in the development of trial by jury in English law as it affected the insane. Hadfield had shot at King George III in Drury Lane Theatre, but had missed

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his aim, and the King was unharmed. This was an act of treason, punishable with death, and it was for treason that Hadfield was tried at the bar of the Court of King's Bench in 1800. Now the old common law had been modified, as we have seen, by the act 7 Will. 111 C. 3, which allowed counsel to a prisoner on trial for treason. Consequently Hadfield had counsel, as he would not have had if he had been, like Arnold and Earl Ferrers, on trial for murder or attempted murder. It is to this fact alone that we owe the celebrated speech of Erskine in Hadfield's defence—a speech which more than any other ever pronounced in a court of justice tended to change the legal tests for insanity. for it introduced and established the doctrine that insane *delusion* is a good defence in law.

In 1812 Bellingham, a delusional lunatic, shot and killed Mr. Spencer Perceval, First Lord of the Treasury, in the lobby of the House of Commons." He believed that the government owed him a large sum of money, and failing to obtain redress he had assassinated this eminent statesman. Bellingham's case is the most notorious in the medico-legal annals of England. He shot Mr. Perceval on the 11th of May; was put on trial the same week, found guilty after a very short trial, during which a fruitless attempt was made to secure delay in order to obtain witnesses to his insanity, and was hanged on the 18th of the same month; so that the boast was made that his body was on the dissecting table in eight days after he had committed his crime. At the end of the case for the crown the prisoner was called on for his defence; and he then, pointing to his lawyer who was present, said: "Is not that gentleman going to speak for me?" On being told that the law did not allow this, he defended himself." He addressed the court, and spoke so coherently that the crown lawyers exultingly made much of it, as evidence of a sane mind. A lawyer who was engaged to help him, although not allowed to appear for him as counsel at the trial in the ordinary sense, begged vainly for postponement. "I never saw the prisoner before, and it has not been in our power to bring forth all the evidence to prove whether he be sane or insane." But the plea was vain.

²⁹ I Collinson, Lunacy, 636.

²⁰ Century of Law Reform, 2d Lect. by Sir H. B. Poland.



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All this was in accord with the practice that prevailed less than one hundred years ago in English courts. Sir H. B. Poland says^m that in cases of felony (which included murder, but not treason) a prisoner's counsel was only allowed to crossexamine witnesses, to argue points of law, and to examine witnesses for the defence of the prisoner. But evidently he could not address the jury. And Chitty tells us that upon a charge of felony (which included murder) counsel were allowed to the prisoner only if some *point of law* should arise fit to be debated.^m

Reform in legal procedure moves slowly in England, but popular indignation was gradually roused against this injustice; and it found voice in a most unexpected quarter. In 1824 George Lamb presented a petition to Parliament, signed by members of the juries serving in criminal cases at the Old Bailey, praying that the accused in cases of felony (murder, &c.) might have the benefit of counsel, as in cases of misdemeanor. It was plainly said by a writer of the time that the juries had become weary of the continual butchery, and resolved to acquit. It was believed that innocent persons were often found guilty because of the absence of counsel; and one telling argument was based on the helplessness of the insane, when forced to defend themselves before a jury and against trained lawyers for the crown.

"Suppose a crime to have been committed under the influence of insanity," exclaimed Sydney Smith; " is the insane man to plead his own insanity—to offer arguments to show that he must have been mad—and by the glimmerings of his returning reason to prove that, at a former period, that same reason was utterly extinct?" This was exactly what had been going on for centuries, but Sydney Smith, although he wrote so eloquently, did not appear to know it.

Lord Chief Justice Denman, of the Court of King's Bench, said that he had once tried two prisoners who were deaf and dumb; and he exclaimed against the harshness of such a trial without counsel for the prisoner. It would indeed be hard to imagine anything more grossly unjust than to try a person who could neither hear the accusation nor reply to his accuser, and who was not allowed counsel to hear and reply for him. When

¹⁰ Op. cit., p. 50. ¹⁰ Footnote to Chitty's Eng. Statutes, 1894, Vol. 3.

Lord Lovat was tried for treason in 1747 he protested that he could not conduct his own defence, because he could neither see nor hear. In consequence a bill was brought into Parliament to allow counsel to prisoners impeached by that House.

Sydney Smith's essay,¹⁰ in 1826, from which we have quoted, was a masterly criticism of the old law, and it probably had something to do to mould public opinion and lead to reform; but that reform did not come until 1836, when Parliament passed the law known as the Prisoner's Counsel's Act (6 & 7 Will. IV C. 114), which prescribed as follows:

"That all persons tried for felonies shall be admitted, after the close of the case for the prosecution, to make full answer and defence thereto, by counsel learned in the law, or by attorneys in courts where attorneys practice as counsel."

Thus not until near the middle of the 19th century did England correct an injustice which had stood for centuries, and not then without protest. Poland says that, after reading Sydney Smith's article in the *Edinburgh Review*, it is difficult to understand how the law could have remained unchanged until 1836. But it is a still more astonishing fact that, according to the same writer, twelve out of the fifteen highest judges in England strongly condemned the bill, and one of them, Mr. Justice Park, said that if it was allowed to pass he would resign from the bench. Nevertheless the bill did pass, and the learned judge did not resign.

The fact is well known that the insane often object to the defence of insanity in their behalf. This defence, as a rule, is not relished by paranoiacs. These lunatics do not like to be called insane. They resent the imputation most vigorously; for it is a well-known characteristic of delusional patients to defend their delusions, and this they will do at the risk of their lives, even when on trial for murder. Under the old common law such patients, when obliged to defend themselves without counsel, were more likely to ruin their cases than to help them. We have seen

²⁸ Edinburgh Review, Dec., 1826. Sydney Smith's essay was written as a review of Stockton On The Practice of not Allowing Counsel to Prisoners Accused of Felony, 8vo. London, 1826. The review is republished in Smith's Collected Essays, London, Longmans, Green, and Co., p. 539. It was unsigned in the original. In commenting on the old practice Smith wrote, "The iron age of Clovis on Clottaire can produce no more atrocious violation of every good feeling and every good principle."

how Lord Ferrers apologized for making such a defence, and said he was forced to do so by his family; he evidently resented the idea. Another early case was that of Frith,[#] in 1790, who protested loudly against the defence of insanity. He had thrown a stone at the King in his royal coach, and when put on trial he harangued the court in a crazy manner. A like scene was enacted at the trial of Pearce," in 1840, for felonious assault. Insanity was admitted by the crown, but the prisoner would have none of it, and insisted on addressing the court and examining the witnesses himself. These witnesses, called and examined by him, so far from proving him sane, proved quite the contrary; and he was found not guilty, on the ground of insanity, in spite of his protests. His counsel (for this was after the passage of the Prisoner's Counsel's Act, in 1836) said that "he relied on the prisoner's denial of his insanity, under the circumstances which had been proved against him, as one proof of the fact of his being insane." But usually, under the old common law, the very opposite conclusion was drawn by the prosecution. Thus, as we have seen, Bellingham addressed the court, and spoke so well and conclusively in an insane speech, that the court accepted it as an evidence of his sanity. Guiteau derided the idea of his own insanity; and if he had been compelled, or allowed, to conduct his own defence, his trial would probably have been going on vet."

There are curious and deep psychological reasons for the old English common law denying counsel, and even witnesses, to a prisoner on trial for grave crime. The subject is too involved for more than a hasty discussion here. One idea was that it was the business of the court to defend the prisoner; that is, to see that no injustice was done him. Hence the old saying that the judge is of counsel for the accused. This was a part of the orthodox belief of almost every old common-law writer; and was particularly derided by Sydney Smith. But another and more occult reason appears to have been that it was deemed a wicked opposition to the Majesty of the King for any lawyer to get up

^a See the writer's work in Wharton & Stille's Med. Jurisprudence, 5th ed. Vol. 1, pp. 840-841, from which the above paragraph has been taken ^m part.

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[&]quot;22 Howell's State Trials, 307. "Reg. vs. Pearce, 9 Car. & P. 667.

in court and deliberately oppose him—for in the fiction of the law the King is always present in court in the person of one or more of his judges. The defence of a man who might be guilty was disloyalty to the King, or at least a disrespect shown to him, and it was held to be more likely than not a mere effort to forestall justice. As one writer says, it was an "indecency" to oppose the King's counsel. This was a prejudice derived from the civil law of feudal Europe, and was based probably on the fact that the majority of accused persons who come to trial are really guilty, and it is the business of the court to demonstrate that fact. Any opposition, as by counsel for the prisoner, is an unwarranted interference. The old jurists were keenly alive, in other words, to the possible abuses of the defence; to all the arts and wiles and trumped-up pleas that make our present criminal trials too often such public scandals.

But modern jurists do not see it that way, and it is an axiom now that an accused man is entitled to his defence. The contrary savors too much of tyranny. One of the most infamous laws of Robespierre, during the Reign of Terror, was the law of Twentysecond Prairial, by which, among other iniquities, counsel was denied to prisoners accused of treason. This feature aligns this law with the old English common law, which bore so hard on the insane. Morley says that "of all laws ever passed in the world it is the most nakedly iniquitous."ⁿ

In times of stress the office of advocate for an unpopular prisoner may be one not only of embarrassment but of danger. Malesherbes, that grand and venerable man who, at the peril of his life, undertook the defence of Louis XVI before the Convention, is perhaps the most conspicuous example in history. At the age of 74 years he attempted to save his King, only to follow him in a few short months to the guillotine.^{**}

At the trial of Colgosz, the assassin of President McKinley, the position of counsel for the prisoner was thought to be so obnoxious that special measures were taken to have it filled; and the defence was but half-hearted and perfunctory. The man was really tried by public opinion long before his formal trial in

²⁰ Lamartine's History of the Girondists, Vol. II, p. 314 et seq. Vol. III, pp. 411-412.

[&]quot; Critical Miscellanies, Essay on Robespierre, p. 106.

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court. It was such a case as under the old common law would not have been allowed counsel at all; and the question of the man's insanity was as badly presented as it would have been in the Court of King's Bench in the 17th century. Human nature does not change much, even if the laws do.

It is well perhaps for the modern reader in his complacency to reflect that in the present day we may have gone to the other extreme. Some one should write a treatise on the abuses of the legal art of defence. Certainly we see to-day the prisoner and his counsel allowed every latitude. Every loop-hole of escape is opened to him; irrelevant testimony, technicalities, insanity dodges, appeals to popular prejudice, and by-plays to the jury, now consume days in the trial of a case in which the issue is so simple that under the old common law, when courts sat all night, and juries were not allowed meat, drink or fire, the prisoner could have been convicted between sunrise and sunrise.

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THE RELATION OF IMMIGRATION TO THE PREVALENCE OF INSANITY.

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The growth of immigration within a very few years has been so great that at last it has become the principal source of population and its character has changed so fundamentally that it has assumed an entirely new relation to American social problems. Up to 1900, the average annual immigration had not exceeded one-half of one per cent of the population of the United States and the races which had made the first settlements in the country were still contributing more than seventy-five per cent of the whole number of arrivals. By 1901, the "new immigration" had fairly started, the English, Irish, Germans, and Scandinavians had been quite supplanted by Hebrews, Slavs and Italians and the impetus had been received which, four years later, was to carry immigration past the "million-a-year" mark. More than one-fifth of all the immigrants who have come to this country have arrived since 1900 and, with the changed sources of immigration, a remarkable transformation in the composition of our foreign-born population is in progress.

To some, this transformation brings only the gloomiest forebodings. Professor Goldwin Smith, in a recent paper, expressed the opinion that the present great tide of immigration would be found unassimilable and that it constituted the most prominent peril to the Republic. The spread of Socialism, the extension of industrial disturbances into social and political spheres, an increasing disregard for law and many other evils are believed by those who share Professor Smith's views to be directly attributable to the "new immigration." There are others who see nothing unassimilable in the present immigration but who firmly believe that the strikingly dissimilar elements of our population are capable of being welded together into a homogeneous whole in which American ideals will continue to prevail. These are matters, of

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course, which only incidentally concern the physician, but social conditions and mental disease are so closely related that it is well worth while to investigate the present immigration from the standpoint of those who have to do with the care of the insane and are particularly interested in the prevention of insanity.

Before 1900, the foreign-born insane in the hospitals fairly represented the foreign-born population and the "Special Report on the Insane and Feeble-minded," recently issued by the Census Bureau provides very valuable material for studying the part played by the "old immigration" in the prevalence of insanity in the United States, but the "new immigration" has been of such recent origin that it is difficult to estimate the value of data relating to its influence. In many States, the effects of the "new immigration" have not yet been felt at all, but in the State of New York, which receives more than one-third of the yearly quota of the "new immigration," and which has in its institutions more than twenty-eight per cent of all the foreignborn insane of the United States, some interesting material is available for study. In that State, the ratio of the insane to the population has risen from one in 675 in 1875 to one in 294 in 1905. In 1906, forty-six per cent of the whole number of patients admitted to the New York State Hospitals were of foreign-birth, while the foreign-born population was but twenty-six per cent of the whole population of the State. There is such an obvious relation between this rising ratio of the insane to the population and the increasing proportion of foreign-born patients in admissions that it is a matter of practical interest to collect some information regarding the insane immigrants arriving at the present time and the most recent foreign-born admissions to public institution.

To do this is the purpose of this paper, and two groups of one hundred cases have been taken in order to make some comparisons as to age, sex, nativity, and race. One group consists of one hundred consecutive cases of insanity detected at Ellis Island by the medical officers of the Public Health and Marine-Hospital Service and the other of one hundred consecutive cases of insanity in aliens deported from public institutions. All cases in both groups were in the fiscal year ended June 30, 1906. Sex.—Of the 100 insane immigrants detected at Ellis Island, 61 were men and 39 were women. The ratio of men to women in the total number of arrivals in the fiscal year was 69 to 31. Among the insane aliens deported from public institutions during the year the ratio was 56 to 44. In all the admissions to the New York State Hospitals for the fiscal year ended September 30, 1905, the ratio of men to women was 48 to 52. There seems, therefore, to be a higher proportion of women in the foreignborn insane. In Germany, England, and Italy the number of insane women exceeds that of insane men in about the same proportion that the number of females in the population exceeds the number of males.

Age.—The following table shows the ages of the insane immigrants detected at Ellis Island and of the aliens deported from public institutions for the insane.

TABLE I.

Showing the age of 100 immigrants certified for insanity at Ellis Island and of 100 aliens deported from public institutions.

Age	Certified at Bllis Island	Deported from institutions
Under 15 years		2
15 to 20 years	7	25
20 to 25 years	18	28
25 to 30 years	21	17
30 to 35 years	10	14
35 to 40 years	12	6
40 to 50 years	16	7
50 to 60 years	13	I
Over 60 years	3	••
		<u></u>
	100	100
Average age		23.2 yrs.

The strikingly large proportion of young people among insane immigrants is a matter of considerable practical importance. Under modern systems of care, the chronic insane tend to accumulate in institutions and, as their expectation of life is not much less than that of sane people of the same age, young patients with incurable forms of mental disease become ultimately the source of much greater cost to the public than older patients. In 1905,

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the average age of patients admitted to the New York State Hospitals was 40.3 years, at which age the normal expectation of life is 26 years. The average age of the 100 insane aliens deported from public institutions was 23.2 years, at which age the normal expectation of life is 38 years. It is safe to predict that, from the diminishing average age of patients admitted to the New York State Hospitals, the ratio of the insane to the population will continue to rise. The absence of senile cases in insane immigrants is accounted for in part by the small number of arrivals more than 45 years old (only 4.3 per cent, while 11 per cent of the whole population of the country is older than this), and by the fact that relatives in this country are less likely to send for those who have deteriorated mentally than for those whose infirmities are only physical.

Nativity and Race.—The following table shows the nativity of the two groups of 100 cases and, for comparison, the percentage of immigrants from each country in the arrivals of the fiscal year. Those countries which furnished a proportion of insane immigrants in excess of their share of arrivals are marked by asterisks.

TABLE II.

Showing the nativity of 100 immigrants certified for insanity at Ellis Island and of 100 insane aliens deported from public institutions, and, for comparison, the percentage of immigrants from each country in the total number of arrivals during the fiscal year.

Country	Percentage of total arrivals	Percentage of insane immigrants detected at Bilis Island	Percentage of insane aliens de- ported from institutions
Austria-Hungary	25.4	12.0	21.0
Belgium	5		1.0
*France, including Corsica	9	40	2.0
*German Empire	. 3.5	12.0	5.0
Greece	. 2.0	I.O	1.0
Italy, including Sicily and Sardinia	a 28.8	12.0	10.0
Norway	. 1.5		3.0
*Roumania	4	I.O	I.0
*Russia and Finland	. 19.6	17.0	29.0
Sweden	. 1.6	I. O	I.0
*Switzerland	· .4	••	2.0
*Turkey in Europe	8	••	5.0

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Country	Percentage of total arrivals	Percentage of insane immigrants detected at Ellis Island	Percentage of insane aliens de- ported from institutions
United Kingdom:			
*England	3.7	13.0	5.0
*Ireland	2.6	19.0	11.0
Scotland	1.3	4.0	I.0
West Indies	I.O	1.0	1.0
All others and unascertained	6.0	3.0	1.0
Total	100.0	100.0	100.0

The following table shows the nativity of the foreign-born patients in the New York State Hospitals on September 30, 1905, and, for comparison, the percentage of natives of each country in the total foreign-born population of the State and the ratio of the insane of each nationality to the whole number of natives of that country in the State. Those countries having a larger percentage of insane than of the total foreign-born population are marked by asterisks. The nativity of the foreignborn patients remaining under treatment in the New York State Hospitals, September 30, 1905, was the subject of a special report by the superintendent of each institution and I am indebted to Dr. William L. Russell, Medical Inspector of the State Commission in Lunacy, for copies of these reports. They form the most accurate enumeration of the foreign-born insane in New York State which has yet been made. The last enumeration of the foreign-born inhabitants of New York State, by the countries of their birth, was the Federal Census of 1900 and, therefore, the ratios shown are only approximately correct for the natives of Russia, Italy, and Austria-Hungary as the large immigration from these countries during the last few years has resulted in a disproportionate increase for them in the whole foreign-born population. Until the next Federal Census, it will be impossible to make more accurate comparisons upon this basis

TABLE III.

Showing, by countries of their birth, the percentage of foreign-born patients of each nationality in the total number of foreign-born patients in the New York State Hospitals, September 30, 1905, and the percentage of

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people of each nationality in the whole foreign-born population of the State and also the ratio of the patients of each nationality to the number of people of that nationality in the State. Nationalities represented in either the State hospitals or the general population by less than one-half of one per cent of the whole number of foreign-born are omitted.

Country	Percentage of whole number of foreign-born patients in hospitals	Percentage of whole number of foreign-born in the State	Ratio of insane to population
Austria-Hungary	6.3	6.9	I to 199
Canada	3.8	6.2	I to 220
Denmark	5	.5	I to 170
*France	I. <u>3</u>	1.0	i to 149
*German Empire	25.9	25.3	1 to 173
Italy	3.9	9.6	1 to 431
Norway	6	.6	1 to 182
Roumania		.5	I to 340
Russian Empire and Poland.	8.8	12.4	I to 249
*Sweden	2.4	2.3	1 to 169
*Switzerland	8	.7	1 to 161
United Kingdom:			
England and Wales	5.9	7.5	I to 209
*Ireland	36.0	22.4	I to 111
Scotland	1.3	1.8	I to 249
*West Indies	5	.2	I to 81
All others and unascertained	1.8	2.1	
Tot al	100.0	100.0	•

A better illustration of the effects of the "new immigration" is shown in the following table, which gives the nativity of the foreign-born patients admitted in the year ended September 30, 1905, to the Willard State Hospital and of those admitted to the Manhattan State Hospital. Each institution had about the same proportion of foreign-born admissions but the Willard State Hospital is in the interior of the State where the effects of the "new immigration" have not yet been felt and the Manhattan State Hospital is in New York City.

TABLE IV.

Showing the nativity of the foreign-born patients admitted in 1905 to the Willard State Hospital and to the Manhattan State Hospital. Countries having less than one per cent of admissions are disregarded in each column. 1907]

Country	Percentage of total foreign- born admissions, Willard State Hospital-1905	Percentage of total formign- born admissions, Manhattan State Hospital-1905
Austria-Hungary	4.0	14.0
France, including Corsica	I.5	1.0
German Empire	26.0	18.0
Italy, including Sicily and Sardinia	3.0	6.5
Norway	1.5	
Roumania		1.5
Russia and Finland	6.0	13.0
Sweden		1.5
United Kingdom:		
England	8.5	3.0
Ireland	43.0	24.5
Scotland	I.O	••
All other countries and fractions of p	er-	
centages disregarded	3.0	17.0
Total	100.0	100.0

The race of an immigrant is often of more importance than his nativity. For example, Hebrews born in England would be included with the English in statistics if the matter of birthplace alone were considered and misleading conclusions be reached. Unfortunately, statistics for race are not available for the admissions to the New York State Hospitals and so the table which follows refers only to insane immigrants detected at Ellis Island. The percentage which each race constituted of the total number of arrivals is given for comparison and those races which contributed a larger proportion of insane immigrants than of arrivals are marked by asterisks.

TABLE V.

Showing the race of 100 immigrants certified for insanity at Ellis Island, and, for comparison, the percentage of immigrants of each race in the total number of arrivals during the fiscal year.

Race or people	Percentage of arrivals	Certified at Ellis Island
African (black)	2	I
Bohemian and Moravian	. I.2	I
Croatian and Slovenian	. 3.3	I
Dalmatian, Bosnian and Herzegovinian	5	I
*English	. 3.3	12
Finnish	8	I
*French		4

RELATION OF IMMIGRATION TO INSANITY

Race or people	Percentage of arrivals	Certified at Ellis Island
*German	. 8.1	12
Greek	. 2.3	I
*Hebrew	. 14.2	17
*Irish	. 2.2	19
Italian (north)	. 5.0	3
Italian (south)	. 25.1	9
Magyar	. 4.8	2
Polish	. 7.6	6
Roumanian	7	. 1
Ruthenian (Russniak)	7	••
Scandinavian	. 3.9	I
*Scotch	. 1.3	4
Slovak	. 3.9	I
Turkish	2	••
Welsh	2	2
Unascertained and all others	. 9.2	I
	100.0	100

It would be very desirable to compare more accurately the prevalence of insanity in the races of the "old immigration" with its prevalence in the races of the present immigration, but it is doubtful if a much better comparison can be made than by arranging a table to show the average annual immigration from each of the three political divisions which furnished the larger part of the immigration of twenty years ago and to show the ratio of the natives of each of these three countries in our public institutions for the insane to the whole number of natives of that country in the United States and then to compare this with a similar statement for the three countries which lead in the immigration of the present time. This is done in the following table, which is based upon the number of insane enumerated for the special report of the Census Bureau which has been referred to and the foreign-born population of 1900.

TABLE VI.

Showing, for the three political divisions which led in the "old immigration," the ratio of the insane of each nationality to the whole number of natives of that country in the United States and showing the same ratios for the three countries which furnish the greater part of the "new immigration."

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THE "OLD IMMIGRATION," 1880-1885.

Country or politi- cal division	Average annual immigration	Ratio of insane to population in U. S.
German Empire	174,109	One in 211
United Kingdom		One in 159
Scandinavia	69,665	One in 195

THE "NEW IMMIGRATION," 1900-1905.

Country or politi- cal division	Average annual immigration	Ratio of insane to population in U.S.
Italy	176,650	One in 439
Austria-Hungary	176,514	One in 292
Russia and Finland	122,920	One in 380

It would seem from this table that even the substitution of Hebrews, with their remarkable susceptibility to mental and nervous disease, has not been sufficient to outweigh the effects of the long-continued accumulation of insane of Irish and of German birth, and that the surprisingly small number of Italians in the insane population will effect an actual reduction in the ratio of insanity among the foreign-born. That this conclusion is not warranted is evident when it is remembered that more than forty-seven per cent of all the Italians. Hebrews, and Slavs who have come to the United States have arrived since 1901. When the young Hebrews and Slavs of the immigration of to-day have been here long enough to develop the psychoses of later life with the frequency with which it has been shown that they develop those of adolescence, it is likely that, even disregarding the enormous increase in its volume, the "new immigration" will prove more adverse in its effect upon the prevalence of insanity than the "old immigration" has been.

It is disquieting to learn that, whatever doubt there may be about the exact prevalence of insanity in the races of the "new immigration," there is none about that of idiocy and other mental defect. The following table shows the race of 100 consecutive cases of idocy, imbecility and other mental defect detected in immigrants at Ellis Island during the last fiscal year and, for comparison, the percentage of each race in the whole number of arrivals.

TABLE VII.

Showing the race of 100 immigrants certified at Ellis Island for idiocy, imbecility, and other mental defects, and, for comparison, the percentage

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of immigrants of each race in the total number of arrivals of the fiscal year.

Race or people	Percentage of arrivals	Percentage of immigrants certified
African (black)	.2	••
Bohemian and Moravian	I.2	3.0
Croatian and Slovenian	3.3	5.0
Dalmatian, Bosnian and Herzegovinian	.5	2.0
English	3.3	2.0
Finnish	.8	••
French	1.3	1.0
German	8.1	8.0
Greek	2.3	1.0
Hebrew	14.2	29.0
Irish	2.2	1.0
Italian (north)	5.0	••
Italian (south)	25.I	34.0
Мадуаг	4.8	1.0
Polish	7.6	4.0
Roumanian	.7	••
Ruthenian (Russniak)	.7	••
Scandinavian	3.9	3.0
Scotch	1.3	1.0
Slovak	3.9	2.0
Turkish	.2	••
Welsh	.2	••
All others and unascertained	9.2	3.0
Total	100.0	100.0

It is seen that the percentages for the insane, given in Table V are almost reversed. It is doubtful if the disadvantage of admitting such mentally defective immigrants would not be as great as that of admitting an equal number of the insane, for a large proportion of the latter would undoubtedly become committed to institutions within two years and be deported, while most of the mental defectives would spend their lives outside of charitable institutions and be at liberty to transmit their defect to their children.

It may be of interest to consider, a little in detail, those peoples in which the prevalence of insanity has been found to be excessive.

The prevalence of insanity among the Irish in the United States has no parallel in the world. The ratio of the insane

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to the whole population in Ireland (1903) was one in 203, while in the United States one in 121 is in an institution for the insane. Irish immigration for some years has been but a small factor, and this numerical decrease will soon give the Irish second place in the number of foreign-born admissions to institutions for the insane in this country.

England, too, has furnished a larger proportion of insane immigrants and insane residents of this country than it has of the total immigration or of the whole foreign-born population. The ratio of English patients in the New York State Hospitals to the number of natives of England in the State is about one in 209, while in England the ratio of the insane to the whole population (1905) was one in 288. The latter ratio is said to have been influenced by foreign immigration and the new "Aliens' Act" of England provides for the expulsion of aliens who, "within three months from the time at which proceedings . . . are commenced, have been in receipt of any such parochial relief as disqualifies one for the Parliamentary franchise."

In 1882, 250,000 German immigrants entered the United States while last year but 37,000 came. The number of insane of German birth is already decreasing and the practical cessation of German immigration makes it certain that the future prevalence of insanity among the foreign-born will not be greatly influenced by the part played by Germany in immigration.

The enormous increase in Hebrew immigration and the high prevalence of insanity among Hebrews make this race of especial interest in an analysis of the relation of the "new immigration" to the prevalence of insanity. Wherever the Jews have settled, their striking susceptibility to insanity has been made the subject of comment by medical writers. Lombroso states that in Italy insanity is three times more common in Hebrews than in the rest of the population. Dr. Maurice Fishberg, in an article entitled "The Pathology of the Jews," in the *New York Medical Journal*, March 30, 1901, quotes Dr. Sikowsky and Dr. Maximoff as saying (Proceedings of the XIIth International Medical Congress), that they had tabulated the prevalence of insanity in the Russians, Poles, Monhammedans, and Jews in the troops at Kieff in 1895-1896 and had found that the Jews furnished more cases of msanity than all the others combined, although they were in a

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considerable minority. In the same article, Dr. Fishberg presents many other interesting references to the excessive incidence of mental and nervous diseases among Hebrews. In Germany, insanity is said to be twice as prevalent among Jews as among any other element of the population. In Warsaw, according to Dr. Raymond, Hebrews furnish all the psychiatric and neurological material for the clinics. In this country, the remarkable prevalence of insanity among the Jews had been noticed before the present influx of Hebrew immigrants had begun. Dr. Frank G. Hyde (AMERICAN JOURNAL OF INSANITY, Vol. LXIII, p. 471) stated that from December 13, 1871, to November 30, 1900, 10.05 per cent of all the patients admitted to the Manhattan State Hospital, West, had been Hebrews.

The ports of departure which furnished the greater percentages of insane immigrants during the last fiscal year were, in order: Queenstown, 15; Liverpool, 14; Bremen, 12; Glasgow and Londonderry, 11; Hamburg, 10; Italian ports, 9; Rotterdam, 8; Southampton, 8, and all others, 13. This is of interest in view of the probability that in the future medical officers of the Public Health and Marine-Hospital Service will be stationed abroad to examine intending immigrants at the ports of departure and there recommend the rejection of the unfit. Three officers—one at Liverpool, one at Queenstown and one at Glasgow—would have had an opportunity of intercepting 40 per cent of the insane immigrants who were detected at Ellis Island last year.

Types of Mental Disease.—The types of mental disease found in immigrants can be considered only very broadly within the limits of this paper. At Ellis Island, 47 per cent of the immigrants certified by the medical officers of the Public Health and Marine-Hospital Service for insanity were actually on their way to their native lands within two days after the diagnosis of insanity had been established and nearly all were returned to their ships to await sailing within twenty-four hours after they had been certified. It has been impossible, therefore, to determine with any degree of accuracy the psychoses existing in much more than one-half of all cases and, in some of these, further observation would doubtless have led to a revision of the diagnosis. The classification of the cases diagnosed is shown in the following table: 1907]

TABLE VIII.

Showing the clinical classification of the immigrants certified for insanity at Ellis Island during the fiscal year ended June 30, 1906.

Type of mental disease	Percentage of all cases	Percentage of cases diagnosed
Alcoholic psychoses	. 3.0	5.0
Dementia præcox:		
Paranoid forms	. 3.0	5.0
Hebephrenic forms	I.O	2.0
Katatonic forms	. 3.0	5.0
Allied types and not classified	. 16.0	28.0
Depressive hallucinosis		2.0
Involutional psychoses	. 5.0	9. 0
Dementia from gross brain disease		3.0
Paresis		17.0
Paranoic conditions	. 6.0	10.0
Manic-depressive insanity:		
Manic attacks	. 1.0	2.0
Depressed attacks	. 2.0	3.0
Dementia from cause unknown		7.0
Senile psychoses	. I.O	2.0
Not classified		••
	100.0	100.0

In the case of insane aliens deported from public institutions the average time under treatment had been two months and a diagnosis was possible in nearly all of them. The following table shows the classification of these cases. Those marked with asterisks were deported from jails or from institutions in which cases are not classified in accordance with some of the newer conceptions in psychiatry.

TABLE IX.

Showing the clinical classification of the insane aliens deported from public institutions during the fiscal year ended June 30, 1906.

Type of mental disease	Percentage of all aliens deported	Percentage of those insane at time of arrival
Alcoholic psychoses	4.0	7.0
Dementia præcox:		
Paranoic forms	3.0	••
Hebephrenic forms	4.0	4.0
Katatonic forms	5.0	4.0
Allied types	I.O	••
Not classified		22.0

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Type of mental disease	Percentage of all aliens deported	Percentage of those insane at time of arrival
Depressions not differentiated	•	4.0
Depressive hallucinosis	3.0	••
Involutional psychoses	2.0	4.0
Dementia from gross brain disease	I.O	••
Paresis	2.0	4.0
Paranoic conditions	4.0	8.0
Manic-depressive insanity:		
Manic attacks	2.0	8 .o
Depressed attacks	1.0	••
Mixed forms	•••	••
Allied forms	1.0	4.0
Not specified	5.0	I.0
Infective-exhaustive psychoses	2.0	••
Epileptic psychoses	2.0	••
Constitutional inferiority	3.0	4.0
Imbecility (with episodes)	2.0	8.0
Not classified	8.0	40
*" Acute melancholia "	1.0	••
*" Melancholia "	1.0	4.0
*" Depression with mental enfeeblemen	t". I.O	••
*" Delusional insanity with mental		
enfeeblement "	1.0	••
*" Acute mania "	2.0	
*" Religious mania "	2.0	
Total	100.0	100.0

Dementia Pracox.—This condition and the conditions allied to it constituted more than 40 per cent of the cases in which a diagnosis was made at Ellis Island and 45 per cent of the cases deported from institutions. In 810 cases admitted to the Manhattan State Hospital in 1905, dementia præcox or its allied types was present in 31 per cent. It is likely that dementia præcox is more prevalent in immigrants than in the natives of this country and more prevalent in immigrants than in the general population of the countries from which they come.

Many immigrants with dementia præcox may never gain admission to institutions for the insane and many more may get along in the alien colonies, which are found now in all large American cities for a considerable time without coming into noticeable conflict with their environment. Of the 39 cases of dementia præcox deported from institutions, in which these data could be obtained,

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20 had been in the United States more than a year before being committed. The average length of time all such cases had been in this country before admission was II months and 20 days. A case illustrating the manner in which such immigrants who are insane on arrival may escape commitment until the period during which they can be deported has nearly elapsed is that of a young Austrian Pole who arrived in New York, February I, 1905. He had always been religiously inclined as he had known from early life that he would die young and he had deserted his wife and come to America for reasons which were delusionary. A year and one-half after his arrival in the United States he attracted public attention and became committed to an institution because he knelt in the street and refused to eat in order to humble himself " as Christ had done."

It is especially desirable to detect such cases at Ellis Island and yet it is very difficult. Those medical officers who are detailed to this part of the inspection of immigrants gain a familiarity with the different racial types which is particularly useful in detecting these cases. What allowance to make for the emotional barrenness of the Ruthenian, the incredible ignorance of Macedonian peasants, or the abandonment to despair which is often seen in Italian women when they have met with some trifling reverse in their progress through Ellis Island, is almost as essential information for the successful mental examination of immigrants as knowledge of the special disease pictures or of the general symptomatology of mental disease.

In the entire absence of any history, the diagnosis between dementia præcox and congenital mental defect has often been found very difficult at Ellis Island and in a great many cases in which a positive diagnosis of dementia præcox could be made there was evidence also of a considerable degree of congenital defect.

Poresis.—As might be expected, this disease, with its prominent physical signs, is detected in many more cases at Ellis Island than its incidence among aliens in institutions for the insane would account for. Over seventeen per cent of the cases in which a diagnosis was made at Ellis Island and only two per cent of the cases deported from institutions were paretics. In only one of the latter cases was the disease thought to have existed before

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the immigrant's arrival. A larger proportion of these cases than of any other type arrived in the saloon or second-cabin; a fact which corresponds interestingly with the social status of this disease.

Manic-depressive Insanity.-Five per cent of the cases in which a diagnosis was made at Ellis Island were of manic-depressive insanity and several of the cases not diagnosed were probably of this type. Depressions not well differentiated are included, in Table VIII, with those "not classified," for it was thought best not to place them under a separate head for fear of giving the impression that indeterminate depressions constituted a large part of the psychoses met with in immigrants while in reality the only reason that most of them could not be diagnosed was the very short period of observation. Two cases of manicdepressive insanity who had been previously detected and deported returned, recovered, during the year but they were recognized and not admitted. It is likely that many such cases come to this country during remissions and secure admission for, of the aliens deported from institutions, in whom a history of insanity in Europe could be obtained, 23 per cent were cases of manic-depressive insanity. The greater number of such cases must inevitably escape detection at Ellis Island.

In 37 per cent of the aliens deported from institutions, who were not insane at the time of arrival but who developed their mental disease from causes existing prior to arrival, the etiological factor given was "constitutional inferiority" or "congenital defect." Among the immigrants held for mental examination at Ellis Island, there are many in whom mental inferiority or instability is most apparent and it is with the greatest reluctance that the medical officers release them because they cannot be certified, in the wording of the law, as "insane." A case which is typical of many was a young Croatian who arrived recently. His father had died when he was young and he had been brought up by an uncle. When he became 19 years of age his mother convinced him that it was his duty to come to America and return with enough money to pay off a mortgage which had remained on her little farm since the death of his father. Although he did not become enthusiastic over this plan the boy agreed. Two days before leaving home, he almost decided not to come but he feared

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the ridicule of his neighbors. On the ship he could think of nothing, he said, but the possibility of dying in this country and never seeing his mother or his home. When he was detained at Ellis Island he had decided to return. The possibility of succeeding in this country, the humiliation of facing his mother and his relatives and appeals to his pride only made him undecided about the matter. He had no abnormal fears or delusions and was not depressed, but he had reacted abnormally to the first experience which tested his judgment and his self-reliance. It seems unwise to admit such immigrants but under the present law there is no means by which they can be excluded.

The insane aliens deported from institutions have an especial interest for those engaged in the examination of immigrants at Ellis Island as they represent, in some measure, the cases which have escaped detection. In the group of 100 consecutive cases of such aliens which has been taken, 26 had been insane before coming to the United States, 54 developed their mental disease after their arrival and in 20 cases these data were unobtainable. Of the 26 thought to have been insane at the time of arrival, 23 per cent were, as has been stated, cases of manic-depressive insanity and 8 per cent were cases having paranoic conditions.

At first thought it would seem a hopeless task to attempt to pick insane and mentally defective immigrants from the unending lines of humanity which file through Ellis Island but a systematic plan of inspection has been devised which results in the detection of many. Officers of the Public Health and Marine-Hospital Service who have had especial training in institutions for the insane are assigned to this duty and the other medical officers unite with them in searching for immigrants who seem atypical or who present signs even remotely suggesting mental disease. The Immigration Inspectors, who have to question all immigrants as to their destination, education and many other matters, have been provided with memoranda as to peculiarities which might suggest the existence of insanity or mental defect and are requested to return immigrants presenting such abnormalities to the medical officers. Occasionally immigrants who have shown marked evidences of insanity during the voyage are reported by the ships' surgeons but, of course, immigrants very robviously insane or defective would be refused passage at the

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ports of embarkation. Immigrants in whom, for any of these reasons, mental disease is suspected are detained, after a preliminary examination, for observation and further examination. Recently, rooms have been set aside for this purpose and a very noticeable increase in the number of cases detected has occurred. A large, separate pavilion in which many more such cases may be detained and observed has been authorized and a psychopathic pavilion in connection with the Immigrant Hospital is being constructed. In the latter pavilion certified cases of insanity will be kept until the return of the ships which brought them and acute cases requiring treatment will be cared for until they are in condition to be returned with entire safety. These additional facilities, the provision of trained attendants to aid in the observation of cases detained and of especially qualified interpreters to assist in examinations will undoubtedly lead to a large increase in the number of cases of insanity and mental defect detected.

Many plans, most of which must be rejected as impracticable, have been suggested for controlling the hereditary transmission of insanity and mental defect and thereby limiting the steady increase in the prevalence of insanity, but in a rigid and systematic mental examination of immigrants we have a measure for the prevention of insanity which can be applied to a million prospective residents of this country every year. This duty entrusted to the Public Health and Marine-Hospital Service presents an opportunity of performing a public service such as is afforded to few other officers of the government. By the detection of the greatest possible number of insane and defective immigrants at Ellis Island, not only will the country be saved the burden of maintaining a large number of alien insane, which has already been proved so costly, and the admission of many who will bequeath their defect to the next generation, but a considerable number of immigrants who would otherwise become committed to institutions within two years after landing can be turned back at the time of their arrival instead of being tom from their relatives after they have established homes in this country.

These unfortunate people come here unconscious of their mental disease and not infrequently influenced by delusions or led by their impaired judgment to take a step which even their friends



think inadvisable. Others are borne along, as are many of sound mind, by the great tide of immigration with little plan except to reach the wonderful "Amerika" where failures can be easily retrieved and broken fortunes mended. They are deported solely for our own benefit, for it is only in very rare instances that the welfare of an insane immigrant is promoted by returning him to Therefore the simplest requirements of humanity his home. make it obligatory upon those charged with the administration of the immigration laws to effect the deportation of insane aliens with every safeguard which their condition demands. Whatever treatment is necessary to tide them through an acute or dangerous phase of their disease should be provided without reference to the cost or duration and all insane and many defective immigrants should be returned with trained attendants to accompany them to their final destination, securing for them humane treatment during the journey and finally delivering them to their relatives or to the proper charitable authorities at their homes. The new immigration law which goes into effect July 1, 1907, makes especial provision for this and makes it possible to perform an unwelcome but necessary duty with kindness and humanity.

In spite of the most effective inspection which can be devised, there must every year be admitted many immigrants already insane and many thousands who are destined, under the unusual stress of the first ten years in the United States, to become insane. So remarkable is the prevalence of insanity among recent immigrants becoming, that it seems an urgent public duty to investigate the conditions which are proving so disastrous to them and to take some measures which will protect the more unstable from the development of mental disease with such abnormal frequency.

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THE CEREBRO-SPINAL FLUID IN PARESIS; WITH ESPECIAL REFERENCE TO ITS CYTOLOGY.

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The year 1901, or ten years after the introduction of lumbar puncture by Quinke as a diagnostic and therapeutic measure in the meningitides, marks the general use of the procedure in neurology and psychiatry. The monographs of Monod (1), Sicard (2), Widal and Ravaut (3), quickly stimulated interest in the subject, especially in France, and other contributions followed in short order, the most important being those of J. Nageotte (4), E. Dupré and A. Devaux (5), Duflos (6), Séglas (7), and Joffroy and Mercier (8). Since then from all sides a mass of literature has accumulated, the size of which may be well estimated from Kaupe's (9) collective review, in which he gives 487 references from the literature of 1904-5-6 alone. Of this only a small part has been produced in America, and one may thus infer that the diagnostic value of the procedure as yet has not been fully appreciated here.

The cerebro-spinal fluid occupies the subarachnoid space of brain and cord and forms a thin watery envelope for the entire central axis of the nervous system. This fluid normally clear and limpid with a specific gravity of about 1007, and variously estimated from 60 to 80 cc. in total quantity, contains a very few hymphocytes and polymorphonuclear neutrophiles. Chemically the fluid is slightly alkaline and contains about I per cent solids, of which 0.8 per cent is inorganic and the remainder organic, chiefly proteid. The amount of the latter is given by Quinke as 0.2-0.5, Riecken 0.5-I and Gumprecht as 0.25 parts in a thousand. Halliburton and others have shown that this proteid is a globulin, and that albumin does not normally occur. Mott, Halliburton, and Gumprecht have found traces of choline, and finally a reducing substance, described by Halliburton as allied to pyrocatechin, but by Nawratzki and others as dextrose has been shown to be present. The fluid is held in the subarachnoid space under a certain tension, which has been found to vary directly with the venous pressure in the sinuses, or in general with the intracranial venous pressure, and normally shows rhythmic variations corresponding to the Traube-Herring waves of general blood pressure. Kronig found in 12 normal individuals that the pressure of the fluid averaged 125 mm. water in lateral decubitus and 400 in sitting position.

It is easy to see from both anatomical and physiological standpoints that pathological changes in meninges, brain or cord would produce some alteration in one or more of the characteristics of the fluid, and it was not long before a large number of diseases of the central nervous system and cranial vault were found to do so. It is beyond the scope of this paper to dwell on the changes accompanying the meningitides, hæmorrhage, brain tumor, abscess, hydrocephalus, etc., in some of which marked alterations in appearance, amount, etc., are found. But there is a group of diseases, including syphilis of the nervous system, tabes, and paresis, where a normal appearing liquid is obtained, but which on closer microscopical and chemical examination discloses well-defined pathological characteristics. To this group, especially paresis, the following paper refers.

Since the introduction of lumbar puncture as a clinical method the fluid has been subjected to examination on the following points: (a) the number and character of the cells, (b) the proteid content, and (c) the appearance, amount, and pressure. Other procedures, such as the determination of the freezing point, the electrical conductivity, the amount of choline and reducing substance, as well as bacteriological and hæmolytic investigation have been introduced with varying findings, whose value are in general as yet undetermined. The first three have yielded definite and valuable results. The cytological examination is easily the most important, so much so that the term "cytodiagnosis" has been used to cover the entire technique.

Until recently the centrifuge method of Widal and Ravaut has been used to collect the cells in sufficient numbers for microscopical study. This, in brief, is to take a certain amount of fluid and centrifuge at high speed, decant and spread the remaining portion on a slide, fix, stain, and estimate the number of cells found in a 1-12 inch oil immersion field. It can readily be seen

that this method is open to serious errors. Nissl (10), and others have expressed their dissatisfaction with it and wished for a better technique. It is subject to variation not only in the hands of one observer, but offers no possibility of comparison with the results of others. The speed and duration of the centrifuging, the manner of decanting and spreading, and the counting itself all may vary so far beyond the limit of permissible error as to entirely invalidate the results. Further, the bruising to which the cells are subjected causes all manner of distortions and seriously interferes with the tinctorial reaction. In this way it is difficult and often impossible to recognize the different cell elements, and indeed, sometimes to distinguish a lymphocyte from a red blood corpuscle. As a corollary a differential count is frequently out of the question. It is evident that the inaccuracies of the method would affect the most of those cases where the fluid has a small but definite cell increase, or just those chiefly early ones, in which an accurate determination is most desirable and where an otherwise positive count is reported as negative.

Laignel and Lavastine (11), made the first advance toward greater accuracy by introducing the use of an ordinary blood counting slide, but as they first centrifuged, their results are largely open to the same objections. Fuchs and Rosenthal (12) three years later did away entirely with the centrifuge, and devised a method of examining directly the undiluted fluid. A special slide, constructed by Zeiss, was provided similar to the ordinary blood counter but with the cell chamber 0.2 mm. deep and rulings 4 mm. on a side or containing 3.2 cubic mm. Their technique required in addition only an ordinary leucocyte pipette and a The latter, consisting of methyl violet 0.1. staining diluent. glacial acetic 2, and distilled water 50 parts, was sucked up to the I point, and the pipette then filled to the II mark with uncentrifuged fluid as soon as obtained from the needle, and shaken. After allowing several minutes for staining the pipette is carefully shaken for five minutes and a drop placed on the slide. The whole field is counted over in at least two slides, and the average obtained. The number of cells in the cubic millimeter is calculated from the formula $x = \frac{11a}{32}$ in which a is the total count and x the actual number in one cubic millimeter or approximately $x = \frac{a}{3}$.

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This method has the great advantage in providing a definite unit of measurement which permits for the first time comparison of one observer's work with another, and having less chances of error, is accurate within safe limits. Furthermore much time is saved, in fact it is possible after the fluid is obtained to say within a few minutes whether or not a leucocytosis is present.

In a series of 12 cases of paresis Fuchs and Rosenthal found from 15 to 196 cells to the cubic millimeter, while in 6 neurological cases not luctic the count varied from 0.5 to 2, and in 9 others not neurological from 0 to 2 cells. They mention the possibility of making a differential count simultaneously by means of the methyl violet diluent but do not report any in their communication. In my own series I found this diluent frequently stained the red corpuscles, which in varying numbers are practically always present, so as to offer serious difficulty in differentiating them from a lymphocyte; and furthermore so disturbed the osmotic relations of the white cells as to cause bursting and other distortions. Finally a differential count was difficult if not impossible as the structural features of the whites were too poorly brought out. The use of Unna's polychrome methylene blue was found to obviate these difficulties. The stain is used undiluted as furnished by Grübler & Company, and is drawn to the 0.5 mark (in so doing x comes more nearly to equal $\frac{a}{2}$) the pipette shaken and allowed to stand

5 to 10 minutes when the cells are well stained. The tube is then carefully shaken (I found two minutes amply long enough) and after rejecting the first two, the third drop is put on the slide and the whole field counted over, simultaneously making a differential If the first two slides do not approximately correspond count. a third or fourth should be used. The average is taken and divided by three giving the total leucocytosis in one cubic millimeter. The ordinary red-blood slide with Türck rulings may be substituted for Rosenthal's. Here also the whole field is counted and the average (at least three drops being used) is the number of cells in one cubic millimeter ; since $3 \times 3 \times 0.1 = 1$ (approx.). On account of the smaller amount of fluid taken the chances of error are increased. The polychrome blue stains the leucocytes well enough to permit a good differential count. The finer structures are not brought out as well as would be the case could the proper

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fixing agents be employed, but are sufficiently apparent for practical purposes. The red cells are unstained and cannot be mistaken.

The technique of obtaining the fluid is too well known to warrant any detailed description. Nearly all my cases were punctured in the sitting position, in which it is possible to have the back well arched. It is also more convenient for the operator. Ethyl chloride as a local anæsthetic was used in all the cases with a few exceptions where the patient was in advanced dementia, and was found of great assistance, often no pain at all was experienced. Only twice in 65 punctures was any general anæsthetic necessary, once with hyoscin-morphine-chloroform in a very nervous and apprehensive man, and once with ether in a paretic who fought against the procedure. As for the time of operation, I found the evening convenient. Artificial light is quite good for cell counting, and then the patient who perhaps is an ambulatory one, may at once be returned to bed and kept there until the following noon. By so doing in the large majority of instances all postpuncture symptoms i. e., general malaise, frontal headache. nuchal and lumbar pain, nausea and vomiting, may be entirely averted. Platinum needles are by far the best, they should be furnished with platinum plungers. Such needles are more easily and quickly sterilized, are somewhat pliable, may be easily sharpened and do not rust. The interspace between the fourth and fifth lumbar vertebrae was usually used, sometimes the one between the third and fourth. Before referring especially to the cytological side of the fluid let us consider the pressure and protein content.

PRESSURE.

For measuring the pressure various modifications of a water manometer have been used, such as that described by Eve (13), or that introduced by Cushing at Johns Hopkins Hospital. With similar technique Shaefer found the pressure in paresis averaged 184 millimeters H_2O (lateral decubitus) Nawratzki and Arndt in 14 cases obtained an average of 113, and Tanner in 14 cases got varying results from 70 to 320. Nissl found the pressure quite variable, even in the same case at different punctures. My own observations confirm his results. In 34 cases the pressure was estimated as increased 14 times, normal in 11, and diminished in 9. The factor probably determining the pressure is primarily 6

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the blood pressure which is in turn influenced by the emotional state of the patient, struggling, etc., to a less extent an increased amount of fluid or a hydrocephalus ex vacuo from brain atrophy. In view of the slight average change usually found it seems unnecessary to use any of the more or less elaborate apparatus. From the way the liquid flows from the needle an approximate idea may be formed of the tension; if it spurts in a stream which is maintained for some seconds we may safely assume it is increased, but if it only emerges in fast coming drops the pressure is diminished. Whether or not apparatus is used one must never neglect to pass the plunger through the needle before making any estimate, as often a small plug of tissue picked up en route so bars the lumen that the fluid can only trickle through in slow drops, or sometimes is entirely stopped-the cause of many a "dry puncture." Sometimes the needle is inserted too far and may impinge on the opposite wall of the canal and thus prevent a free flow. On this account it is always best to manipulate the needle forwards and backwards to find the point where the greatest flow is obtained. There seems then a concensus of opinion that the pressure in paresis does not depart much from normal, and is in general a negligible factor.

PROTEID.

The estimation of proteid on the contrary is most important. Most observers have followed Sicard in the opinion that the fluid normally contains no serum albumin. Nissl and Merzbacher, however, have found traces of the latter. All agree that it is definitely increased in paresis, forming I to 3 parts p. m. Guillain and Parant introduced a clinical technique for precipitation of the globulin by addition of equal parts of saturated magnesium sulphate. After filtering and boiling a normal fluid would remain clear. Nissl objected to this method, claiming that all of the globulin is not precipitated by the magnesium, but some would remain to be mistaken for serum albumin on boiling. At Cohnheim's suggestion he substituted a concentrated ammonium sulphate solution and obtained a complete precipitation of the globu-The latter, he believes, plays no essential role in pathological lin. fluids. Others hold it is unnecessary to separate the proteids, if indeed such a thing is possible, and at the present state of our

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knowledge it is sufficient to estimate them together with such a reagent as Esbach's. With this precipitant various clinical quantitative methods have been introduced. Nissl used a special centrifuge tube with an arbitrary scale which could not be reduced to grams per liter and consequently is not practical. Nageotte's method employing a 1-10 dilution and giving readings of 0.1 gram for each gram of fluid is better. Rous' (14) modification of this is more accurate. But for ordinary clinical purposes the simple test-tube method of Nissl-Cohnheim is sufficient, and has the advantage of being quickly performed. This is the method used in this series of cases. To repeat, equal parts of fluid and saturated ammonium sulphate are shaken together, and the precipitated globulin filtered out. The clear fluid is then acidified with acetic and boiled. If the albumin is considerably increased a coarse flocculent precipitate results, if only slightly a well marked turbidity instead. In 31 consecutive punctures I found the increase of albumin constant-a result in accordance with practically all observers. Seven times it was "considerably" increased, and three "much" increased. There was also an accompanying increase of globulin in 10 out of 24 fluids. I was able to deduce no constant relation between the amount of proteid and the stage of the disease, although generally speaking it appears that the further the disease advances the more is found. In paresis a proteid increase invariably means an increase of cells.

CYTOLOGY.

That there is a clearly defined increase in the cells found in the paretic cerebro-spinal fluid nearly all observations are in accord. Fuchs and Rosenthal in 208 cases collected from the literature found 10, however, with no increase, and Dupré I in 20, Joffroy 3 in 48, and Meyer I in 13. Fischer (15) and others also report negative findings. These instances of failure to obtain a cellular increase in clinically clear cases would seem entirely due to errors inevitably associated with the centrifuge technique. On the contrary with this method Nissl's 60 punctures in 28 cases and Merzbacher's 26 were all positive. Fuch's and Rosenthal's 12, and Rehm's 39, both with the slide-counting method, were also positive.

In my series 25 cases were punctured 37 times, all with clearly positive result. This inclines me to the opinion that every case of

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paresis without exception shows a cellular increase. The total cytosis without reference to the stage varied from 12 to 216, with an average of 52. Opposed to this is the average of 2 in 21 negative punctures, which from a cytological standpoint may be classed as normal. The range here was from 1 to 4. There seems to be a sharp limit between positive and negative, the latter having 5 as the furthest limit. In view of the constancy, the importance of lumbar puncture in paresis becomes more apparent when we consider that any one or more of the cardinal signs and symptoms of the disease may be absent, or subject to great variability. Admitting its constancy, the question then arises, how early does it occur? Marie and Duflos considered it antedates the ocular. speech, and memory defects. Joffroy states: "There is no sign pathognomonic of paresis, but of all the signs of the disease the cerebro-spinal lymphocytosis is the earliest and most constant." Except in one instance I regret I have not had the opportunity to examine the fluid in very early cases. This was a man of 29, who had probably had syphilis 9 years previously, in whom mental symptoms had been present only three weeks. The fluid showed a count of 12, the lowest of the series. Two months later it was 25, the disease having advanced rapidly in the meantime. The pathology of the disease as far as known would suggest that the early stages show a small leucocytosis. This, indeed, seems to agree with the findings. The terminal stage, excluding convulsive conditions, gives a high count. Intermediate is a period in which one is unable to correlate the cytological findings with the mental symptoms. A case in the second stage with the cardinal signs, neurological and mental all developed and with considerable dementia may give a count from 20 to 50, while a case apparently not so advanced gives 100 to 150.

In the 21 negative fluids the cells ranged from 1 to 4. The small number renders any differential estimate liable to large inaccuracies, but by counting over a larger number of slides the chance of error was lessened. In the normal fluid the lymphocytes predominate, but polymorphonuclears are apparently always present and ranged from 10 to 50 per cent, with an average of 20 per cent.

The large majority of fluids are contaminated more or less with red blood corpuscles. This is usually unavoidable. A small amount of blood picked up by the needle in its passage through

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the tissues is carried into the subarachnoid space or (2) may result from a slight hæmorrhage about the dural puncture site, or (3)from perforation of small veins in the wall of the vertebral canal. Usually the small admixture may be disregarded, but when the number much exceeds 200 correction must be made for the hæmic whites; the proteid test is also interfered with. It is better that such a specimen be rejected, and another puncture made later.

In the paretic fluid, with the above technique the following varieties of leucocytes may be found:

1. Small lymphocytes. $5-7 \mu$. Cytoplasm unstained and visible as a small clear ring about the nucleus, which is usually a fairly dark violet, but sometimes light blue. This is the most frequent cell and varied from 45 to 97 per cent.

2. Large lymphocytes. 7-12 μ . Cytoplasm more abundant, staining pale blue, the nucelus darker, varying from 0 to 15 per cent, with an average of 4 per cent.

3. Polymorphonuclears. $7-12 \mu$. Cytoplasm quite deeply violet. Granulations poorly made out. Nucleus somewhat darker and denser violet than rest of cell. Easily distinguished from the lymphocytes by the depth of stain. In 18 consecutive fluids, these cells ranged from 1 to 56 per cent, and averaged 18 per cent.

4. Epithelioid. Often larger than (3) and irregularly shaped, but sometimes round. The cytoplasm more evenly stained, nucleus small in relation to the cell, and clearly defined. Of infrequent occurrence and apparently an accidental inhabitant.

5. Plasma cells. 7-8 μ . Usually elliptical but may be round. Nucleus occupies an eccentric position and stains rather deeply with clearly defined edges. Cytoplasm prominently and often irregularly stained, and contains frequently fine granules or inclusions staining darkly. The cell is easily recognized by the eccentric nucleus, and prominent cytoplasm which often appears to have a definite envelope. In some fluids it is the most striking element present. It was found in 27 out of 32 consecutive punctures, ranging from 0.1 per cent to 15 per cent, and averaging 1.5 per cent. Nissl (10) and Merzbacher (16) did not find plasma cells in their material, for which the centrifuge is undoubtedly to blame. Fischer, with an improved centrifuge technique, found them present in greater proportion than my series.

6. Degenerated cells. The so-called "clear elements." $10-15 \mu$.

They are of frequent occurrence, and stain difficultly or not at all except for small beads or wreaths of chromatin material variously placed. Their appearance often suggests that they are degenerated polymorphonuclears. Rous (14) has convincingly shown however, that they may represent disintegrating lymphocytes. But there is no reason to believe the autolysis should not affect all the leucocytes. In fluids where these cells are numerous the tinctorial reaction of all the others seems generally impaired. Either autolysis in such fluids has been active, or the cells have been long floating free, a point which is impossible to decide.

I have not been able to correlate any particular differential combination with any one stage of the disease, except that after convulsions, where a marked relative and real increase in the polymorphonuclears occurs, a fact to which Widal and Lemierre first called attention. This was of constant and striking occurrence in all the cases with seizures examined.

Case M, with 23 cells of which 74 per cent were mononuclears, 12 per cent polymorphonuclears, and 12 per cent plasma was again punctured immediately after a series of 6 convulsions when the total leucocytosis was 30, but the differential now showed only 55 per cent mononuclears and 42 per cent polynuclears, while 2 per cent were plasma cells.

Case F, had a leucocytosis of 27, with 95 per cent mononuclears and 3 per cent polynuclears. One and a half hours after a seizure the count was 111 with 54 per cent monuclears, 55.8 per cent polynuclears and 0.2 plasma cells.

Case G, an hour after a convulsion, showed 31 per cent polymorphonuclears, 68 per cent mononuclears, and 1 per cent plasma cells.

It is evident then that even in paresis we do not always find a lymphocytosis alone, hence the use of this term is misleading and inadequate and it is still more so in other conditions where the percentage of polymorphonuclears is very high. To obviate this difficulty Fischer has suggested "cerebro-spinal pleocytosis" which, besides being objectionable on account of the unnecessary introduction of a new term, is not so acceptable as "spinal leucocytosis" since the latter plainly indicates that the *white* cells are increased without implying the predominance of any one kind.

It is not the intention in this article to dwell on the fluid as

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found in the various acute meningitides, where the cells vary from hundreds to thousands, mostly polymorphonuclears, and the fluid itself of varying degree of turbidity, or that found in hæmorrhage, abscess or other acute infective diseases within the cranial vault, but to refer briefly to those diseases where the differential diagnosis of paresis comes into consideration. They may be divided into two groups, (I) those in which the fluid may simulate that of paresis, and (2) those where there is no similarity, but where the clinical symptoms offer possibility of confusion.

I. (a) Cerebral syphilis. In this condition cytodiagnosis so far has been no aid. If we cannot make the differentiation on clinical grounds by the presence in brain lues of more limited somatic phenomena, such as ocular and facial palsies, cephalalgia, neuralgia of the trigeminus, and hemiplegia, as well as from the history of recent specific infection, we must, as McDonald (17) suggests, fall back on the result of anti-syphilitic treatment, often necessarily prolonged, to help us out of the dilemma. In the only case in my series the total count was 34, of which 88 per cent were small lymphocytes, 6 per cent large lymphocytes, 5 per cent polymorphonuclears, and 2 per cent plasma cells. Serum albumin was slightly increased, and the pressure apparently normal.

(b) Tabes likewise has a similar fluid, but offers usually no diagnostic difficulty as far as differentiation is concerned, unless the tabetic process is associated with paresis. The only case in my series gave a leucocytosis of 37, 81 per cent of small lymphocytes, and 15 per cent polynuclears. Serum albumin slightly increased; pressure normal.

(c) Syphilis in secondary and tertiary stages may give a leucocytosis depending on the degree of involvement of the nervous system. Even with the latter, negative findings have been reported. Unless the infection has advanced into cerebral lues there is, however, no likelihood of confusion with paresis.

(d) Multiple sclerosis. As yet the obscure pathology of the disease offers no suggestion as to whether or not we should expect a spinal leucocytosis. The results of puncture have been variable. In 24 cases reported by Babinski, Nageotte (18) and others (cit. Merzbacher) 18 were positive and 6 negative. Fuchs and Rosenthal's 10 cases were all positive. In my one case,

which in some points suggested paresis, a negative result was obtained.

Thus a leucocytosis, mainly lymphocytes, in a clear fluid with increased albumin is not pathognomonic of paresis. The conclusion that we are in presence of the latter can safely be made only by process of exclusion of all other sources to which they may be attributed. Certain it is that there can be no doubt in our diagnosis when we have a positive puncture in connection with various combinations of the other signs and symptoms. A negative finding, on the contrary, is of great or even greater significance in differential diagnosis. This brings us to the second group of diseases which in some stage may simulate paresis, but give a negative puncture. This includes the following:

- (a) Arterio-sclerotic psychoses.
- (b) Chronic delusional states.
- (c) Chronic alcoholic psychoses.
- (d) Hypomania post apoplexiam.
- (e) Certain maniacal and hypomaniacal states.
- (f) Dementia præcox.
- (g) Epilepsy.
- (h) The psychoneuroses.

Since the psychic symptoms of the paretic process are protean in their variability, and a cross-section at any one phase of the disease may be confused with any one of the above, the importance of lumbar puncture is evident. It is not always, however, such clear sailing, for in practically all of the group under consideration positive punctures have been found. Merzbacher (16) and Rehm (19) claim that a leucocytosis under such conditions is certain evidence of a preexisting luetic process. According to the former 90 per cent of all having a previous lues would show a leucocytosis, but without an increase of albumin. To my mind this is needlessly confusing the subject. I have had a number of cases of dementia præcox, hysteria and chronic delusional states in which syphilis was positively shown to have been present from 4 to 15 years previously, and one case (dementia præcox) where the infection was incurred synchronously with the onset of the psychosis, yet the spinal fluids on every occasion, and several were punctured two and three times, was cytologically negative with normal proteid. This, for one reason, inclines me to strongly 1007]

believe that a spinal leucocytosis in this group should be regarded as a complication and that we are dealing in addition with a syphilitic or parasyphilitic process. To this view Pomeroy (20) in a recent article also inclines. However, only a small per cent of the cases in this group give an antecedent syphilis.

It has just been said that a negative puncture is of more value than a positive. But to be sure it is negative two or even three punctures should be done at intervals of not less than two weeks or if possible longer.

The diagnosis of paresis in the face of a negative finding should be made only with the greatest caution, and if one or two subsequent punctures at intervals of several months are also negative the affection is beyond doubt not paresis.

The question of the origin of the cells found in the fluid has given rise to much discussion and almost as many theories as authors—many of these diametrically opposed to one another. Inseparably connected with it is the question of the origin of the fluid itself, which most physiologists agree is a transudate from the blood and lymph vessels all along the pia-arachnoid surface, as well as the choroid plexus and the ventricles, the fluid from the latter being in communication with the subarachnoid space through the foramen of Magendie, the foramina of Luschka, and perhaps other places.

To explain the lymphocytosis in luetics and paraluetics where no clinical signs of a meningitis were demonstrated as well as that in paresis, Babinski and Nageotte introduced the term "meningeal irritation." The expression came into general use by French writers but was strongly opposed by Nissl and especially Merzbacher as being hypothetical and entirely without pathological basis, and has since fallen into disuse. Instead closer attention has been paid to the pathological histology of these conditions, especially paresis. In the latter the lesion associated with the spinal leucocytosis is the subacute or chronic periarteritis and pia-arachnoiditis which produces an inflammatory infiltrate into and about the adventitial sheaths of the pial vessels. Between the cells which form this exudate and those in the fluid. Nissl (10) and Merzbacher (16) could find no correspondence, noting especally as evidence of this the apparent absence of plasma cells in the latter, while they are numerous in the adventitial infiltrate.

To account for this discrepancy they fell back on the previous syphilis which they state so alters the meninges that certain cells can gain the fluid, without, as is frequently found, any pathological alteration in the meninges. In Merzbacher's series of paresis he states that only those with previous lues gave a lymphocytosis. This extreme view, with which Abraham and Ziegenhagen (21) agree, brings up the much mooted question of the relation of paresis and syphilis.

Erb and Fournier have led the van with the axiom " no syphilis, no paresis," and for many years the latter, with tabes, have been considered "parasyphilitic" diseases. Others have taken a less radical view. Ziehen found only 60 per cent of his cases had syphilis, others have reported still smaller percentages. To-day the trend of opinion is that lues is entirely a secondary factor, preparing a suitable soil already predisposed by heredity. The importance of alcohol especially when taken during the active syphilis as another secondary element has recently been emphasized by Krzpelin. The specific etiological factor is yet to be discovered, but a clear understanding of the rôle of syphilis would mean a great advance toward the coveted goal, and incidentally throw light on the origin of the cells in the fluid. The chief obstacle in the past has been the difficulty of obtaining a reliable anamnesis. It is often impossible for obvious reasons to determine the question of syphilis in a given case. Of my series of 25 paretics, only 7 had positively had syphilis, 6 probably, 4 surely negative, 4 probably negative, and in 3 no data could be obtained. But important light has recently been shed on the question by the serum work of Wasserman and Plaut (22) in paresis and Schütze in tabes. The former tested by hemolysis the presence of syphilitic anti-bodies in 40 paretics. The reaction was positive in 31, negative in 5, and partial in 4. Schütze (23) in 12 cases of tabes had a negative reaction in 4 who had denied previous lues. That is in 53 cases of so-called "parasyphilitic" disease there was no syphilis in 9. This work, if confirmed, would go far to prove the essential independence of syphilis and paresis. Further confirmation of this is the failure to find spirochætæ in any state of general paralysis. (Marinesco and Minea, and Catola (24).) The writer is consequently inclined to the opinion that syphilis per se has nothing to do with the spinal leucocytosis of paresis.

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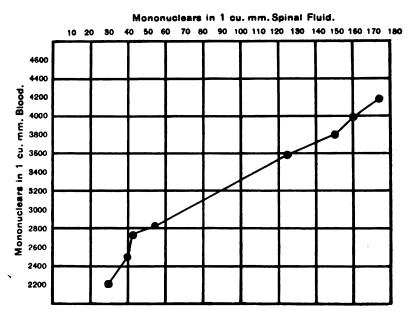
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The failure to find a relation between the cells of the fluid and those of the meninges as reported by Nissl and Merzbacher seems due to fault in the centrifuge technique, as is also pointed out by Fischer (15) in an important recent monograph. This writer centrifuged at not more than 2000 revolutions for 20-30 minutes, having previously added formalin sufficient to make a 5 per cent solution. With this modification very little distortion occurred. The liquid remaining after decantation, was then spread on slides, heated on a copper bar at 120° and stained with hæmatoxylin and eosin. Having obtained excellent cytological pictures in this manner, he was able to show the close relation between cells of fluid and meninges. In a series of cases examined post-mortem in which a previous puncture was made he compared the cells of the fuid with those of the meninges at various levels, and found that there was a qualitative and quantitative correspondence only for the lumbo-sacral meninges. In cases where this region is uninvolved but the cerebral meninges markedly infiltrated, this close inter-relation does not hold, and the cells recovered in the fluid in the latter case, may be so few in number as to indicate a negative finding. This is occasioned, he states, on account of the current of the fluid, which is upward from the pontine region, draining into the venous sinuses and emissary veins. Even in the spinal portion the movement is upward as judged by injection experiments (Sicard, Retzius and Key). Fischer concludes that a spinal leucocytosis is only the expression quantitatively and qualitatively of a meningitis spinalis inferioris, which may be quite circumscribed. His results are open to criticism owing to the absence of an exact means of cell enumeration, the centrifuge method, as already said, being too inaccurate when dealing with small numbers of cells. Further his findings in regard to the upward movement of the fluid have not been confirmed. He admits that there is a general meningeal involvement in paresis, but, while calling attention to the local differences in intensity which give varying results on puncture depending on the relation to the course of the fluid, he fails to show that a positive puncture is ever really absent. His work is very suggestive, but points to the need of further clinico-anatomical comparative study, as well a experimentation on the course of the fluid.

Apparently the fluid cells are those of the adventitial infiltrate

of the pia-arachnoid, which in turn are primarily of vascular origin, the vessel walls being in some way so altered as to permit a diapedesis of the white corpuscles, chiefly lymphocytes. In support of such a theory is the sudden appearance of polymorphonuclears in the fluid after seizures which is hardly conceivable unless by the rapid process of diapedesis.

The fact that the blood in paresis shows a lymphocytosis no one as yet has called attention to. This is a real rather than apparent increase. Frequently the relative percentage of lymphocytes may



be lower than normal, but in non-convulsive cases where the total leucocytosis is between 7000 and 10,000, it may range from 35 to 55 per cent. In 12 out of 13 cases I found the lymphocytes actually increased, varying from 2060 to 4470 per cu. mm., and averaging 3240. Taking 1880 as normal, this is a very appreciable increase. Capps (25) gives 2862 as the average in nonconvulsive conditions but makes no reference to the fact beyond stating that the large mononuclears are relatively increased especially after convulsions. This I was unable to confirm in my cases.

Further there seems to be a numerical relation between the hæmic lymphocytes and those of the fluid. In 8 out of 12 cases

there was an approximate proportional relation as the accompanying diagram (Fig. 1) shows. This close relationship, which has been shown for the mononuclears, undoubtedly also applies to the polymorphonuclears, especially after seizures. Apparently the cells of the fluid are quantitatively and qualitatively dependent on those of the blood. What the conditions are which so alter the intervening medium as to permit this inter-relation can only be conjectured. The changes in the blood in turn are probably the reaction to the same toxine which causes the lesions in and about the pial and other vessels, as well as the other pathological changes found in the nervous system.

In 70 consecutive punctures in various psychoses the following three cases are of especial interest in suggesting that in certain depressive states accompanied by a hæmic leucocytosis there is also a diapedesis of polymorphonuclears into the spinal fluid.

CASE F. S.—Male, 50. No previous syphilis. Clinical diagnosis, involutional melancholia of agitated type. Patient fell into a crisis of acute agitation, and collapse symptoms supervened. Two hours before death hæmic leucocytosis 22,000. Lumbar puncture gave a clear fluid with slight increase of albumin and 12 cells to cu. mm., of these 75 per cent polymorphonuclears, and the rest lymphocytes. In other words the increased count was due entirely to the polynuclears. On histological examination of the pia, nothing abnormal was found (there had been no clinical signs of meningitis) and there was nothing to account for the small but definite increase of polynuclears, except that the hæmic and spinal polynucleosis bore a relation to each other through some change permitting a vascular diapedesis of these elements.

CASE L.—Male, 55. No previous lues. Acute agitated condition, delirium of negation, nihilism, and auto-accusation. Marked disturbance of consciousness, clouding and disorientation, hallucinations of sight and probably hearing. Motor excitement. No meningitic signs. Pyrexia sustained at 101-3°. Clinical diagnosis in doubt, but probably acute agitated melancholia. Paresis apparently excluded. Hæmic leucocytosis 20,000, of which 92 per cent were polymorphonuclears, 5 per cent small, and 2.5 per cent large lymphocytes. Spinal fluid under apparently normal tension, protein not increased, cells 13 to cu. mm., 81 per cent polymorphonuclears, and 17 per cent lymphocytes. Patient made a rapid and remarkable recovery, and for a year has been well and at work.

CASE P. S.—Male, 50. No syphilis. Depressive psychosis, with ideas of poverty, remorse and auto-accusation. Clinical diagnosis, involutional melancholia. In a suicidal attempt, patient fractured frontal bone without injuring meninges. Several months later an abscess of frontal sinus which at subsequent operation was found not to involve meninges. Shortly before operation hæmic leucocytosis 15,000. Spinal fluid clear, with slight excess of albumin, and 10 cells to cu. mm., 70 per cent polynuclears and 30 lymphocytes.

These cases are important in that the fluid may be mistaken for that of paresis, even though the number of cells is smaller than the average in the latter, unless a differential is made. While probably not similar pathogenically and entirely too few in number to permit definite conclusions, these cases point to the necessity of further investigation of the cellular content in fluids where there is a high hæmic polynucleosis, and perhaps indicate that there is a certain depressive condition in which the findings of a small but definite spinal polynucleosis is of as definite diagnostic value as the lymphocytosis in paresis.

CONCLUSIONS.

1. Every case of paresis exhibits a spinal leucocytosis and increase of albumin.

2. This sign is also from point of view of its constancy, in all probability the earliest.

3. The diagnostic value of a negative puncture is often of greater value than a positive one.

4. The cell counting method with Fuchs and Rosenthal's slide is more accurate and rapid than the centrifuge technique, and has the great advantage in permitting comparative results.

5. The use of Unna's polychrome blue in the *mélangeur* permits a simultaneous differential count.

6. A differential count is important in differentiating the paretic fluid from others, especially where the cytosis is due to a small number of polynuclears.

7. The conditions under which syphilis produce a spinal leucocytosis demand further investigation, especially regarding the number and character of the cells. The increase of cells in the paretic fluid is apparently independent of any long antecedent syphilis.

8. There seems to be a correlation, both qualitative and quantitative, between the spinal and hæmic leucocytoses, which particularly refers to the mononuclears, but includes the polymorphonuclears, especially after convulsions.

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THE EARLY STAGES OF AN EXPERIMENTAL PIA-ARACHNOIDITIS IN THE RABBIT (WITH ILLUSTRATIONS).

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This piece of work was undertaken with a view of studying the tissue changes in the pia-arachnoid from day to day, occurring as the result of a sterile inflammation caused by chemical irritation in the form of glacial acetic acid. It is hoped that this work may add something to the present knowledge of the condition of the pia-arachnoid, in an acute inflammatory state: it is hardly necessary to add that many very inviting by-paths present themselves and offer valuable fields for study and investigation, but owing to the limited time at my disposal it was imperative that the work should not assume other than the most modest proportions. However, even with this in mind it has been found impossible to entirely dissociate the changes occurring in the piaarachnoid, under the conditions to be described, from those occurring in the underlying superficial layers of the cortex cerebri.

The technique will be first described in order that a clear understanding of the etiologic factors of the inflammation may be gained.

The animals used in the experiments were young adult rabbits, of a uniform age as far as possible. This uniformity of age, of course, was of the utmost importance, because in young rabbits the changes in the elements of the normal pia are conspicuous from week to week. So if we were to learn anything of the changes occurring, almost like the changing views of a panorama, the careful observance of this rule was absolutely necessary. Despite the fact that the rabbits were of the same age approximately, and that any variation was noted, it was found necessary to take

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a piece of normal tissue from each animal and use it as a control in the study of the inflamed area.

Eleven rabbits in all were used, one was a normal rabbit on which no operation was done. The others were all operated upon and represented the various stages in the inflammatory process from one day up to ten. The technique employed in the operations was as follows: The rabbits were prepared for operation in the usual way—the hair on the top of the head being carefully shaved, the vertex being then scrubbed successively with potassium permanganate, oxalic acid and bichloride. An incision was then made in the middle line extending from the frontal to the occipital region. The periosteum being thus exposed was carefully scraped back over the areas which were to be trephined.

The trephine opening was made on each side of the middle line, one somewhat anterior and the other posterior, because it was found that when the openings were directly opposite, there was much more liability of disturbing the button which had just been replaced, than when the opening was not so exposed. The small trephine openings were now made, the buttons being carefully placed to one side. A known quantity of glacial acetic acid was then applied. A small pipette of fine bore was used for this purpose, which was so graduated that the amount of fluid used could be estimated. On one side a small amount of acid was applied (usually 2 cm.), and this was known as the weak irritant which of course caused the mild lesion. On the other side the strong irritant was applied (usually 5 cm.) and the resulting lesion was the severe one. It must of course be kept in mind that the words "weak" and "strong" are here given relative quantitative values, the quality being the same in each instance.

Directly the acid was applied the buttons were replaced and the periosteum scraped back over the openings, and finally the scalp was sewed up. A collodion dressing was applied and the rabbit liberated.

In order that our results might be as accurate as possible, notes on the condition of the animal while on the table and after being liberated were made. Also on their condition in the time intervening between the operation and the time when they were etherized. Nearly all the animals were running about eating 1907

grass in less than twelve hours after operation, apparently as well as ever, any exceptions to this are noted hereafter.

It goes without saying that the operations were all done under strictly aseptic conditions, because the presence of an infection would greatly interfere with the results obtained by causing an increased number of leucocytes to be present in the early stages and causing destruction of areas of tissue rendering them unfit for careful study. Certain other points in connection with the treatment of the tissue after the death of the rabbit until the tissue was ready for study are worth noting. First, it was found most convenient to kill the rabbits by etherizing. This could be done quickly and the tissue could be quickly removed before the post-mortem changes had set in. As soon as the bone was removed and the brain exposed, it was kept moist by normal saline, this prevented the membranes from drying out and kept the tissue in a normal state until it could be fixed. Three per cent nitric acid was first applied to the tissue in situ-as fixative, small blocks were then removed and put through 50 per cent, 60 per cent, 70 per cent, 80 per cent, 90 per cent, 96 per cent alcohol successively, the o6 per cent being changed three times in the first 24 hours. After this the tissue was dealt with in the usual way, celloidin being used for embedding.

The constituents of the pia-arachnoid with which we had to deal were simply mesodermal elements, all being derived from the same source (that is the simple mesoblastic connective-tissue cell) by a process of differentiation. We had also to deal with fixed connective-tissue cells—those going to make up the walls of the blood-vessels, the adventitial cells, muscle cells and endothelial cells—all these were seen in various forms, young, adult, and also certain transition forms. We had finally to consider the different hæmatogenous elements which made their ap jearance at times.

The normal pia-arachnoid is made up of long connective-tissue cells joined end to end being frequently bulging in the center and pointed toward either end, the nuclei containing many small chromatin granules. Other nuclei are more or less irregularly oval in outline also containing masses of chromatin. A distinct membrana limitans externa and interna can at times be made out. These membranes are simply chains of flattened endothelial cells

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lying end to end. Lying between these rows of cells are the connective-tissue strands. The blood-vessels are everywhere quite numerous in the pia-arachnoid, being separated from one another by varying intervals. Some of the vessels run parallel with the membranes and others run at right angles. They vary considerably in size, from quite small ones to vessels of fairly good size-in many places branches of the vessels can be traced for a short distance into the cortex cerebri. In some instances the limiting membranes of the pia-arachnoid served also as the adventitial layer of the blood-vessel wall. In the normal pia there are no hæmatogenous elements free in the tissue, and it is only after some inflammatory process has been set up that these are found. The connection between the glia fibers and connective-tissue strands in the pia-arachnoid was also seen, long processes of the glia cells running down to the pia. The presence of a small amount of elastic tissue and of collaginous fibers in the pia should be kept in mind.

The rabbit selected for experiment No. 1 was a healthy young adult. The operative procedure before described was carried out, the animal stood the operation well and appeared quite lively after being released from the operating table. Until the time when it was killed 24 hours later, nothing unusual was noted. Immediately after death a section was made and the tissue secured. After being put through in the manner described elsewhere, sections were cut which were stained with Thionin and by the Van Gieson method.

The thionin sections were first studied as they show the changes which one would naturally expect to find at such an early stage of the inflammatory process. It was at once apparent even with the low power that the changes in the pia-arachnoid at this time were largely due to the presence of foreign elements—in other words to the presence of a hæmatogenous exudate. The thickness of the pia was apparently increased, and this was very well seen in sections in which could be compared in the same field of the microscope normal pia and pia that showed changes due to the presence of a pathologic process. With the high power the pia appeared to be swollen and the presence of the exudate was more clearly seen. On could also make out now three zones. The first or central zone showing the injured pia overshadowed by the hæmatogenous exudate, this being the area where the regressive changes were seen in their most characteristic form. Just outside this and somewhat less in extent transversely was the zone where the pia elements could be seen to have increased in number; where progressive changes were going on, and finally zone number three; that which was most peripherally situated, being almost normal pia.

It is interesting to study the appearances in each of these zones separately. In the central zone, there were scattered everywhere throughout, irregular masses of chromatin, in almost every conceivable shape and form. Some which had undergone the least changes, were irregularly horse-shoe in shape and were at once recognized as nuclei of polymorphonuclear leucocytes, of which the cytoplasm had entirely disappeared. In many other instances the chromatin was arranged much more irregularly, sometimes as rows of small round granules, in other places as curiously shaped figures composed of a number of small granules. These masses of chromatin were scattered everywhere throughout this area, and they were the most conspicuous element present. Owing to their large number they obscured the pia elements and the normal network appearance was quite obliterated. Lying just inside the endothelial layer of the blood-vessels lymphocytes were seen, and the other elements which after the polynuclear chromatin masses, were perhaps the most characteristic of this stage-that is the plasma cells. They were seen in all stages, from the young cells still presenting features of the lymphocytes (from which they are probably derived) namely, the lightly staining cytoplasm with nucleus containing distinct chromatin clumps, to the full-grown cell with eccentric, blue lightly stained nucleus, and the purple cytoplasm containing many granules and in some showing the characteristic appearance of the plasma cell where the protoplasm toward the center being somewhat rarefied and staining less intensely appeared almost like a vacuole. The nuclei of these cells were in many instances quite irregular in outline, and the cells themselves showed no definite cell membrane. The plasma cells so far having showed no proliferative changes, (i. e., mitosis) after reaching adult form they commenced to show regressive changes.

It will thus be seen that where the irritant was most active, at

the height of the curve, so to speak, the changes were chiefly regressive. But passing over to where the action of the chemical was less severely felt, it is apparent that we have to do with a progressive process. The pia elements have been stimulated, they were increased in number, as was evidenced by the increased width of the pia, and this could be seen to be due, not to the presence of the hæmatogenous elements as in the former case, but to a proliferation of the connective-tissue elements of the pia. Where it was possible to trace a small capillary through the pia into the cortex, the vessel wall showed certain changes indicating activity in the mesodermal elements in the immediate neighborhood; in the walls of the vessels just beyond the nuclei little reticulated areas could be made out. In parts of the cortex where the stimulating effect of the irritant had not been felt by the vascular elements only the nuclei could be made out.

The vessels themselves appeared swollen, the lumina appeared wider than normal. In all cases the lumen contained large quantities of red cells and and a considerable number of polynuclears. An occasional vein could be distinctly made out in the pia-arachnoid, and here also the lumen could be more easily made out than in the normal pia where no inflammatory change was present. The endothelial cells in the wall with their nuclei could be differentiated.

In many instances the condition of the vessel wall suggested the beginning of an active proliferative process—this was most conspicuous just out side the acute zone where the changes were all more or less regressive. The presence also of fibroblasts suggested an active proliferating process in the pia, and for this reason beginning mitotic changes were carefully looked for, and although there were ceratin appearances which strongly suggested mitosis, no definite picture of cell division was seen at this period.

With the Van Gieson stain an increase in the amount of collagenous material could be made out. This being practically the only observation that could be made from an examination of the Van Gieson pictures; other than those noted in sections stained by thionin.

So it was clear that the picture that presents itself at the end of the first 24 hours in an acute inflammatory condition artificially induced under aseptic conditions is chiefly of a hæmatogenous nature. The changes being both accumulative and regressive, the latter being most in evidence as was seen by the great masses of polynuclear leucocytes undergoing degenerative changes. At the same time the stimulation of the tissues just outside the actually wounded area had clearly brought about the reparative process, this being evidenced by the activity in the elements of the vessel walls.

In the case of the rabbit used in this experiment, owing to the amount of irritant used having been small, no marked changes in the cortex cerebri were anticipated and this proved to be the case. There was slight damage to some of the ganglion cells due to the direct action of the irritant and the mesodermal elements which run into the cortex from the pia-arachnoid, showed the changes here as elsewhere. But, the mesodermal elements are really foreign to the cortex cerebri, not being related to the specific constituents of the gray matter in origin, development or function, simply supplying the layers of the cortex with its blood supply and having other functions entirely dissimilar to those of the native tissue.

Next were studied the changes at the end of the second 24 hours—that is, the conditions found at the end of 48 hours. It was noted at the time of operation that the rabbit used for the experiment was not quite fully grown. It stood the operation well and no untoward incident was noted up to the time of death.

With the low power the area of the lesion could be seen and definitely limited and the normal pia-arachnoid on either side followed. With this magnification it was evident also that the exudative condition with which we had to deal in the 24-hour sections had largely subsided, and because the pia was definitely increased in amount at the site of the lesion, the only solution was that active progressive changes had superseded the regressive ones which were so conspicuous before at the site of the lesion. With the 1/12 power the first striking fact was the disappearance in large part of the chromatin masses that were present in such large quantities 24 hours previously. The masses were comparatively rare and scattered at irregular intervals. The fact that these masses of chromatin had largely disappeared; and the other hermatogenous element, which largely dominated the 24-hour picture, namely, the plasma cell, was not seen in its typical form; naturally suggested the probability that certain elements had arrived whose function was phagocytic. This proved to be the case and we saw for the first time cells which in common with certain other workers I shall hereafter speak of as "reticulated cells." Before going further, it would perhaps be well to digress to the extent of clearly explaining the nature of the cell of which I wish to speak at some length.

They have been called "fatty granular cells" and "Epitheloid" cells, also "Gitterzellen," lattice cells, so described by Juliusburger and Boedecker and this name Nissl also applies to them. They are found chiefly in lesions of the brain where there has been actual destruction of tissue and it has been recognized for some time that their function is largely phagocytic, and this point Nissl has emphasized. This fact was clearly recognizable in our sections, as several of the cells contained foreign bodies. Their appearance in the adult form is as follows: They vary considerably in size, they are as a rule irregular in outline; they have no definite cell membrane, they are made up of numerous vacuoles joining together, the cytoplasm being confined to the thin threadlike trabeculæ which bind the vacuoles. The cell itself stains lightly. The nucleus is, in the characteristic cell, peripherally situated. It stains quite deeply and is in marked contrast to the cell body. There is no definite nucleolus, but the nucleus contains irregular masses of chromatin which stain very deeply as a rule, also there are other small granules of chromatin scattered throughout the nucleus.

In the sections which we are at present dealing with these cells were confined to the arachnoid spaces. None were seen in the cortex. The vacuolations could be made out more clearly in some than in others. In certain cells there were only two or three conspicuous vacuoles, the others being much less marked. The vacuoles which were as a rule most noticeable contained foreign bodies (some resembled chromatin masses, others appeared like red-blood cells), and this appearance is characteristic. The cells were not very numerous at this stage. They showed no evidence of mitosis and their appearance was probably synchronous with the next element which we have to describe, namely, the fibroblast in an active proliferating state.

This element is a product of the simple embryonic mesodermal

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cells from which the more highly differentiated adventitial and endothelial cells are developed. Their appearance in the lesion at this stage was characteristic, the slightly elongated, irregularly oval nucleus; staining rather lightly as did also the cell protoplasm, the mesh-like appearance just outside the nucleus where a number of small very irregular meshes could be made out. This condition is always found in the active fibroblast. The nucleus contains scattered irregular clumps of chromatin.

All through the section fibroblast nuclei were much in evidence and a great many tended to assume a spherical form. The most striking feature about the fibroblasts was their activity. Everywhere the process of mitosis could be seen. Cells were seen in all stages of division, and in many instances, one could see in the same field chromatin clumps assuming a polar arrangement and the adjacent cell just divided. Many of these cells undergoing mitosis were seen in almost every field, particularly over the site of the lesion, and they were one of the most characteristic appearances in the 48-hour picture.

The newly formed fibroblasts tended to run in parallel lines (fibroblast trains) and to form the wall of new blood-vessels.

Mitosis was also seen occurring in the endothelial cells in the walls of the veins, and was characterized by the bulging out of the wall of the nucleus and the usual arrangement of the chromatin. Similar mitoses were seen in the walls of the capillaries in the cortex.

These were the features in the pia at the end of 48 hours which were the most conspicuous, and it is evident that the changes going on at this time were largely progressive in character. Wherever in the tissue there had been very evident destruction, the connective tissue as we have seen, was undergoing active proliferative changes which had been stimulated by the inflammatory process.

Certain changes in the layers of the cortex directly under the lesion will be noticed just for a moment. Many of the ganglion cells were seen to have been severely injured by the irritant action of the acid. They showed very considerable nuclear changes with breaking down in the cell body. In one instance where the cell protoplasm stained only faintly and where the cell outline was not at all clear, in the nucleus the nucleolus was deeply

stained and was peripherally situated. This condition of degeneration in the ganglion cell was not seen elsewhere than in the zone of the lesion. Certain accompanying glia changes were also observed. Many of the glia nuclei were larger than normal, the chromatin granules were larger and stained more deeply, and the protoplasmic processes of the glia cell bodies could be more easily followed. Clusters of glia nuclei were also seen, three or four glia nuclei were seen in one cell overlapping one another, but the outline of each one could be distinctly seen. The cell itself appeared irregular in outline, the protoplasm had partially disappeared, but scattered throughout small peripheral basophilic particles could be seen. As the work is to deal chiefly with changes in the pia, further observations on the existing conditions in the cortex cerebri are not recorded.

Before proceeding to a consideration of the changes observed at the end of 72 hours, I would say that many forms of the reticulated cells were observed which were chiefly characterized by the presence of one large vacuole clearly to be seen, and a number of others much more difficult to distinguish as such. The sections studied to show the changes present at the end of 48 hours were Thionin preparations. A study of the Van Gieson sections showed very well the increased amount of the connective tissue present, and this could be well demonstrated with the low power where one was able to bring into one field, the area which had been treated with the irritant and areas of normal pia on either side. When this was done, the increased thickness of the pia over the site of the lesion was seen to be due to the proliferation of connective tissue-the various forms of adventitial and endothelial nuclei were also well seen here; and their appearance was compared with that of the fibroblast nuclei; these latter being nearly always spherical, the type of the embryonic mesodermal tissue cell nucleus; the adventitial and endothelial, were nearly always seen to be flattened, elongated structures. In many instances it was difficult to make out their cell protoplasm. The mitotic activity of the endothelial and adventitial nuclei was much less marked than in the case of the fibroblasts; and this of course was to be expected, as the fixed tissue elements take a less active part in the proliferative processes than do the fibroblasts and are less in evidence where the process of repair is going on. Of

course as the fibroblasts develop, many of them, as was noted before, serve in the formation of the walls of the new vascular channels.

The animal used in the third experiment was a young fullgrown rabbit. It was etherized 72 hours after the operation. Nothing of interest occurred between the time when the animal was operated upon until it was killed. A study of the sections at this stage showed many interesting developments. It was at once apparent even with the No. 6 power that we had largely to do with fibroblastic activity, and it could also be demonstrated that the changes were to be found chiefly in the molecular zone in the cortex. The sections did not present the picture of a greatly thickened pia as sections made earlier had done. Instead, the striking feature was the connective-tissue invasion of the molecular zone. Everywhere strands of connective tissue either in the form of new vascular channels or as fibroblast trains could be seen.

With the 1/12 power were noted the increase in the connectivetissue elements, the invasion of the molecular zone and the marked absence of the hæmatogenous elements which was so conspicuous at the end of 24 hours and could still be seen at the end of the second day. It will perhaps be better to discuss the changes in the various elements in a categorical fashion—and we will begin with the connective-tissue elements, present in most striking numbers as fibroblasts.

These cells presented the same appearance that was noted in the previous sections—the rather elongated nucleus rounded at either end containing a rich chromatin strand which stained deeply, the rest of the protoplasm in the nucleus staining much less intensely, and the cytoplasm often being still more difficult to distinguish because of the small amount of stain which it had taken up. They were in an extremely active condition; all stages of mitosis being seen. They varied considerably in size according to their age. Some of the cells which had made their appearance some time before being of quite large size. The newly formed fibroblasts in many instances soon joined to form new blood-vessels, and when they assumed the condition of a fixed tissue cell their appearance changed somewhat, this being due, of "course, to a decrease in their functional activity—then they were

much less likely to undergo mitosis—the chromatin of the nucleus was decreased in amount and the staining of the cell body and the nucleus was more uniform.

The activity of the fibroblasts was not solely confined to those found in the molecular zone. Occasionally a mitosis would be seen in a fibroblast deep down in the layers of the cortex. Everywhere the appearance was characteristic of activity of the mesodermal elements.

The hæmatogenous exudate had practically disappeared. No plasma cells were seen. Some chromatin masses, the remains of broken down polynuclears were occasionally seen, but they were quite few in number. The regressive changes in the leucocytes had gone on to such an extent that it was often extremely difficult to recognize various forms which were seen. These were scattered about in the cortex and could only be differentiated from certain regressive forms of glia nuclei by a careful search for other forms in earlier or later stages whose character we knew.

The increase in the number of reticulated cells was guite striking-with the fibroblasts they were as a rule the chief constituents of any field. The adult forms were first studied and quite a number was seen, whose nuclei were extremely irregular in outline, where the vacuoles were small and where there was an appearance of cell membrane, but this, of course, was not present. However, by far the greatest number of those seen were perfectly characteristic forms, large and containing on the average from about 15 to 17 vacuoles, the nucleus was eccentric, and there was no suggestion of a cell membrane while the cells were, as a rule, quite regular in outline, as was also the nucleus. Some of the irreguar forms of the reticulated cells contained dumb-bell shaped nuclei which strongly suggested a beginning mitosis, but this was never actually seen. Some of the reticulated cells had a tailpiece of protoplasm-the tag end of the cytoplasm which had not yet been taken up into the cell body. These were not altogether unlike the pseudopodia which the reticulated cell does throw out when surrounding a foreign body; but at the same time it was quite evident that the little tags were not pseudopodia, but in all probability the tag of protoplasm showing where division had taken place. The fact that the reticulated cells were found everywhere in the cortex, emphasized the fact that they are the wandering cells most usually seen there.

It happened that in the sections which were studied at this time the function of the reticulated cells, namely, phagocytosis was not seen as well as in certain fields in the 48-hour sections, and the possible explanation of this is that the cells at this particular period were more actively engaged in division than at other periods. And it could be seen that they were more actively engaged in mitosis than at any other stage. Everywhere the characteristic change in the cytoplasm and nucleus preparatory to division were seen and the various stages could be studied. The cytoplasm showed a deeper staining reaction, the vacuoles were much less conspicuous, in fact in some cells they had quite disappeared -the cell body became more compact, the chromatin masses in the nucleus assumed the form of a rosary-a single row of small clumps arranged in a circular fashion about the nuclear membrane. Later the two polar bodies could be seen, the filaments running from one to the other could also be made out and along their course little basophilic granules were seen. These granules were chiefly confined to the rows of filaments, but a few had strayed out to the edge of the nucleus just outside the nuclear membrane

A curious feature was noted in connection with the reticulated cells, and it was that many cells in the process of mitosis were lying close to capillaries, and it is possible that reticulated cells so situated show more active proliferation. Of course, many of these cells were also seen dividing at a considerable distance from any vascular channel.

As one would expect, since the site of the changes seen at this period was the molecular zone, the changes in the cortex were more conspicuous than at any other period so far investigated. The most striking feature was the regressive changes seen in the glia nuclei. Their forms were extremely varied. Some were seen as almost circular, small darkly staining bodies in which no distinct granules could be seen, and in many of these no cell body could be made out; in some the cell body was suggested by a halo surrounding the nucleus. Other nuclei stained very faintly and contained small chromatin clumps, about these also no distinct cytoplasm could be differentiated. The size of the regressive

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nuclei was of course very variable, some were about normal in size and were filled right up with small chromatin granules. Besides the atypical form seen, there were of course many glia nuclei undergoing progressive changes, these were larger than usual and showed all the signs which have been mentioned before of glia proliferation.

The sections which have just been studied were all stained with thionin and the Van Gieson picture did not add anything new. In explanation of the fact that the changes noted had largely taken place in the cortex, it should be mentioned that the lesion was quite a mild one, although owing to an accident to the capillary pipette while the instruments were being prepared for operation the amount of irritant could not be as accurately determined as in the other cases.

We have seen then that the changes which were noted at the end of three days were really: An increase in the proliferative activity seen at the end of 48 hours with more marked regressive changes in the glia nuclei, and finally the last phase in the life history of many of the hæmatogenous elements which made up the exudate. Certain other elements were seen at this time, which will be briefly touched upon. They were long narrow cells, irregular in outline, closely resembling adventitial nuclei, and it is probable that they are elements closely related to them. At times they were only of moderate length and were more or less cresentic.

The absence of any plasma cells has been spoken of elsewhere, and it is only fair to state that possibly in other sections which were not studied closely these elements might have been found. It has been the habit of the writer to take one section and make nearly all observations from a study of this; because once oriented regarding the points to be learned by a study of the particular slide, the task was much easier and the study more thorough and searching, because various forms could by comparison often be traced through different phases.

At the beginning of the study of the tissue which was secured four days after the irritant was applied; it is well to state that owing to an accident while the operation was in progress the amount of the irritant applied was slightly greater than in any previous case in consequence of which the lesion produced may

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appear very acute when one considers the length of time that had elapsed, viz., 96 hours. The rabbit used was a normal adult.

The exudate which we have seen by a study of the third day section had largely disappeared, was still less noticeable, only an occasional irregular chromatin clump was found, indicating the regressive process going on in a leucocyte. A few plasma cells were seen, although they were not present or at least were not observed at the end of three days. They were present in the cortex and in the area which had been injured by the direct contact of the acid.

The most striking features in the picture at this time, however, were: the continued activity in the fibroblasts, and secondly, the active proliferation of the reticulated cells. The activity in the fibroblasts was possibly even more conspicuous than at the end of 36 hours; mitosis was seen to be going on in many places and a further process was noticed—that the newly formed fibroblasts were actively engaged in forming new blood-vessels—and in some of these vessels red-blood cells were seen. Before this time the new vessels were all formed from preexisting vessels branching off as capillaries, etc., so that the process which presented itself at this stage was decidedly an advance. Fibroblast trains were also seen and were more numerous than at the end of the third day.

The fibroblast activity of course caused a great increase in the number of connective-tissue elements and resulted in a very considerable increase in the width of the pia.

The second feature in the connective-tissue proliferative activity was the great increase in the number of the reticulated cells. They were everywhere present, but most in evidence in the damaged cortex. They presented very many different forms, some small, some very large, some regular, others quite irregular in outline, some spherical in shape.

Many features in connection with the life history of these most interesting cells were observed. The rapidity with which they appear, attain adult form, divide and undergo regressive changes was indeed striking. Some cells were seen where the tag of protoplasm indicating a very recent cell division could still be seen, and in these cells mitosis had begun. A somewhat earlier stage was also noted, where the two cells had not separated,

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where two distinct nuclei were present, but the cytoplasm had not yet divided.

The third phase exemplified by the regressive forms was also quite conspicuous; they varied from cells where there was only a slight diminution in the number of vacuoles—to cells where only little tags remained attached to the nuclei—the vacuoles having entirely disappeared. Following this further, various reticulated cell nuclei were seen where no cytoplasm could be made out at all, and in some instances these nuclei were seen in the vacuoles of other more recently formed reticulated cells. Here they had actually been prey for their younger brother phagocytes. A considerable number of reticulated cells were observed to have two nuclei and an occasional one with three. These of course were cell nuclei and not degenerated cell nuclei that had been taken up because these later could be differentiated by being always in vacuoles.

That these cells, the Gitterzellen or reticulated cells are the most important phagocytic elements in the cortex, was over and over demonstrated. It has already been noted that they contain regressive reticulated cell nuclei; they were also seen to have taken up glia nuclei and regressive forms of ganglion cell nuclei. No other cells were observed to have a phagocytic function in any section studied.

Certain regressive changes in the reticulated cells, which have already been mentioned, made it hard (in some instances) to be sure whether we had to deal with regressive glia forms or reticulated cells. But on a closer study it was found to be almost invariably true that the glia nucleus was surrounded by a small amount of cytoplasm, and often the thread-like processes could be traced for a short distance, but in the case of the reticulated cell nucleus where the tags of protoplasm suggested the possibility of its being a glia nucleus, the cytoplasm was absent and the spider-like processes were not seen. The connection between the various glia cells of course also aided in the differentiation. Several instances of mitosis in glia nuclei were seen and here the rosary-like appearance of the chromatin granules just inside the nuclear membrane was observed. Hypertrophic glia cells were seen, very large forms containing an increased amount of chromatin. Owing to the severity of the lesion various regressive

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forms were seen in both glia and ganglion cells. To summarize briefly, the changes at the end of 96 hours were seen to be largely proliferative as regards the connective-tissue elements. Keeping in mind, of course, the fact that the reticulated cells, owing to the brief span of their activity, also showed many regressive changes. The changes in the glia were proliferative and regressive and in the ganglion cells the changes were all regressive.

This brings us to a consideration of the changes occurring at the end of five days. The rabbit used in the experiment was only half-grown. It stood the operation rather badly; but after being liberated when the operation had been completed, it hopped about and showed nothing abnormal up to the time when it was etherized. These factors, particularly the difference in age, must be kept in mind because the results obtained were quite different to those obtained at earlier stages, and it seems probable that such a factor may have had some importance in determining the variation.

In looking over sections where only a small amount of irritant had been applied, it was at once evident that the changes were largely confined to the pia, the changes in the underlying molecular zone being so slight that they really did not enter into reckoning at all. The other changes with which we had to deal were found to be more easily studied in sections where the more severe lesion had been induced; so that the observations were chiefly confined to these.

The most striking feature of the five-day picture and the one which was constant in all sections was the great increase in the number of plasma cells. They were found in large numbers in every field studied. That they were present at the end of four days has already been noted, but their number at that time was quite insignificant when compared with their frequency in the five-day sections. That they are present in various inflammatory exudates, of course is well known, but the variability in their appearance both as to the time of their occurrence, and as to their frequency strongly impressed itself upon my mind, and, it is really the point of importance elicited by the study of the sections at this time. As to their form they varied from the most characteristic types to those where quite marked regressive changes were under way. In the case of the typical plasma cells,

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the rather large cell body, fairly regular in outline, with slightly staining cytoplasm, the eccentric more darkly staining nucleus containing a number of chromatin masses arranged about the periphery, as a rule all staining darkly, with the exception of one small clump, more centrally located, whose staining reaction was the same as that of the cell protoplasm—that is light. The darkly staining basophilic clumps did not at all suggest the rosary-like arrangement spoken of elsewhere as the characteristic of premitotic states in the reticulated and glia cell nuclei.

The less characteristic plasma cells show differences in the staining reaction. Occasionally the nucleus would stain very darkly throughout, and its structure could not well be made out. This condition suggested the probable early onset of still more marked regressive changes, and this was found to be true in certain instances. Occasional bi-nuclear forms were also present as one would expect, with the very considerable increase in the number of plasma cells, there was also an increase in the number of other hæmatogenous elements, and a marked hæmatogenous exudate was seen in certain fields, but its character varied somewhat from that seen at the end of 24 and 48 hours. And the most characteristic difference was in the absence of the regressive forms of leucocytes, chiefly the polynuclears; an occasional polynuclear was seen both in the pia, and of course in the blood-vessels, but they were not undergoing degenerative changes. fairly large number of mononuclear was seen, some very large forms almost like myelocytes; of course a few leucocytes were seen to be breaking down, but their number was quite inconsiderable.

The connective-tissue proliferation continued, many fibroblasts were seen undergoing mitosis, and some beautiful karyokinetic figures were observed. Some of the best of these were in the endothelial cells. Here all the various phases could be seen from the early pre-mitotic condition of the nucleus to the establishment of the two nuclei and the beginning division of the cytoplasm. In some of the endothelial cells the spherical shape of the nucleus was well seen and this was characteristic of those elements when found in a connective-tissue hyperplasia.

In the sections studied, even where the lesion was most severe, very little change could be made out in the cortex. The very

evident regressive conditions present in sections of previous days were absent here. Unfortunately also, nearly all the sections showed a very light staining of the molecular zone so that the exact condition there could only be ascertained with difficulty. But one feature which was rather puzzling was the absence of the reticulated cells, or rather one should say they were not observed, because it is quite possible that owing to the very mild staining reaction of the upper zone of the cortex they may have been present, but not detected owing to the mild nature of the irritation, the cortex being (as has been noted) almost intact; it is extremely probable that they would at least be greatly reduced in numbers. It is also true that they were not seen anywhere in the pia-arachnoid in the sections studied. This observation would merely add to what already has been said regarding their function, because in these sections the changes were almost entirely limited to the pia-arachnoid, and on that account one would not expect to find many phagocytic elements present. As in the case of the sections studied before, almost all the observations made were on sections stained with thionin. From a brief study of the Van Gieson sections the chief thing noted was an increase in the amount of the collagenous material present.

The study of the sections made at the expiration of six days was rather unsatisfactory for the reason that the rabbit used for the experiment stood the operation quite badly, struggled considerably, and bled quite profusely from the nose during the progress of the operation. After being liberated it hopped about and seemed to be in a fairly good condition. On the morning following, however, it was quite dull and stupid, could hardly be urged to change its position and was not eating well. This condition lasted for two or three days when the animal became somewhat more lively, and by the sixth day to all outward appearances was not very abnormal.

The sections at once showed, however, that one had other conditions to deal with than the lesion produced by the application of the irritant. A very severe cerebral hæmorrhage had taken place, involving all the layers of the cortex and extending even below it into the white matter. Red-blood cells were seen in large numbers lying free in the cortex, and the cortex itself in some places had quite lost its structure. Everywhere there were

great numbers of reticulated cells, in some of the fields they were so dense that they were overlying one another. This reaction in the injured cortex was very characteristic and served to illustrate one of the processes which follows a cortical hæmorrhage under any condition; the appearance of a vast number of the reticulated cells, whose object is to remove the tissue that has been devastated and is undergoing regressive changes.

The pia showed an overwhelming number of fibroblasts; they were present in such great numbers that it was extremely difficult to study their structure or arrangement or rather lack of arrangement. They were really piled up in banks. In places where they were not so numerous and where their characteristics were not obscured by their quantity; it could be seen that mitosis was still going on. Plasma cells were seen occasionally in such areas.

Owing to the conditions which have just been mentioned, it was found quite impossible to make any accurate or careful observations, for this reason we passed directly to a consideration of the state of the pia-arachnoid seven days after the irritant had been applied. The rabbit used in this instance was a full-grown healthy animal. It stood the operation well, but it was noted at the time that it bled quite profusely throughout the operation. No other untoward incident is recorded, however, in the time that elapsed before it was etherized.

Unlike the sections at other times and clearly indicating an advance in the process, the sections at the end of seven days showed an arrangement of the newly formed connective-tissue elements, characteristic of fairly late progressive changes. The fibroblasts had become oriented in parallel rows, the formation being very dense, of course causing a very considerable increase in the thickness of the pia. The mitoses were seen much less frequently, and this was doubtless owing to the large number of fibroblasts already present, and also probably to the slight amount of injury sustained by the cortex in the lesion at this time.

The arrangement of the cells in rows is a more mature phase in the changes following an inflammatory process than the conditions observed at any time previous, and would suggest that the progressive reaction resulting in the overgrowth of connectivetissue elements has almost attained its acme. Of course the individual reaction of each rabbit and the probable slight variation

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in the amount of irritant applied have to be considered. For this and other reasons one cannot be too dogmatic, as we have seen by the study of the changes at various other periods, and one of the striking characteristics in the elements present has been the variability in number of the element at different times.

Plasma cells were found in much less abundance than at the end of the five days, and relatively less abundant than at the end of the sixth day. The reticulated cells were few in number, and this probably also followed because of the slight injury which had been done to the cortex. Certain very interesting forms were observed in studying the fibroblasts which had not been encountered before. They were regressive in character and assumed many bizarre shapes. Some were stellate, others arrow-shaped, and many long narrow cells almost identical in some cases with adult adventitial nuclei. Some of these cells showed by their staining reaction that not only were their physical properties altered as was shown by their forms, but also that they had undergone a chemical change. Cells which under normal conditions showed a mauve reaction to thionin, were green. These cells were occasionally seen cut off from the other fibroblasts and apparently were not functionally active at times. They would be seen to be hemmed off by the dense formation of fibroblasts already mentioned, and occupying an otherwise comparatively clear area. I shall not advance any explanation as to why these forms should have been in the picture at this time.

The dura mater was seen in some of the sections studied at this time, and since no mention has been made of it before we may digress just long enough to mention its connection with these experiments.

When the opening was made in the vertex in the cases operated upon, the irritant was applied directly to the dura and reacted upon the pia-arachnoid through the dura. However, when the animal came to autopsy and the skull was removed piece by piece, the dura was also taken off, and since this work dealt only with the pia-arachnoid, no attempt was made to preserve the dura. Because of this, no section studied until the one present showed any trace of the dura. However, at this time it was seen. In its structure it is a connective-tissue membrane, made up of many strands running together. It is less vascular than the pia and of

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course does not show the loose spongy arrangement seen in the pia-arachnoid.

The change at the end of the next 24 nours, that is, in the rabbit killed eight days after operation, can well be described under three headings: those in the epiblastic tissue, those in the mesoblastic, and the difference in the hæmatogenous elements seen. The rabbit was a normal adult and nothing was noted that would modify the observations made. The connective-tissue hyperplasia was seen especially well in the sections where only a mild lesion had been caused. Here the fibroblast overgrowth was seen to be continuing, many new small vessels of the pia-arachnoid were seen. The mitoses in the fibroblasts were not quite so numerous as seen in the sections at the end of the seventh day where the lesion was relatively of the same intensity. The differentiation of the newly formed fibroblasts was more noticeable than at any other period. Some had assumed the position of adventitial cells, while others formed the lining of the new vascular channels. Some of the regressive fibroblast forms noted in the study of the sections of the previous day, were seen in the large vessels. The glia proliferation in these sections was quite striking; many nuclei were seen in the pre-mitotic stages, glia clusters were also quite numerous. The ganglion cells did not show many changes and this of course was due to the nature of the lesion. As a consequence of the mildness of the lesion and the few regressive changes seen, the reticulated cells were less numerous, but in some of those observed mitosis was seen well under way.

The blood elements were quite numerous, the plasma cells being present in greatest abundance. They were rather more frequently seen than at the end of the seventh day. The nuclei of some of the plasma cells were seen to be in an active condition suggesting an oncoming mitosis, and later some cells were seen in the process of division; in one cell observed the two newly formed nuclei were very characteristic. An occasional chromatin clump was seen, some having the form of the nuclei in the polynuclear leucocytes. A number of lymphocytes was also seen. In the case of the severe lesion a considerable area of the cortex had undergone a degenerative process and a low power picture of the tissue was extremely characteristic. One could make out the connective tissue bounding the area where regressive changes

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were in progress, marking it off clearly from the surrounding cortex. With the higher power the great number and the marked activity of the reticulated cells was seen. They were everywhere present and many contained foreign matter—granules of various sizes—and the regressive forms of the ganglion cells. The action of the reticulated cells in removing the granular débris, all that remained of the cortex, was plainly evident.

Just below the injured zone proliferating glia nuclei were seen in very considerable numbers. The fibroblast invasion of the injured zone was also well under way, and here and there definite fibroblast trains were seen.

The rabbit used in the next experiment was a healthy adult animal. Nothing of special note occurred during the time that elapsed between the operation and the death of the rabbit. Two lesions were caused as in previous operations. The study of the sections of the severe lesion revealed very little that has not been noted in the corresponding lesion at the end of the eighth day. In the less severe lesion, however, it was seen that the ninth day picture in certain fields showed a slight advance in the process. The mitosis was less conspicuous both in fibroblasts and reticulated cells, but the proliferative activity of the reticulated cells is, as we have seen elsewhere, almost entirely dependent upon the degree of severity of the lesion in the cortex. That is, the reproduction of the cells is determined by the necessity of their presence for the performance of their phagocytic function.

The fibroblast picture in certain areas was extremely interesting. In such fields they made up a network of very delicate structure, and in the interstices of this network reticulated cells were everywhere seen. Plasma cells were seen to be present in quite large numbers, they were probably more numerous in sections of the severe lesion. In general outline the pia-arachnoid appeared even thicker than at the end of eight days, and this thickening was mainly due, to the greatly increased number of fibroblasts, which undoubtedly was the result of extreme proliferative activity at an earlier stage in the development of the picture.

The sections made at the end of 10 days were from a normal bealthy adult rabbit, in this animal only one lesion was caused a mild one. Here, again, although the changes indicated a slightly later stage, nothing very markedly suggestive was noted.

Regarding the reticulated cells which were still present, the only unusual feature observed was the degeneration of quite a considerable number. Except for this feature nothing else was seen that has not already been spoken of. The fibroblasts still showed some activity and the increase in their number was much less marked than in sections of earlier days and this suggested the possibility that the height of the process had been almost reached. In some of the fibroblast nuclei, that is, in those cells which still were seen to be in an active state, the chromatin had assumed a girder arrangement, one band passing across the center of the nucleus. The hæmatogenous exudate was observed to be present, plasma cells being seen here and there, also a smaller number of mononuclear leucocytes, and in one the presence of two nuclei was observed.

Owing to the short time available it was found impossible to continue these experiments at present, and this was much regretted because the process was really in an acute stage; however, the observation of further stages up to the conclusion of the process will be continued at a later period. The work is presented merely as a preliminary report of the acute phase of a process which later would doubtless show many interesting regressive changes. It is the aim of the writer at some future date to present the findings in the later stages of the process.

To sum up, I would present the following conclusions:

I. That in an acute, aseptic inflammatory process which has proceeded as far as the 10th day, the most striking feature is the variability in the time of the appearance, and in the number of the various elements present at different times.

II. Further, that the study of a single individual element is not sufficient to indicate how far the process had gone. To this end a general survey of all the elements is necessary.

III. That the variability in the character of the elements in different phases of the process is very slight. Elements observed in a certain condition at the end of the third day may be seen in identically the same form at the end of eight days.

IV. That plasma cells are at all times conspicuous, in the early stages being present in very large numbers; then somewhat less numerous, and again, later in the process being relatively in-

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creased in numbers. But throughout the whole process their presence is a characteristic feature.

V. And lastly, the fact that at no stage of the process were any Mastzellen observed. This was quite noteworthy, when certain features in the process, namely, the presence of various other hæmatogenous elements, is kept in mind.

The photomicrographs accompanying are intended to represent various phases of the process, as explained by the legends printed with the same.

DESCRIPTION OF PLATES.

FIG. I.—Shows section of normal cortex cerebri of rabbit with piaarachnoid. The membrana limitans interna and externa are shown and an occasional vessel cut in section may also be seen. It will be observed that there is a very slight amount of connective tissue running from the pia-arachnoid into the cortex in the normal condition, and there are no vascular elements free in the tissue.

FIG. 2.—Illustration of sections made at the end of 24 hours. The very strong reaction to the glacial acetic acid is here shown. The great number of vascular elements free in the tissue and the greatly increased number of blood cells in the vessels shown in section is also evident. The thickness of the pia-arachnoid is greatly increased and this increase is due not to connective-tissue proliferation but to vascular engorgement.

FIG. 3.—(Taken at the end of 72 hours.) This photograph shows a further stage in the inflammatory (reactive) process. Connective-tissue proliferation is here well seen—the pia-arachnoid is greatly thickened and is seen to be due to a great increase in number of fibroblastic elements. It will also be seen that the connective tissue actively extends down into the cortex, particularly in the molecular zone. Vascular elements are seen to be still free in the tissue but they are much less numerous than in the preceding photograph.

FIG. 4.—This illustration shows the process at the end of five days. The connective-tissue proliferation is very much more marked, and the pia-arachnoid is greatly increased in thickness in consequence. The activity of the mesoblastic tissue in the deeper layers of the cortex is also seen. Vascular elements are here very little in evidence.

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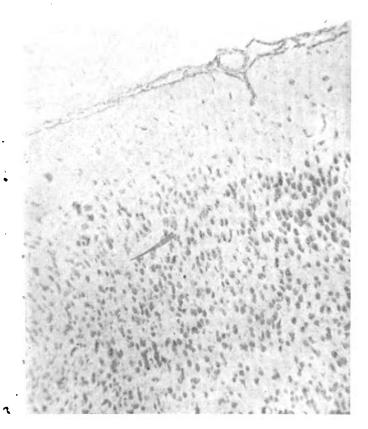


Fig. 1.

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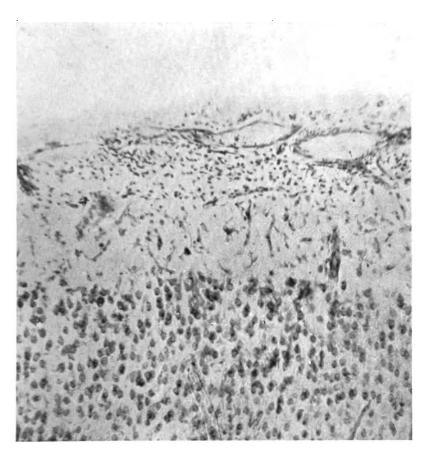
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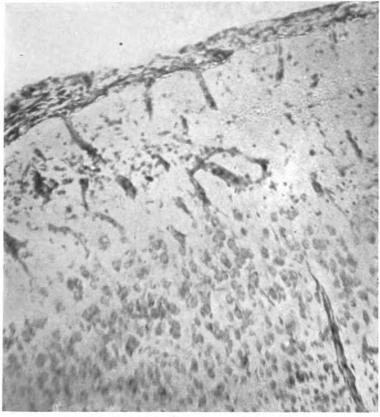


FIG. 3.

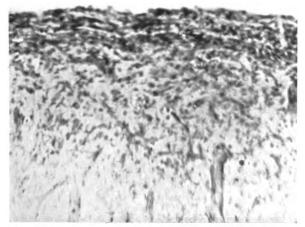


FIG. 4.

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REPORT OF COMMITTEE ON TRAINING SCHOOLS FOR NURSES.

To the President and Members of the American Medico-Psychological Association the following report is respectfully submitted:

At the meeting of the Association in June, 1906, your Committee was appointed "to prescribe a minimum course of instruction for training schools for nurses in hospitals for the insane." The matter has been carefully considered and an attempt is here made to suggest such a course. Should it seem to some to include too much, your Committee begs to suggest that with the advance of recent years in the care and treatment of the sick the minimum of what a nurse should know cannot be small.

ORGANIZATION OF THE SCHOOL.

Something should be said upon the proper organization of a school, since upon this its success in so large a measure depends. The teaching staff should be large enough so that the burden on any one person may not be too great, and so that the work of the school would not be embarrassed by the temporary disability or the withdrawal of one or more of the instructors. The superintendent of nurses,¹ who is also superintendent of the school, should have begun her nursing career in a hospital for the insane and afterward have graduated from a general hospital school. Under the direction and with the advice of the Superintendent of the hospital she should co-ordinate all the work of the school and arrange for rotation of service of the nurses, which is so important for variety of experience. In a hospital of any size she would have an assistant, whose qualifications should be similar to her own, and both should rank and be treated as officers of the hospital.

Lectures on medical subjects are, of course, to be given regu-

¹The Superintendent of the hospital will probably avoid trouble by educating one of his own nurses for this position.

larly by different members of the medical staff, occasionally on special subjects by physicians from outside the hospital. This medical instruction should be supplemented by recitations from text-books, which may be conducted by the physicians, the superintendent of nurses, her assistant and the supervisors. The technic of nursing, however, which a physician perhaps ought to know, but which he usually does not, should be taught to small divisions of the classes by the superintendent of nurses, her assistant, the supervisors and the head nurses of the various wards. Special subjects, such as hydrotherapy, massage, physical training and cooking, should be taught by especially employed teachers, or by specially trained graduate nurses. The apothecary of the hospital can give the practical demonstrations in materia medica. If the work is to proceed satisfactorily, reasonable time must be allowed the pupils for study and for the various exercises of the school.

QUALIFICATIONS OF PUPILS.

The pupil nurse should be not less than nineteen nor more than thirty-five years of age, and preferably should have had at least the instruction of one year in a high school or its equivalent.

COMPULSORY EDUCATION?

Should it be compulsory for all, both men and women, who enter the nursing service of the hospital to join the training school? It is desirable, but perhaps it is not always possible to insist upon it. It may be necessary at present to employ some who will not join the school and who may be called attendants to distinguish them from members or graduates of the school, who are called pupil nurses or graduate nurses, and no doubt it is well to distinguish between the graduate nurses and the attendants not only by the positions which they occupy but also by the money compensation which is given them.

INSTRUCTION TO ATTENDANTS.

It would, however, seem highly expedient to give some form of instruction to the attendants, who do not join the school, in the form of demonstrations in housekeeping and general nursing in order to obtain from them a more satisfactory service.

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FUNCTION OF THE NURSE.

It is the function of the nurse to assist the physician in the care of his patients, and in so doing to render personal service to the sick. Assistance to the physician in the care and treatment of the insane is greater, more important and calls for a higher service than in any other form of disease, and the need for careful instruction and training is correspondingly greater. The nurse must not only minister to the bodily needs of such patients, but tactfully and with good judgment influence and direct the conduct of those who have to a greater or less degree lost the ability to properly care for themselves. In order that this assistance and service may be intelligent there is need of instruction similar in kind to that of the physician, though differing in degree.

WHAT NURSES SHOULD BE TAUGHT.

Nurses should have some knowledge of the body, with which they are concerned in the general nursing of all diseases, and of the mind, to which they minister in cases of nervous and mental diseases. An elementary knowledge of anatomy, physiology and psychology therefore should be taught.

The nurse also should know something of personal and public hygiene, the germ theory of disease and its application in medicine and surgery, the appearance, methods of administration and the effects of the more common drugs, cooking for the sick, bandaging, massage, hydrotherapeutics, the more common medical and surgical diseases, including contagious diseases, obstetrics, gynæcology, diseases of children, nervous diseases and insanity.

In order that the assistance and service of the nurse may be not only intelligent but acceptable, instruction should be given in the ethics as well as in the more practical matters of the technic of nursing.

NURSES SHOULD BE TAUGHT GENERAL AS WELL AS SPECIAL NURSING.

The question has been raised whether nurses in a hospital for the insane should be taught only the care of cases of mental diseases or whether their training should include general nursing as well. Your Committee has no doubt that they should be instructed in general as well as in special nursing, just as the physician who is a specialist should have a general medical educa-

tion. Moreover the nursing of cases of insanity does not differ in many respects from the nursing of other diseases. The routine work of the nurse in the personal care of the patient-such as bathing, care of the teeth, hair and nails, changing clothing, massage, hydrotherapy, taking and recording of the pulse, bloodpressure, and temperature, the keeping of charts and daily records, making of beds and care of the sick room, cooking for the sick, serving food nicely, and other matters of personal service, does not differ much whatever the case may be. It is the intelligent and acceptable doing of all such things which in so large a measure constitutes the good nurse and which, perhaps, can be even better taught in hospitals for the insane, where they are often done under great difficulty, than in those for general diseases, where the patient usually co-operates, or at least does not resist; while habits of observation, carefulness, tactfulness and patience. and a kind consideration for the sick can be much better taught there.

PRACTICE IN GENERAL NURSING TO BE OBTAINED OUTSIDE THE HOSPITAL.

Hospitals for the insane are somewhat deficient in opportunities for practical work in nursing medical and surgical cases, although the larger the hospital the greater the opportunity. They therefore must get a part of this practice for their nurses outside the hospital, either in district nursing or through an alliance with a general hospital, just as the general hospitals themselves are obliged to find opportunities outside their walls for their pupils to practice in some special departments of nursing.

METHODS OF INSTRUCTION.

Nurses are now taught by means of lectures, by recitations from text-books, by demonstrations and by practical work. The lectures and recitations are no doubt useful and perhaps necessary, but so far as is possible instruction should be given by demonstration with explanation and comment, and by practical application by the nurse, under competent supervision, of the knowledge received. It is quite evident that the details of housekeeping, cooking, massage, hydrotherapy, bandaging, urinalysis and the technic of nursing in general must be so taught, and that a practi-

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cal knowledge of drugs is best obtained in the dispensary. It would seem to be equally evident that any knowledge of the different forms of disease, which it is proper for a nurse to have, can best be given by instruction at the bedside of the patient, which, so far as it goes, is like that given to medical students. In order to be able to observe patients intelligently and to report on their condition to the physician, the nurse must be taught how and what to observe. The clinical men who are studying their cases closely often receive the most valuable assistance from intelligent nurses.

LECTURES.

Lectures to nurses should be given in such form that the knowledge can be applied, or its application seen, in their work. Thus, when speaking of the skeleton, it is well to consider briefly the common injuries to which the bones are liable; when talking of respiration, diseases of the respiratory organs; etc.

NOTE TAKING.

It is the custom in most schools for the nurse to take notes of lectures and write them out within a few days in as good English as may be for inspection and correction. Although these notes may be imperfect the nurse is much more likely to remember something of the lecture from having written them, and it is also in a general way educational.

ROTATION OF SERVICE.

In order that the nurse may have variety of experience, and receive instruction in the nursing care of all forms of disease and of patients under all conditions, it is absolutely essential that there should be rotation of service. The frequency with which a change from one ward to another is made will depend on the conditions in each hospital, but usually about once in three months.

EXAMINATIONS.

Examinations both in written and in practical work should be held at the middle and at the end of the school year.

DIPLOMA.

Diplomas should be awarded the students as evidence of a satisfactory completion of the course of study.

LENGTH OF THE COURSE.

In order to teach the requirements of modern nursing it would seem to your Committee that three years is not too long a time. A minimum of two years is a necessity; three years is advised, unless there are opportunities for post-graduate courses of which the nurses can and will avail themselves.

It is recommended that formal instruction be given for eight months of the year, from October 1 to June 1, and that during each week of this time each pupil shall receive at least three hours of instruction, consisting of perhaps one lecture, one recitation or quiz, and one demonstration, with as much more time for demonstrations as can be given.

PRELIMINARY COURSE OF INSTRUCTION.

If a three years' course is prescribed, it will be found a great advantage to give a preliminary course of instruction of from one to four months, during which time the nurse will be occupied almost entirely in study with only sufficient work in the wards to put in practice the instruction received. This preliminary course should be devoted to the study of anatomy, physiology, hygiene, bacteriology massage and the fundamentals of housekeeping and general nursing. With freedom from ward work and the anxieties of the personal care of patients, the pupil nurse can accomplish more in four months than in a whole year under the usual conditions.

SCHEDULE OF COURSE.

Any possible arrangement of the order of studies is open to criticism. There is a tendency to put most topics as early in the course as possible, in order that the nurse may have the benefit of the instruction in the care of patients, but some must come last, and many things must be systematically taught long after the nurse has practiced them. This cannot be avoided unless a full theoretical course of instruction is given before it is put to any practical test.

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A schedule is here presented for a course of two years and also one for a course of three years. Since it is practically impossible to make an arrangement of studies which would be entirely satisfactory to all schools, these are presented merely as suggestions, the order being subject to variation according to individual necessities.

ACKNOWLEDGMENTS.

Your Committee is indebted for suggestions and criticism to the following Superintendents of Training Schools for Nurses in hospitals for the insane: Miss Mary E. May, Willard State Hospital; Miss Marie Ferrier, Kings Park State Hospital; Miss Sara E. Parsons, Sheppard & Enoch Pratt Hospital; Miss Linda Richards, State Hospital for the Insane, Kalamazoo; and Miss Lucia E. Woodward, McLean Hospital.

In the preparation of the following schedules of practical work the writer has not hesitated to use, and even literally to copy from, the Outline of Practical Training prepared in 1906 for the New York State Hospital Training Schools for Nurses by Dr. William L. Russell, a member of your Committee.

> CHARLES P. BANCROFT. CHARLES K. CLARKE. ARTHUR W. HURD. WILLIAM L. RUSSELL. GEORGE T. TUTTLE, Chairman.

LIST OF SUBJECTS—TO BE TAUGHT BY TEXT-BOOKS, LECTURES, DEMONSTRATIONS AND PRACTICE.

Ethics of Nursing.

Elementary Anatomy and Physiology.

Bacteriology.

Hygiene-Personal and Public.

Housekeeping.

Food, Dietetics and Cooking.

The more common Medical and Surgical Diseases. (Including Contagious Diseases.)

Technic of Aseptic Surgery.

Splints and Bandaging.

Psychology.

Nervous Diseases and Insanity.

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Obstetrics and Gynaecology (Women). Genito-urinary Diseases (Men). Venereal Diseases and their effect on both sexes. Materia Medica. Physical Therapeutics-Massage, Elementary Gymnastics, Hydrotherapy, Application of Electricity. Urinalysis. Emergencies. Nursing-general and special. SCHEDULE FOR A COURSE OF TWO YEARS. First Year: The Ethics of Nursing. The History of Hospitals; Insanity and the Care of the Insane. (One or two general lectures.) Anatomy and Physiology-to the Nervous System. Bacteriology. Urinalysis. Hygiene-Personal and Public. Housekeeping. Food, Dietetics and Cooking. Physical Therapeutics-Massage, Elementary gymnastics. Bedside Instruction. Nursing-general and special. Second Year: Anatomy and Physiology-Nervous System and Special Senses. Psychology, Nervous Diseases and Insanity. The more Common Medical and Surgical Diseases. (Including Contagious Diseases.) Technic of Aseptic Surgery. Splints and Bandaging. Obstetrics and Gynæcology (Women). Diseases of Children (Women). Genito-Urinary Diseases (Men). Venereal Diseases and their effects on both sexes. Physical Therapeutics-Hydrotherapy, Application of Electricity. Emergencies. Observation of Symptoms with Bedside Instruction.

Nursing-general and special.

Review.

Each hospital prescribes and instructs its nurses in its own rules and regulations. Such matters therefore are omitted in these schedules.

SCHEDULE FOR A COURSE OF THREE YEARS. First Year: The Ethics of Nursing. History of Hospitals, Insanity and the Care of the Insane. (One or two general lectures.) Anatomy and Physiology-to the Nervous System. Bacteriology. Hygiene-Personal and Public. Housekeeping. Food, Dietetics and Cooking. Physical Therapeutics-Massage, Elementary Gymnastics. Nursing-general and special. Second Year: Anatomy and Physiology-Nervous System and Special Senses. The More Common Medical and Surgical Diseases. (Including Contagious Diseases.) Technic of Aseptic Surgery. Splints and Bandaging. Materia Medica. Physical Therapeutics-Hydrotherapy, Application of Electricity. Emergencies. Observation of Symptoms with Bedside Instruction. Nursing-general and special. Third Year: Psychology-Nervous Diseases and Insanity. Obstetrics and Gynæcology (Women). Diseases of Children (Women). Genito-urinary Diseases (Men). Venereal Diseases and their effects on both sexes. Urinalysis. Observation of Symptoms with Bedside Instruction. Nursing-general and special. Review.

Practical experience in a general hospital or in district nursing or in both for at least four months should be had if possible, whenever most convenient during the second half of the course.

SCHEDULES OF PRACTICAL WORK—TO BE TAUGHT, IF POSSIBLE, BY DEMONSTRATION.

Housekeeping.

Temperature and ventilation of wards and rooms.

General and special cleaning of wards and rooms.

Care of wardrobes, bureaus, etc. and their contents in patients' rooms.

Care, airing and cleaning of bedstead, mattress, blankets, and bed-linen.

Prevention and extermination of vermin-mice, moths, cockroaches, bed-bugs and lice.

Making show bed.

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Cleaning, ventilating and general care of toilet rooms, laboratories and baths.

Care of cupboards and medicine closets.

Care of brooms, brushes, mops, pails and other ward utensils.

Care of dining-rooms, serving-rooms, refrigerators, water- coolers, closets, sinks, garbage pails.

Use and care of disinfectants and other poisonous ward solutions.

Care of rubber goods—air beds, sheets, hot water bags, ice-caps, enema tubes, catheters, rubber rings, etc.

Care of basins, sputum cups, spittoons, bed pans, urinals, and all other metal and porcelain articles.

Care of clothes and linen rooms:

- (a) Marking hospital and patients' clothing and ward linen.
- (b) Arranging clothing and ward linen.
- (c) Mending clothing and ward linen.
- (d) Sending clothing to and receiving it from the laundry.
- (e) Requisitions for ward supplies.
- (f) Taking out stains.

Economical use of supplies.

General Nursing.

Reception of patient; undressing patient and bath; care of clothing and valuables.

Making go-back bed. Open bed for patient at night.

Toilet and bath of patient in bed; washing hair, care of mouth, hands and feet.

Changing of bedding and clothing of patient in bed.

Sitting patient up in bed; getting patient out of bed.

Care of the back and other parts exposed to pressure.

Use of bed-pan and urinal, back rests, rings, hot water bags, etc. Preparation of patient for various physical examinations.

Serving food to patients in bed; feeding helpless patients.

Giving enemata—purgative, nutrient and stimulating.

Subcutaneous injections of drugs and normal salt solutions. Use and care of catheter; washing out the bladder.

Giving various douches.

Washing out the stomach.

Making an application of poultices, fomentations, stupes, mustard pastes, etc.

Application of ointments, liniments, etc.

Application of dry cups, blisters and leeches. Use and care of thermo-cautery.

Aspirating needles and apparatus.

Administration of oxygen, ether and chloroform.

Giving hot air bath to patient in bed.

Collection and preparation of specimens of excreta for the laboratory.

Taking and recording pulse, blood-pressure, temperature and respiration.

Observation of symptoms with bedside instruction.

Daily record of patient.

Special care of the dying.

Evidences of death.

Surgical Nursing.

Cleaning and disinfection of the operating room. Making bandages, tampons, sponges, etc. Sterilization and care of surgical dressings.

Making ether bed.

Preparations for surgical operation—(Demonstration when actual cases are not available).

- (a) Patient-bowels, bladder, skin, for anæsthesia, etc.
- (b) Operating room.
- (c) Instruments and dressings.
- (d) Solutions.
- (e) Personal preparations-hands, costume, etc.
- (f) Anæsthetist's articles.
- (g) Bed and clothing of the patient.

Assisting at surgical operations. Assisting at surgical dressings. Surgical emergencies.

Insanity.

Proper reception of patient in order to lessen shock of admission to a hospital for the insane.

Removal and searching of clothing.

Bath, examination of body of patient for bruises, etc.

Care of patient previous to special instructions.

Attendance on physician during his visit.

Preparation of patient for physical examination.

Assisting physician during examination.

Administration and care of medicines.

Use and care of disinfectants.

Tactful, gentle and patient methods of persuasion.

Proper methods of physical control.

Persuasion of those who refuse food.

Feeding resistive and unconscious patients.

Spoon feeding.

Tube feeding:

- (a) Preparation of food.
- (b) Preparation of patient.
- (c) Assisting the physician.

Occupation—Industrial training.

Guarding the aged against fractures and other injuries. Observation of mental symptoms with bedside instruction.

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Duties of the nurse as a companion:

- (a) Music, games, indoors and out.
- (b) Reading aloud.
- (c) Walks and drives.
- (d) Occupation.

Emergencies, and how to meet them.

States of depression of spirits; delusional conditions:

Care in respect to toilet and clothing.

- Management of conditions of restlessness and agitation.
- Observation and management of delusions, impulses, obsessions and suicidal tendencies.

Care of patients who have controlling delusions.

Precautions against accidents, exposure, over-exertion, escape and suicide.

States of excitement:

Care of rooms with reference to the special necessity for ventilation, heating and cleanliness.

Special care of beds and clothing.

Dressing and undressing excited patients.

Care of mischievous, violent and destructive patients.

Observation of action of bowels and bladder.

Care of patients who wet and soil themselves.

Management of emotional outbreaks and impulsive acts.

Precautions against assaults.

Special preparation of food.

Feeding patients who require much special attention.

Bathing—care of hair, teeth, and nails under great difficulty.

Giving packs, prolonged baths and other hydrotherapeutic procedures to patients who resist.

States of dementia:

Precautions against scalding and choking by special preparation of food as to temperature, division, bones, etc.

Cultivation of habits of neatness at the table.

Care of untidy patients, correcting pernicious habits, management of incontinence.

Regulation of bowels by habit, food and exercise.

Special care in respect to toilet and clothing.

How and what to observe and how to record it.

Epilepsy.

Household arrangements for safe-guarding epileptics, beds, etc. Nursing during a convulsion; guarding against injury, ex-

posure, choking, biting, etc.

Nursing after convulsions.

Nursing of status epilepticus.

Anticipation of convulsions; auræ, mental states.

Precautions against injuries and outbreaks.

Management of the epileptic-mental condition.

Nursing of epileptic excitement, depression and automatic states —preventive measures.

Precautions in the occupations and diversions of epileptics. Precautions in bathing epileptics.

Dietary of epileptics. Rectal medication.

Care of the mouth, teeth, stomach, and bowels in epileptics. Night care of epileptics. Precaution against accidents.

Night Duty.

Attention to quiet moving and speaking.

Modification of ventilation, temperature and lighting of wards and rooms.

Guarding against exposure and draught.

Systematic observation of patients.

Nursing of sleeplessness and restlessness.

P. r. n. remedies for sleeplessness, restlessness, headaches, backaches, etc.

Precautions against accidents, escapes, suicides and assaults. Duty of the nurse in case of fire and in other emergencies. Morning report on each patient.

Obstetrics.

Preparation of room.

Making lying-in bed.

Preparation of dressings, antiseptics, etc.

Preparation of patient for confinement.

Different positions of patient for examination or delivery.

Demonstration with the manikin when actual cases are not available.

After care of the mother.

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General care of the baby—washing, dressing, feeding, etc. Complications and emergencies.

Gynæcology.

Preparation of the table. Articles and instruments for examination. Preparation of patient for examination. Various positions of patient on table. Assisting physician.

Contagious Diseases.

Selection and preparation of the room. Isolation of the patient.

Care of the room with reference to:

- (a) Ventilation and temperature.
- (b) Special methods of sweeping and dusting.
- (c) Utilization of sunshine as a disinfectant for bedding, furniture, clothing, rugs, etc.

Disinfection and preparation of clothing for the laundry.

Disinfection and disposal of sputa, urine and stools.

Disposal of food left by the patient.

Variation in nursing care, and precautions to be taken in different diseases.

Measures for preparing patient to leave infected room.

Disinfection of room after use.

Care of body after death.

Precautions to be taken by nurse for herself and for others:

- (a) General care of her health.
- (b) Carefulness in regard to excretions and soiled articles.
- (c) Care and disinfection of her hands.
- (d) Methods of disinfection of herself before associating with others.

Emergencies.

Methods of stopping hemorrhage.

Artificial respiration.

Transportation of the sick and injured.

Preparation for reception of cases of accident or sudden illness.

First aid in cases of:

Wounds, fractures and dislocations.

Bruises, burns, and scalds, frost bites.

Drowning, hanging, inhalation of gas, choking, or asphyxia from any cause.

Sunstroke, poisoning by drugs.

Convulsions, apoplexy, fainting.

Unconsciousness from any cause.

Splints and Bandaging.

Kinds of splints; preparation for application.

Assisting in application.

Making and rolling bandages.

Spiral, figure of eight, spiral reverse bandage.

Arm bandage, elbow, spica of shoulder, single and double.

Hand bandages, spica of thumb.

Foot, including heel; leg, including knee.

Stump dressing and bandage.

Recurrent of head. Eye bandages.

Slings, handkerchief bandages; T, four-tailed, many-tailed, breast bandages.

Binders of various kinds.

Preparation for and assisting in application of plaster of Paris dressings.

Collodion dressings.

Dispensary.

Review of tables of weights and measures.

Review of abbreviations and signs used in prescriptions.

Practice in the use of weights and measures.

Making percentage solutions.

Dispensing definite doses from solutions of known strength.

The recognition, doses, and effects of some of the drugs in common use.

Different classes of drugs.

Different preparations and methods of administration.

Poisons and their antidotes.

Assisting in putting up medicines for the wards.

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TRAINING SCHOOLS FOR NURSES

Food, Dietetics and Cooking. LECTURES. PRACTICE LESSONS.

Building and care 1. Chemical composition of body. of fire. Food — classification, composition and Cold beverages. use of food nutrients. Fuel value of foods. Care and preservation of food. Fuels. Construction and use of cooking appliances. Water supply. 2. Selection of food as regards age, occu-Hot beverages. pation, climate, season of year, cost and economy, digestibility. Dietaries for the sick with list of foods included in each. The service of food. Toasts. 3. Milk and milk products. Composition, care, food value. Fruits. Adulterations and impurities. Methods of altering the taste, and of improving digestibility. Methods of preservation. Infant foods. Gruels. 4. Carbohydrates. Starch-dextrin; cellulose. Porridge, s e r v e d Composition, food value, digestibility, with and without fruits. effect of heat upon. Composition and value of cereals and vegetables. Fruits --- composition and dietetic value. Nuts and fungi. 5. Carbohydrates, continued. Simple desserts Dextrinized foods. with starch.as blanc Sugar and sugar substitutes. mange with moss. corn starch. oat flour.

6. Proteids. Eggs. Eggs-composition, digestibility when Simple desserts cooked in different ways. Test for with eggs. freshness. Custards - baked Methods of preservation. and soft-of different flavors. Oysters. 7. Proteids, continued. Broiled, baked and Fish—composition, digestibility of boiled meats and fresh, dried, smoked and pickled fish. fish. How to select. Methods of cooking, serving, and garnishing fish. Meats-composition and digestibility. How to select. Methods of slaughtering, dressing and canning. Methods of cooking, serving and garnishing meats. 8. Soups—meat and vegetable. Meat and vegetable Fluid meat preparations. soups, broths, etc. 9. Batter Mixtures. Bread. Cake. Substance used to lighten. Sandwiches. Bread and cake making. Sandwiches. 10. Fats-animal and vegetable. Salad dressings. Composition. Digestibility. Salads. Salads and their use. Boned birds. 11. Gelatinoids. Gelatine dishes. Gelatine; source, properties, kinds. Ice cream. Directions for preparing and serving gelatine dishes. Frozen desserts. Sherbets. Ice creams, etc.

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12. Diabetic foods.

Brief review of physiology of digestion. Peptonized foods. Diabetic foods. Peptonized milk. Gruel. Jelly. Egg nog. Oysters, etc.

Hydrotherapy.

Assisting in hydrotherapy room:

- (a) Preparing patient for bath.
- (b) Duty of the nurse during and after the bath.
- (c) Precautions to be observed.
- (d) Demonstration of effect of baths on pulse, temperature, respiration and blood-pressure.

Technic of various hydrotherapeutic procedures :

- (a) Sponge bath.
- (b) Ablutions.
- (c) Affusions.
- (d) Dripping sheet.
- (e) Local baths-sitz, foot, etc.
- (r) Compresses of throat, chest and abdomen.
- (g) Packs-dry, wet, hot, cold, local, and general.
- (h) Continuous baths.
- (i) Brand bath (for reduction of bodily temperature).
- (j) Alcohol rub.
- (k) Salt rub.
- (1) Hot air bath.
- (m) Vapor bath.

Electricity.

Static breeze, spark. High frequency current. Faradic battery, portable. Galvanic battery, portable.

Elementary Gymnastics.

Simple gymnastic exercises intended to secure symmetrical muscular development, correct posture in standing and walking, and free use of the organs of respiration.

- (a) Introductory exercises-correct standing position, etc.
- (b) Arch flexions.
- (c) Arm extensions.
- (d) Balance exercises.
- (e) Back movements.
- (f) Abdominal movements.
- (g) Lateral trunk movements.

Breathing exercises are to be combined with all the above movements.

Laboratory.

Urinalysis:

Color, odor, etc. Specific gravity.

Reaction.

Sediment.

Test for albumin.

Test for sugar.

See casts of the urinary tubules and various bacteria under the microscope.

Care of the Dead.

Preparation of body for the undertaker.

Preparation of body for autopsy.

Preparation for autopsy at hospital and in a private house. Assisting at autopsy.

Care of body and room after autopsy.

REFERENCE AND TEXT BOOKS.

Anatomy and Physiology.

Hutchison. Physiology and Hygiene for General Readers. N.Y., Maynard. \$1.10.

Kimber. Text-book of Anatomy and Physiology for Nurses. N. Y., Macmillan. \$2.50 Net.

Hough & Sedgwick. Human Mechanism. Boston, Ginn. \$2.00 Martin. Human Body. N. Y., Holt. \$2.50 Net.

Kirke's Hand-book of Physiology, by W. D. Halliburton. Phila., Blakiston. \$3.00 Net.

Gray. Anatomy. Phila., Lea. \$6.00 Net.

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Hygiene.

- Pyle. Manual of Personal Hygiene. Phila., Saunders. \$1.50 Net.
- Egbert. Manual of Hygiene and Sanitation. Phila., Lea. \$2.25 Net.
- Harrington. Practical Hygiene. Phila., Lea. \$4.25 Net.
- Bergey. Principles of Hygiene. Phila., Saunders. \$3.00 Net.

Bacteriology.

- Stoney. Bacteriology and Surgical Technique for Nurses. Phila., Saunders. \$1.50.
- Muir & Ritchie. Manual of Bacteriology. N. Y. Macmillan. \$3.75.

Materia Medica.

Stoney. Materia Medica for Nurses. Phila., Saunders. \$1.50 Net.

Potter. Compend of Materia Medica. Phila., Blakiston. \$1.00.

Dock. Text-book of Materia Medica for Nurses. N. Y. Putnam. \$1.50.

Dietetics.

- Hutchison. Food and Principles of Dietetics. N. Y., Wood. \$3.00 Net.
- Farmer. Food and Cooking for the Sick and Convalescent. Boston, Little & Brown. \$1.50 Net.
- Hill. Cook Book for Nurses. Boston, Whitcomb & Barrows. \$0.75.
- Sachse. How to Cook for the Sick and Convalescent. Phila., Lippincott. \$1.25 Net.
- Friedenwald & Ruhrah. Dietetics for Nurses. Phila., Saunders. \$1.50 Net.

Medicine and Surgery.

- Senn. Nurses' Guide for the Operating Room. Chicago, Keener. \$1.75 Net.
- Fowler. Operating Room and the Patient. Phila., Saunders. \$2.00 Net.
- Osler. Principles and Practice of Medicine. N. Y., Appleton. \$5.50 Net.

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Obstetrics and Gynæcology.

- Fullerton. Hand-book of Obstetric Nursing. Phila., Blakiston, \$1.00 Net.
- De Lee. Obstetrics for Nurses. Phila., Saunders. \$2.50 Net.

Physical Therapeutics.

Baruch. Principles and Practice of Hydrotherapy. N. Y., Wood. \$4.00 Net.

Graham. Massage. Phila., Lippincott. \$4.00 Net.

Nursing.

Weeks. Text-book of Nursing. N. Y., Appleton. \$1.75.

- Hampton-Robb. Nursing—its Principles and Practice. Phila., Saunders. \$2.00 Net.
- Humphry. Manual of Nursing. Phila., Blakiston. \$1.00 Net.
- Wilcox. Manual of Fever Nursing. Phila., Blakiston. \$1.00 Net.
- Wilson. Fever Nursing. Phila., Lippincott. \$1.00 Net.
- Granger. How to Care for the Insane. N. Y., Putnam. \$0.60.
- Wise. Text-book for Training Schools for Nurses. 2 vols. N. Y., Putnam. \$1.25 each.
- Burr. Primer of Psychology and Mental Disease. Phila., F. A. Davis & Co. \$1.25.
- Hand-book for Instruction of Attendants on the Insane. 4th Ed. Boston, Old Corner Bookstore. \$1.00.
- Robb. Nursing Ethics. Cleveland, Savage. \$1.50 Net.



Clinical Psychiatry.

CLINICAL DEMONSTRATIONS.

BY CLARENCE B. FARRAR,

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v.

ARTERIOSCLEROSIS CEREBRALIS.

Organic epochal psychosis in a man in the devolutional period. Onset with a "seizure." Duration to date about four and a half years. Course characterised by striking variability of symptoms and irregular recurrence of seizures. Disease not conspicuously progressive. Higher intellectual faculties preserved. Insight intact. Permanent mental invalidism.

In the foregoing demonstration was opened the chapter of the epochal psychoses of later life, and we shall to-day continue the subject by presenting another case of entirely different type, although belonging to the same broad group of involutional psychoses.

In contrast to the epochal cases of other times of life taken together, we find that in the insanities of the senium and präsenium organic brain lesions are much more common as etiologic factors and more constant as anatomic findings, although here, too, we meet with conditions in which no definite and specific pathology has yet been recognised. As such are to be classed the cases of involutional depression described in the last hour as *melancholia vera*. Many of these patients, perhaps a fourth or a third, recover; and while we find practically always in such as come to section that morbid changes have taken place in the cortex, it is not possible to indicate any peculiar association between these changes and the characteristic clinical evidences of the disease.

The alterations are as a rule simply those of an involutional brain, and among them those of the vascular system are of course most frequent and widespread, although not of such character or degree as to determine the clinical picture.

With the condition we are to study to-day, the situation is different in that we have to do with a disease with a clinique and a pathology which can in good measure at least be correlated,—in other words, with an organic epochal psychosis.

The patient, Judge B., is 61 years old and unmarried. He enters the room with a brisk step, takes a conventional survey of his surroundings, replies pleasantly to our salutation, and seats himself promptly in the chair offered him. He understands that he has been asked to come in order that his case may be discussed in clinic and readily lends himself to the occasion.

In his exterior we see a man of good physique, properly clad, but with cravat carelessly adjusted and other evidences of lack of scrupulous attention in his general make-up; complexion slightly florid, hair grey and becoming sparse over vertex, face smooth excepting a grey mustache. The features are symmetrical and regular, the countenance is not scarred with lines, and there is no habitual contraction of any of the facial muscles. His expression betrays nothing unusual, but suggests intelligence, acumen and an appreciative interest in his environment.

He embarks easily in conversation, and before we have proceeded far with questioning, continues spontaneously with the narrative of his illness of which he has a just appreciation and a good memory. If we turn his recollection further backward he becomes reminiscent, and furnishes freely the details of his life, interspersing the account with numerous amusing anecdotes.

We learn that the patient is the fourth in a family of nine children of whom a sister and two younger brothers are still alive. The youngest, by ten years the patient's junior, has had several apoplectic attacks, while the other is a ne'er-do-well of dissipated habits, to whose support as well as to that of various others of the family Mr. B. has always been obliged to contribute. He is a native of Virginia and traces his descent directly from one of the original settlers of that State. At the opening of the Civil War, being then seventeen years of age, he joined the Confederate Army in which he served with distinction. Of his numerous

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war reminiscences he enjoys particularly relating how while discharging his duty as courier he was picked by a sharp-shooter who sent a bullet through his right foot. Amputation of the third toe was necessary and he was henceforth known as "notoerious B."

In his post-bellum career Mr. B. devoted his energies to journalism and the law, to which latter he finally confined his attention exclusively. His keen ambition, quick intelligence and indefatigable industry brought him to a reasonable degree of success and honor. He occupied in turn several responsible municipal offices and was at length raised to the position of Chief Justice of the Orphan's Court of Baltimore City, in which capacity he was serving when overtaken by the illness we are about to consider. He enjoyed a wide and distinguished acquaintance and reckons among his friends many persons of note of whom he is still able to detail a surprising wealth of interesting recollections.

It is to be noted that the patient is the only one of the four brothers who reached any accomplishment, the only one in the family also who was self-supporting. His three brothers were alcoholic, and being the eldest son in a large family whose material goods had dwindled during the War, unusual responsibilities fell upon Mr. B. while still a young man and it was largely on this account, he says, that he never married. In his own habits he was always decidedly temperate, almost abstemious, as regarded alcohol. To Venus, however, he was devoted and admits specific infection (ca. 1890) as well as recurrences of Tripper. To these things he sometimes refers, suggesting that if he had led a more orderly domestic life he might perhaps have been saved from his present situation.

In his religious life the patient appears to have been healthy. He was an occasional conventional church-goer but never affiliated with any denomination.

All of these facts and as many more as we like he is ready to supply, for we have crossed him in a communicative mood. His narration abounds in circumstance and there is present an unmistakable tendency to digression in which not infrequently the main issue of thought is lost and forgotten in the accumulation of selfsuggesting associated details. To brief casual observation, if the patient is left to his own spontaneous expression, little abnormality may be noted beyond this inclination to *reminiscent digressive* garrulity which is not in itself characteristic of the psychosis present, except in so far as it may occur as an epochal sign.

As Mr. B. continues his story, however, he pauses from time to time at a loss for a name or a date, and it is soon apparent that his *time sense* is very uncertain and untrustworthy. He readily transposes events in his narration, on different occasions gives varying dates for the same event, and is even for the moment unsure whether we now write 1897 or 1907. This in spite of the fact that he punctiliously reads the daily papers. Of this memory defect he is conscious and comments that he has for several years suffered with "aphasia."

A third symptom consists in a mild *emotional instability* which is just noticeable at times in an undue expression of feeling, an unsteadiness of the voice, perhaps even a slight show of tears, when he speaks of the past kind offices of some friend. At once recovering, he refers with intended compliment to the pleasant acquaintances he has made among physicians, and backs this with the observation, which, he smilingly adds, does not represent his own opinion, that doctors are men who pour drugs of which they know little, into bodies of which they know less, to cure diseases of which they know nothing.

When we mention the rather conspicuous and coarse *tremor of the hands*, which is exaggerated under observation or when the patient tries to hold them steady, but which has not the character of an intention tremor, we shall have practically exhausted the symptoms which lie upon the surface at the present moment.

If now we go backward twenty-four hours and fancy our interview taking place yesterday, we shall have quite a different picture. We shall find the patient in bed with his room darkened and the door carefully closed. Although wide awake he takes no notice of our approach. His countenance expresses morose gloom, and at times a suggestion of cynical resignation. To our inquiry if he has slept, he mutters in low monotone, "there's no more sleep for me in this world"; and to our further question if he desires anything, he rejoins shortly, "to be left alone,—to lie here undisturbed for countless centuries." He is evidently in no humor for conversation and if we persist in the effort to engage him, he impatiently turns his back to us, closes his eyes and remains silent, 1907]

or brusquely asks us to withdraw. His customary courtesy and politeness are hardly in evidence. With perfect insight he declares that his condition is hopeless, that no one can do anything for him, that his life has become a useless burden, a treadmill existence which seems never ending, that it is folly and weariness to spend words in the matter.

In the present phase of the disease, Mr. B.'s life passes in an alternation of these two states,-affability, deferential politeness, circumstantial communicativeness, on the one hand; taciturnity, seclusiveness, irritable moroseness, on the other. We are thus accustomed to speak of his good and bad days, which sometimes follow each other for short periods in alternating sequence. Again, several approximately good days may occur together, or, not infrequently, a week or more may pass during which he is fairly inaccessible. It is perhaps most common of all, however, for a good morning to be succeeded by a bad afternoon. On such days the patient has used up his powers of resistance by noon, often neglects his mid-day meal or retires to bed at once thereafter. avoiding supper and keeping his room till the following day. This recurring exhaustion of the power of common adaptation and reaction, when the day is but half done, is to be noted as an important and characteristic symptom. Two other circumstances may also be mentioned in connection with these alternating states, namely, that the transition is often surprisingly abrupt, and secondly, that the patient's mental states stand in no demonstrable relationship to barometric conditions, as is frequently observed, particularly in certain allied states to be referred to later.

The successive occurrence of short depressive phases with intervals of almost normal euphoria might possibly suggest the alternations of *Cyclothemia*. With the bare fact, however, that such successively contrasting phases are present, the similarity ends. Until his fifty-eighth year Mr. B. was mentally sound, his character has been substantial and independent, his affect stable, his temperament even. Moreover on his bad days his insight is as a rule quite as keen as during his more comfortable periods. There is no conspicuous objective inhibition, and fundamentally the same ideational groundwork obtains throughout. Thus, on the good days there is no pathologic euphoria, no increased divertibility of attention, no ideational flow beyond such as corresponds with the mild loquaciousness of early senescence.

Having viewed thus summarily the personality of Mr. B. as we find him to-day, we must again have recourse to his history for a very important and striking symptom, the one indeed which has initiated and punctuated his illness. He speaks of having suffered from *aphasia*, and in explanation describes a series of characteristic *seizures* which have occurred at irregular intervals during the past four years.

Ths first of these took place in November, 1902, the patient being then $57\frac{1}{2}$ years old. According to his own account he arose one morning, apparently in his usual health, dressed himself and was about to leave his room when suddenly he experienced a sensation of faintness and giddiness. He felt his consciousness waning but is not certain whether it was entirely abolished. He only knows that he lay down for a short time on a sofa, after which he was able to make his way to an adjoining room and report his need for medical attention. During the morning he states that the sensation of fading consciousness several times recurred; there was no pain and no paralysis. The patient was nevertheless found to be in a condition of nervous collapse, tremulousness, uncertainty and difficulty in walking, general muscular weakness. He was taken to a hospital where he was kept in bed for several weeks, after which he took a month's holiday at Atlantic City, returning then (early February, 1903) to resume his judicial duties. During the month, however, he was a second time cut down, losing consciousness and falling on the street. Premonitory symptoms had been present in the form of mild sensations of dizziness and faintness which he had disregarded or was endeavoring rather to "walk off." After a few weeks in a hospital again, Mr. B. once more made the attempt to take up his profession, but other attacks of a similar nature supervened and he was finally sent for a vacation to relatives in the South. He recollects that for a short time preceding as well as following these seizures he often experienced difficulty in finding the right word to express his meaning, and that one of his physicians explained to him that he was suffering from attacks of aphasia. Slight evidences of this trouble we have seen during the interview today.

After a few months absence, the patient returned to Baltimore

and for the third time set himself to take up the broken thread of his professional life. Another seizure, coming during the following winter (1903-04), placed the final veto to his activities, and since this time, January, 1904, he has had the painful consciousness of being a mental invalid.

He has now been under observation three years, having been admitted to the hospital in February, 1904. Between this date and December, 1905, five seizures of approximately uniform quality have occurred at intervals varying greatly in length, the total number from the beginning in November, 1902, being about 12, making an average of about four a year during the first three years' illness.

These attacks happen usually in the early forenoon and cast their shadows two or three hours before. It is observed that the patient on rising in the morning is a little more uncertain than usual in his movements, his fingers have an unwonted tremulousness, in dressing himself he is clumsy and careless, and he may find actual difficulty in grasping and using some toilet or table utensil. His speech is also affected, articulation becomes somewhat jerky and a more or less pronounced motor aphasia manifests itself. In his handwriting a degree of incoordination and a conspicuous coarse tremor are displayed. At such a time the patient may be uncommonly restless and apprehensive and objects to going to bed or lying down and vigorously opposes any suggestion to that effect. He seems to be struggling with vague consciousness against what is to come, he tries to narrate a story in which he loses words, repeats phrases, and soon becomes hopelessly lost.

At length the crisis comes and he falls to the floor unconscious. There may be sphincter incompetence, the face is flushed, becoming perhaps cyanotic, breathing stertorous, skin bathed in perspiration. Exaggerated muscular hypertonus is the rule, twitching of muscle groups may or may not be present. Pulse and blood-pressure are elevated, the latter having been once recorded at 195.

The period of entire oblivion lasts only a few moments. Soon the patient begins to turn and writhe in bed where he has been placed, struggles blindly against restraint, and if left to himself clambers out of bed and staggers about the room with bending knees, frequently stumbling against the wall head-foremost. By

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little and little his movements seem to take purpose and he gropes with uncertain motion for the door, which he tries to open. Failing in this he again curves about the room, runs against the bed and falls across it, but straightway struggles to his feet, and eventually reaching the door again makes the attempt to escape.

At the same time he begins to articulate thickly, scarcely intelligible syllables, among which a word or phrase is now and then successfully brought out. It is soon apparent that an exaggerated sensori-motor aphasia and paraphasia are present, and may persist for several hours, clearing up very gradually. At first the patient . is completely inaccessible and seems practically unconscious of his surroundings, these symptoms likewise disappearing by almost imperceptible gradations.

The following is a sample of the post-critical paraphasia, taken just after articulation had become intelligible and while the patient was wandering helplessly about the room:

Oh my God!----please mi-el---please me please----please you please me please-(reaching the door)----please open me----please me open -please you pread me----please you pill me----Oh the weakness again. ----Oh gentlemen plead you please me----please you presently-----plead you prejudice----please you give me----Oh won't you please me---please you damage me----Oh please you let me damage you-----Mr. xxx (miscalling a nurse) please you damage you please---Oh if you just let me damage you please-I won't damage anything else---please you damage you let you plead-please let me please you-let me hatchet please you----plead let me hatch you please----please let me plead for you----I beg you to let me plead you----Oh my God Almighty----please you 'cuse me-please shave you please me-please you let me clead you plead you-plead you please me-will you plead me nowgood bye won't you----let me beg you----please you----you know how to plead me please----don't saw me----don't antidote me----are you acquainted with the pleading that plead----won't you plead me already---oh the bowels----the terribleness----are you some individual-----do you live---won't you serve you---serve me--'cieve me deed you please ----let me deed you please you plead-----let me go independent of you -----deed you please deed me----Oh my God don't deed me Oh please deed me-----oh beg my pardon----For God's sake-----oh God me deed me please----ace of spades----let me save you (noting hands and face wet with perspiration) see how wet you 'tis now---please me wet yet----let me wet you please you----Mr. plead deed me---plead you deal----won't you let me go to the deed signs---please let me sheeve with you----won't you let me bleed with you—ace of spots—you know what it is—let me plead you with that—plead let me go—ain't this a good thing—

take me abroad—(feeling his melted shirt) all these shirts—melted shirts feel my pains dirty—oh my God—age of plead with you—oh yes—you don't by shade me death—object of take me—ace of spades —You can get me loose bands—is that what you take grounds against you? Is that to plead—your stuff to drink—you want to dock me plead rations in summer it'll go against me—please you judge and paste.

Such in general is the nature of a typical severe seizure. Minor variations, of course, occur, particularly in intensity and duration of symptoms. Occasionally the prodromal events have been very inconsiderable, consisting simply in a somewhat increased difficulty which the patient encounters in finding the right word to express his thought. He then suddenly and without warning falls unconscious, perhaps while reading the newspaper or during a game of cards. Consciousness gradually returns within a few moments and at the end of an hour or two he is as good as before the attack. Again, fairly marked clonic and tonic phases may be present, succeeded by a stuporous or somnolent stage of one or more hours' duration, the series of events simulating more or less closely an epileptic seizure. It has also happened exceptionally that the disturbance of motor speech has reached a very exaggerated degree preceding the attack, to be hardly noticeable with the return of consciousness.

We have spoken of the remarkable alterations in the affect state, and while these have been present throughout Mr. B.'s illness, the general conditon of the affect has changed somewhat with the duration of the disease. We have noted that at present during the depressive periods as well as in the freer intervals, his insight is good and autognosis and autoprognosis correspond approximately with the actual situation and outlook. In the earlier part of his illness, however, the depressive phases were much more intense and protracted than they now are, insight was only partial, the condition of his worldly affairs as well as the state of his mental and physical health were represented subjectively in the darkest colors, and depressive delusions referring to past, present and future, especially the latter, were rampant. There would thus result a condition of apprehensive panic in which the patient was only partially accessible and which might superficially suggest the states of fearful agitation met with in true melancholia. But the retroactive and alloistic autoaccusation of the melancholiac, as well as his con-

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stantly perverted insight and intense and unvarying subjective certainty, are not in evidence in the case of Mr. B. His phases of despairing agitation on the contrary, are always the direct outgrowth of a just appreciation of his condition and his disease, insight becoming temporarily warped only with the acme of the depressive affect.

He is at the period of life when wife and children are no longer considered luxuries and he realises gloomily his aloneness in the world. Further, the fact that he is not financially independent contributes not a little to the burden he consciously labors under; and finally, the sensibility that his disease is incurable, that he will no more be able to earn his own bread, having been so short time ago a much valued official in the city government, that now his social and official credit has been reduced to nil, that his friends and former associates look upon him as a man whose mental health is broken,—the subjective appreciation of all these facts has furnished a sufficient basis for the depressive phenomena present throughout in periodic exaggeration, especially earlier in the illness.

The affect crises have therefore been expressed chiefly in *delu*sions of poverty, which as we have seen have their basis in fact. When the tide of depression is at the full the patient has often manifested extreme restlessness, pacing up and down his room, twisting his hands, declaring himself to be a pauper, "without a change of clothes in the world." If then his attention was called to his belongings in his trunk or wardrobe he would handle them nervously for a moment or two, denying positively, however, that they were his own. He would declare that he must be turned out on the street to beg his bread or to die, that he had no home or shelter and nowhere to lay his head. Often enough he would entirely disrobe, regardless of time or place, affirming excitedly that the garments he had been wearing were not his and that he must be sent to wander in the primeval forest.

He has freely discussed suicide, begging to know how much longer this existence of torture must continue and entreating us to give him something to end his wretched life. When brought to the hospital it was with difficulty that he was restrained from precipitating himself through the car window.

The acute disease-insight in the case of Mr B. has been empha-

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sised as an important and distinguishing character. We may, therefore, accept his account of certain subjective phenomena which were present during the initial period of his illness before mental invalidism was complete, but to which at the time he did not attach adequate significance. In his own words, he noted "impaired memory," "lack of grasp," "difficulty of concentration." Protracted mental application was found to require unusual effort, this being noticed at first only occasionally, but gradually more constantly; initiative suffered, new work was hard to begin, activity tended to subside progressively into routine; names and dates assumed at times a startling and annoying evasiveness; ordinary mental labor was followed by unwonted fatigue, and the desire for rest became more and more insistent; there developed a varying degree of restless irritability and mild hypochondriac depression. The patient was aware, further, that his vision was failing, that print finer than long primer, had become for him more or less blurred and illegible.

All of these premonitory symptoms were of course highly characteristic, and considered in association with the seizures furnished a clear indication of the nature of the process. The seizures, however, remain the most striking and characteristic feature, and indeed of all the varied manifestations of nervous and mental disease, the one which impresses itself most deeply in the mind of the observer is the sudden, even lightning-like stroke in which consciousness is seriously involved or abolished, and, at the same time occur diverse irritative motor phenomena, often of an exaggerated character.

Let us therefore inquire for a moment what are the chief conditions to be borne in mind in cases with "seizures" expressed in profound modification of consciousness and of motor innervation?

In the first place *epilepsy*, a disease in which the critical attacks or equivalents may assume the greatest variety of forms. In our patient the periods of brief unconsciousness with muscular relaxation might perhaps be mistaken for a manifestation of *petit mal*, while the more grievous attacks with violent motor symptoms would similarly arouse suspicion of *grand mal*. The constant presence, however, of a conspicuous pre-and post-critical aphasia or paraphasia would be likely to put one on the right track. Moreover the epileptic spasm is regularly over in a few moments, while

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in Mr. B.'s case the motor phenomena neither pass through the orderly sequence of the typical epileptic seizure, nor are they so narrowly circumscribed in time, clonic movements often occurring irregularly for a half hour or an hour. Thirdly, the post critical stupor and somnolence or the epileptic are much less marked in the present instance. Commonly enough indeed an exaggerated degree of motor restlessness with violent resistiveness develops within a few moments after the onset of the attack, to subside only gradually with the corresponding clearing of consciousness. If there should still remain a suspicion of epilepsy it is minimised when we recollect that epilepsy is essentially a disease of youth, probably three-fourths at least of the cases developing before the twentieth year, and that of the instances of so-called late epilepsy certainly the greater number, if not all, are due to or associated with cardiovascular lesions analogous to those in the present case. They are not therefore examples of true epilepsy and it is unfortunate that the term should be applied to them. Finally, Mr. B. shows none of the traits of the epileptic character. The stiffened, sluggish, circumscribed mentality, the egocentric narrowing of consciousness, the tendency to religiosity and other moral defects, are all absent.

Having ruled out epilepsy, we must next think of paresis, another disease in which a wide diversity of irritative and paralytic motor crises is observed. We know that occasionally this malady makes the first spectacular announcement of its presence in a seizure of an epileptiform or apoplectiform type which may pass without residual motor symptoms or at most a transitory onesided weakness, and after which the patient may for months be able to continue his usual mode of life. Here again as in the case of epilepsy the question of age is all important. If the latter is a disease of youth, paresis is preeminently the disease of the prime of life, probably four-fifths of the cases occurring before the fiftieth year and the great majority between the ages of thirty-five and forty-five. With a patient therefore who has reached Mr. B.'s years before the crisis comes, the probabilities are against paresis. Paretic seizures which closely simulate the apoplectic stroke are rare, while those of an epileptiform character are more common, especially the Jacksonian type. The duration of the attack is, however, often the most striking feature in such cases, convulsive

seizures involving various muscle groups, recurring almost without interruption for hours or even days. Crises of this sort our patient has never had, and further, his retained pupillary reflexes and the absence of the characteristic speech disturbance of the paretic are of diagnostic moment. His disease has now lasted over four years, and has been marked by numerous severe seizures, and we find him nevertheless still a man of judgment, able during his better periods to discuss the affairs of the day, or carry on a line of argument, drawing upon a responsive memory for illustration, and quite capable at such times of sitting down with ladies or gentlemen for a social chat without breach of decorum or failure to hold his own. In other words, while the subjective symptoms and crises have been severe, the course of the disease has not been rapidly progressive, and no considerable degree of mental weakness has been reached as would almost certainly have been the case in paresis of like duration and number of seizures. Finally is to be emphasised an essential difference in the onset of the two maladies, in the majority of cases. Characteristically an early paresis is an objective disease, an early central arterio-sclerosis is a subjective one. Accordingly the first symptoms of the paretic, slight alterations in habits, disposition and character, are commonly noted by his family and friends, while in the case of the involutional arterio-sclerotic the initial symptoms may long be confined within the circle of the patient's own consciousness, resulting in a growing dysphoria which is characteristic. The difference, in short, is one of insight which in the developing arterio-sclerosis is preserved or aggravated, and in the case of paresis more often dulled or lost.

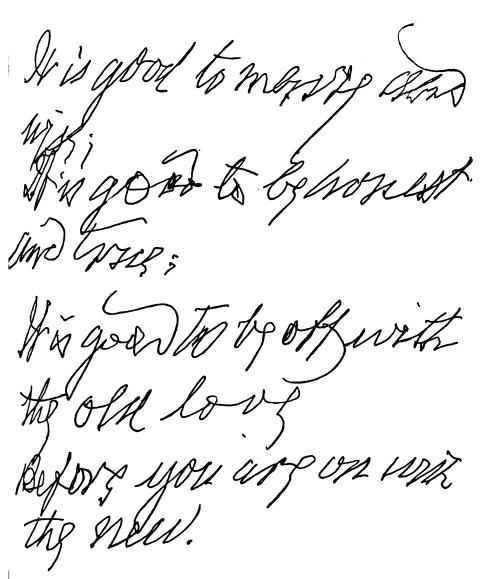
Having satisfied ourselves that seizures of such nature as those of Mr. B. are neither epileptic nor paretic in origin, the question of *alcoholism* arises. Here we have in the first place the toxic convulsive seizures sometimes observed in direct association with alcoholic excesses, especially as a manifestation of delirium tremens; but in such instances the fumes in the breath, the peculiar hallucinosis, the dreamlike disorientation and sensory misinterpretation noted before or after the attack, together with other immediate and palpable evidences of the drug indicate sufficiently its etiologic significance. In chronic alcoholics there is not uncommonly an association with epilepsy which requires no special mention. Further, there develops occasionally upon the basis of chronic alcoholism a series of pseudo-epileptic seizures. In such cases the history reveals no epilepsy earlier in life and their differentiation is usually not difficult. The patients present the typical alcoholic demeanor and character with its ethical and emotional defects. Moreover, neuritic symptoms of one form or another are seldom entirely lacking; and finally after a period of complete abstinence, the seizures cease to recur. We do not hesitate, therefore to rule out the possibility of alcoholic epilepsy or pseudoepilepsy in the case of Mr. B., both from the standpoint of symptomatology and from the history. His abstemious habits have been mentioned.

Insular sclerosis is accompanied in some instances by epileptoid or apoplectiform attacks, but insular sclerosis like epilepsy is a disease of youth, not of old age. Moreover, in developed cases, the spastic-paretic gait, the scanning speech, nystagmus, and intention tremor, serve usually to clear up the diagnosis.

The *psychoneuroses*, hysteria and psychasthenia are notorious for their parti-colored symptomatology, in which may occur various convulsive and pseudoparalytic phenomena. There is manifestly no indication, however, for considering these conditions in connection with out patient, and with their mention we have fairly exhausted the differential possibilities.

There is but one diagnosis possible, namely, diffuse cerebral arterio-sclerosis, and this diagnosis is borne out by the physical signs. The peripheral arteries are everywhere markedly thickened, although this fact alone is by no means an indication that the cerebral vessels are seriously damaged. We find also a somewhat hypertrophied left ventricle, the apex beat lying without the mamillary line, a weak first sound accompanied by an apical murmur, with a considerably exaggerated aortic second, suggestive of a moderate fibrous myocarditis with dilatation. Arterial tension has been constantly elevated averaging perhaps 150, and there has been an associated polyuria with low specific gravity and traces of albumin, indicative of a degree of diffuse nephritis. The polyuria varied from day to day in the characteristic manner, and in a series of observations made some time ago the amounts on five successive days were respectively 2250, 1750, 2300, 1500, 2350 Temperature has usually been slightly subnormal, particularly cc.

[July



[This facsimile is five-sixths of the size of the original.]

It is good to [be] merry and wise; It is good to be honest and true; It is good to be off with the old love Before you are on with the new. in the morning, varying commonly between 97 degrees and 98.5 degrees; pulse averaging from 60 to 70.

On the neurologic side several features are to be noted. The tendon reflexes are abolished, the knee-jerks not being elicited on reinforcement. Cutaneous reflexes are sluggish and inconstant. The character of speech and hand writing has been referred to. We observe to-day only the slightest evidence of uncertain tremulous articulation, without, however, any of the catching, slurring, or drawling of paresis. The writing likewise, as you see by this example, shows a coarse and varying irregularity of movement which increases usually under observation, but without the constant fine tremulousness, the wavy, ragged strokes, the unfinished words and elisions of paresis. The general form and order of the words are preserved, and the alignment is good. The omission in the first line the patient himself noticed, and comments also upon the unsteadiness of his hand. In the first two lines, written under observation, the execution is noticeably poorer than in the last two when he did not feel that he was being watched. The pupils are usually contracted, often slightly unequal, and the light reaction has been present throughout, although in considerably varying intensity at different times. With the continuation of the disease there has been a tendency to increasing sluggishness of pupillary reaction with diminished excursion. There is no trace of hemiplegia.

To summarise, we have a man at the beginning of the seventh decade who four or five years ago began to notice a slightly impaired grasp of his professional affairs, an increasing difficulty of concentrated and prolonged mental effort, an undue fatigue accompanying either mental or physical labor, and an annoying forgetfulness for names and dates. These symptoms are the danger signals and may be present for years without disastrous crises, admonishing to a strictly ordered life of modified activity. In our patient on the other hand a seizure was among the earliest manifestations and practically marked the onset of the psychosis. These seizures have recurred at irregular intervals, but have tended to decrease in frequency, possibly as a result of the orderly sequence of hospital life. It is now (March, 1907) fifteen months since the last one, and the patient's condition on the whole has become somewhat more comfortable. His manner of life is fairly

circumscribed and he is very systematic in his habits, rising and retiring early, engaging sometimes in the simpler recreations and forms of exercise, and spending much time each day with the newspaper. In this way he keeps himself au courant with the world's doings, but his memory for the events of the day nevertheless often fails him. His initiative is small, the desire for activity largely in abevance and an increased tendency to somnolence during the day has manifested itself. Three further characteristics of the disease are especially to be mentioned; (a) the preserved insight which enables the patient to estimate his symptoms with approximate accuracy and which results sometimes in a degree of philosophic resignation, at others in a somewhat cynical irritability. He realises that his memory for recent events is defective but shows no inclination to fill up the gaps with apocryphal material; (b) the marked and often rapid variations in the quality and intensity of the symptoms, including both the senses of general subjective fitness and the state of the affect; (c) the nonprogressive course, as compared for example with paresis, the patient being now in the fifth year of the active manifestations of his disease. It is patent from our interview that there is no considerable mental deterioration : Mr. B. has not ceased to be a social being among his fellows; the superior psychic faculties (critical judgment, artistic sensibility, ethical discrimination) are still operative; and one may say that in general mentality he is practically as good as he was two years ago.

As you know, cardiovascular diseases have a peculiar tendency to recur in several members of the same family and to pass from generation to generation. In this respect, too, the present case is typical, at least five members of the immediate family (father, brother, maternal uncle, maternal aunt, maternal grandfather) having died of apoplexy. In our patient a grave apoplexy or coronary lesion is of course to be feared, but with a carefully ordered hospital régime, unexposed to stress, drug intoxications, or the shocks and exigencies of independent existence, he may for several years escape these accidents, or indeed succumb eventually to other incidents of old age.¹

¹ April, 1907, occurred an epileptiform attack without paralysis after a free interval of sixteen months. On the following day the patient was as well as before the seizure.

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Proceedings of Societies.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.

PROCEEDINGS OF THE SIXTY-THIRD ANNUAL MEETING.

WASHINGTON, D. C., MAY 7, 1907.—FIRST SESSION.

The Association was called to order by the President, Dr. Charles G. Hill, of Baltimore, Md., at the New Willard Hotel, at 10.30 a. m., who said:

"It gives me great pleasure to call to order the Sixty-third Annual Convention of the American Medico-Psychological Association.

"Dr William A. White, the Chairman of the Committee of Arrangements, will introduce the gentlemen who are to welcome us to this city."

Dr. WHITE.—We have with us to-day a gentleman who, at the last Washington meeting of this Association, was good enough to address us and we became so well acquainted with him at that time, I thought in my capacity as Chairman of the Committee of Arrangements that it would be advantageous to continue our acquaintance with him. I think it is well to listen to the gentleman who has charge of the public welfare in the way of public health. I have the honor and the extreme pleasure of introducing to you Surgeon-General Walter Wyman, of the Public and Marine Hospital Service, of Washington. (Applause.)

Dr. Wyman said:

Mr. Chairman, Ladies and Gentlemen of the American Medico-Psychological Association:

I have prepared no formal address in trying to greet you this morning. In fact, I did not think formality was what was required. As Dr. White has so pleasantly said, I feel already acquainted with this Association, having some four years ago, I believe it was, at the annual meeting here in Washington, had the pleasure of addressing a few words to you, just as I am now doing. Now I wish to say that, subsequently to that time, I have occasionally from time to time met various members of this Association, and it has been a great pleasure to feel that they remembered me and knew me, so that I feel more or less at home with this Association and its members.

Speaking of that time three or four years ago, I will be pardoned I am sure, if I refer to the gentleman who introduced me at that time, Dr. A. B. Richardson. The years that have passed since his death have not diminished the respect and love that all who knew him felt for him. He was a member of this Association, and I am sure I am appealing to the sentiments of all here when I speak of him in these terms of affection. It seemed to me he represented the highest type of the physician and the highest type of the specialist. His methods of life, his career and his memory are all an honor, particularly to this branch of the medical profession.

As I was seated a few moments ago, I met the distinguished Secretary of this Congress of American Physicians and Surgeons, Dr. W. H. Carmalt, and he said, "You seem to be everywhere. What are you doing here?" "Well," I replied, "I have some acquaintance with this Association and I have been asked to welcome them on the part of the Public Health and Marine Hospital Service." His remark, however, brought up the idea of the connection between the Public Health and Marine Hospital Service and this Association. If I had had time, I would have shown him some good reasons why I might be here.

Of course the Public Health and Marine Hospital Service is devoted particularly to sanitation and hygiene and the medical examination of immigrants. Now there is a great connection, as I believe, between sanitation and even the matters which come before the specialists of this Association. We who are interested in the great sanitary movement which is going on and which is growing rapidly, feel that sanitation, the elimination of the slums, providing good food, water, air and sunshine, form together perhaps the most important means for the greatest good to the greatest number; that it is, in a measure, a kind of cure all for all the evils of the body politic, including individual diseases. I believe it would be a very interesting matter to study what would be the effect, if we had perfect sanitation and perfect hygiene throughout the whole United States, upon insanity and mental disorders. I feel sure that perfect sanitation and perfect hygiene would add very greatly to the amelioration of those conditions which you are called upon to treat.

Another very important part of the public health service is the detection of insane aliens. Thousands of them land at New York, Boston, Baltimore, Philadelphia, and in fact, all the ports of entry around the coast. It is our duty to detect these aliens who are insane, as well as afflicted with other diseases, and I wish to say right here that we have been aided in this work by a prominent member of your Association, Dr. White, who has kindly consented that the gentlemen on our corps who are appointed in the general service and are not specialists, and yet must have some knowledge of all specialties, may study in his institution. He

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has permitted us to introduce our younger officers into his institution where they may become competent to detect insane aliens when they arrive. We have effected an exchange with him by which his own assistants may serve us temporarily at Ellis Island. You see the relation between the Public Health and Marine Hospital Service and this Association is not so far-fetched, and I am only sorry that Dr. Carmalt is not here to hear this explanation.

It is not expected that this address of welcome should be a long discourse. It was simply as a resident of Washington that I was to welcome you here to the enjoyment of the Capitol City. In doing that, you are being merely welcomed to what is really your own. I think that if there is anything that impresses the stranger in Washington, it is the fact that they are made to feel at home. Why should they not feel at home? It is their own city. Everybody, I think, who comes, has a feeling that it is their city—that it truly belongs to them because it belongs to the whole country.

I hope that before the day is over the sun will shine again and that before you go, we may be able to give you an idea of our Washington weather, which in May is so delightful. Having looked over the programme, I know you will have a very profitable meeting, and wishing you, as well, a very pleasant social time, I again bid you welcome. (Applause.)

DR. WHITE.—Perhaps there is no body of scientific and professional men who fraternize so well as the medical men. Other scientific and professional people have their organizations, it is true, but hardly to the extent that the medical men have. It is said, for instance, of the lawyers, that they have their bar associations, the only function of which is to meet, on the death of a member, and pass resolutions. This does not aply to the medical profession. and particularly here in Washington, the medical atmosphere is alive with interest in medical societies and organizations, and the medical men in Washington are always glad to welcome medical men from other cities. We have with us this morning the President of the representative medical society of this city, the Medical Society of the District of Columbia. I take great pleasure in introducing to you Dr. D. K. Shute.

Dr. Shute said:

Mr. President, Ladies and Gentlemen of the American Medico-Psychological Association:

I have been lecturing to medical students for eighteen years and have always done so with comparative pleasure and comfort, but I assure you there are few occasions upon which I have had to make an address of welcome, and I have always done so with mingled feelings of pleasure

and trepidation. Of course it is a pleasure to welcome to Washington a body of representative medical men and women, but it is very difficult to make a speech upon a general occasion of this character.

I certainly hope that while you are in Washington, you will have a most pleasant and delightful time, and I sincerely hope that the desire expressed by Surgeon-General Wyman that you will have a little sunshine and see Washington at its best at this season will be realized.

I trust that your sessions devoted to the study and discussion of your specialty will be profitable and pleasant. My own specialty is ophthalmology, which indeed has some connection to your special branch of the profession. In my capacity as visiting physician to one of our hospitals, it is my fortune to be brought in contact with some fifteen or twenty insane patients in the course of a year, and I therefore think that I have a somewhat amateur knowledge of insanity, and in consequence feel quite at home among you.

It seems to me one of the most interesting facts of medicine, especially of this branch of medicine, upon which American physicians can congratulate themselves, that it was in America that the old and cruel and barbarous superstition so long held, that a demon possessed the insame individual and that he should be a social outcast was first overthrown. It seems to me a great honor that an American should have started reform in this branch of medicine, as Benjamin Rush did in Philadelphia, about one hundred years ago. It was a very difficult thing for Europe to get away from the atrocities which then prevailed and to get a public spirit aroused before undertaking the task. It will do no harm to recall the fact that an American, Benjamin Rush, started this reform in treating the insane, not as demon-possessed individuals who should be chained and locked in cells, but people, simply, who had a disease of the brain.

I think this great reform in recognizing that insanity is largely, if not entirely, a matter of disease of the brain, had a great deal to do with transforming the metaphysical speculations of the middle ages into the modern experimental psychology. It seems to me one of the greatest reforms in medicine—putting the study of the human mind upon a scientific basis, realizing that no demon possessed the insane, and that in treating the insane we are simply dealing with a scientific problem of one part of the body—the human brain.

I am sorry that Congressman Barchfeld is not here because I had deluded myself with the idea that we would have an attractive address from him, and that the part I should play, in consequence, would be a very brief and formal one.

In conclusion, ladies and gentlemen, in my capacity as president of the oldest medical society of the District of Columbia, I extend a most cordial greeting to your society, in which greeting the medical profession of the City of Washington joins me, to this representative gathering. I sincerely wish for you one and all a most interesting and delightful time, as well as profitable gathering of this Association. (Applause.)

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THE PRESIDENT.—Gentlemen of the Association: While it is quite true that we feel a certain claim upon the National Capitol the institution belongs to us all—we feel the same claim that we do in our State Hospitals, penitentiaries, and other public institutions, but when we have visited those places, either from desire or from necessity, and enter into those buildings, it always is very agreeable and delightful to have the "glad hand" extended to us by those who are in charge of them.

We appreciate these kind greetings from the gentlemen representing the individuals of the city and the professional character of the city, and we appreciate very much the fact that our specialty is understood as interlinking, as it were, with all institutions for the welfare of humanity and the elevation of poor, weak, fallen nature. We appreciate very much these kind words and would ask that these gentlemen and the profession generally of the city come and sit with us whenever they have opportunity.

Before beginning the regular programme, Dr. White has some announcements to make.

DR. WHITE.—I want to call the attention of the Association to the fact that the Congress desires each member to register as early as possible at the Arlington Hotel. You will note also by the programme that there is a reception for the Congress at the White House at 2.30 o'clock this afternoon. Tickets may be had at the desk of the Secretary of the Congress at the Arlington.

The Association will leave Washington, as you know, for the Jamestown Exposition on the Norfolk steamboat that leaves Washington Thursday evening at half past six o'clock. I have made reservations for all those who made reservations by postal card.

Arrangements have been made at the Government Hospital for the Insane to accommodate you to-morrow afternoon, and I should be very glad to have as many members of the Association as possible, with their wives and those accompanying them, visit the hospital. Those of you who intend to go, will please when you pass out at the end of the session, just leave your name or card with the Secretary, so that I may have some idea of how many to expect.

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THE PRESIDENT.—Gentlemen, please bear in mind that those who can accept Dr. White's invitation will please leave their names, so that we may know how many to expect.

The next order of business is the report of the Council, which will be read by the Secretary.

WASHINGTON, D. C., MAY 7, 1907.

The Council begs leave to submit the following report to the Association:

We have received, and transmit herewith, the report of the Secretary regarding the present membership of the Association.

We have also received the report of the Treasurer, which will be read in the proper order.

The Council recommends the following named physicians for active membership in the Association:

Dr. Florence Hale Abbot, Taunton, Mass.; Dr. Chas. W. Burr, Philadelphia, Pa.; Dr. George F. M. Bond, Yonkers, N. Y.; Dr. Lloyd Vernon Briggs, Boston, Mass.; Dr. Earl H. Campbell, Newberry, Mich.; Dr. L. H. Callaway, Nevada, Mo.; Dr. Charles Edward Doherty, New Westminster, B. C., Canada; Dr. W. W. Faison, Goldsboro, N. C.; Dr. Robert L. Gillespie, Portland, Ore.; Dr. Charles E. Hickey, Cobourg, Ont., Can.; Dr. William F. Kuhn, Farmington, Mo.; Dr. Oscar R. Long, Ionia, Mich.; Dr. Daniel T. Millspaugh, Paterson, N. J.; Dr. Donald Campbell Meyers, Deer Park, Toronto, Ont., Canada; Dr. J. Nicholas Mitchell, Philadelphia, Pa.; Dr. Eben C. Norton, Norwood, Mass.; Dr. William W. Richardson, Norristown, Pa.; Dr. Edward Ryan, Kingston, Ont., Canada; Dr. Frederick D. Ruland, Westport, Conn.; Dr. H. Louis Stick, Worcester, Mass.; Dr. Elmer Ernest Southard, Hathorne, Mass.; Dr. William E. Sylvester, New York, N. Y.; Dr. Malcolm H. Yoaman, Lakeland, Ky.; Dr. Philip H. S. Vaughan, Bangor, Maine.

The Council recommends the following named physicians for associate membership in the Association:

Dr. Chas. H. Clark, Cleveland, Ohio; Dr. Dana Fletcher Downing. West Newton, Mass.; Dr. E. Moore Fisher, Morris Plains, N. J.; Dr. John Gerald Fitzgerald, Toronto, Ont., Canada; Dr. Guy G. Fernald, Waverley, Mass.; Dr. Harry Reid Hummer, St. Elizabeth, D. C.; Dr. Gilbert V. Hamilton, Waverley, Mass.; Dr. Frederick Ernest Lawlor. Dartmouth, Nova Scotia; Dr. James Frederick Munson, Sonyea, N. Y.; Dr. Mitchell Charles Mackin, Clarinda, Iowa; Dr. Frederick H. Packard, Waverly, Mass.; Dr. Donald L. Ross, Sonyea, N. Y.; Dr. Jeanette Hurd Shorman, Norristown, Pa.; Dr. Robert Preston Winterode, Catonsville, Md.; Dr. Robert C. Woodman, Middletown, N. Y.

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The Council recommends the reinstatement, as an associate member, of J. M. Keniston, Middletown, Conn.

The Council has considered the following applications for active membership, and in accordance with the constitution, these will lie before the Council one year before final action is taken:

Dr. Oliver C. Brunk, Williamsburg, Va.; Dr. William B. Cornell, Baltimore, Md.; Dr. Edward A. Everett, Elmira, N. Y.; Dr. M. S. Gregory, New York, N. Y.; Dr. Wilfred W. Hawke, Philadelphia, Pa.; Dr. Smith Ely Jelliffe, New York, N. Y.; Dr. William C. Krauss, Buffalo, N. Y.; Dr. Geo. W. King, Jersey City, N. J.; Dr. Chas. H. Solier, Evanston, Wyoming; Dr. Frank T. Seybert, Council Bluffs, Iowa.

The Council recommends the election of Dr. Henry M. Hurd as delegate from this Association to the British Medico-Psychological Association for 1907.

The Council recommends the election of Dr. Henry M. Hurd and Dr. William A. White as delegates from this Association to the International Congress of Neurology and Psychiatry, to meet in Amsterdam, Holland, September 2 to 7, 1907.

[•] The Council transmits herewith a letter from Dr. C. Hubert Bond, Honorary General Secretary of the British Medico-Psychological Association, to the late Dr. A. E. Macdonald.

MEDICO-PSYCHOLOGICAL ASSOCIATION.

EWELL COLONY, EPSOM, Dec. 9, 1906.

DR. A. E. MACDONALD, 431 Riverside Avenue, New York.

Dear Dr. Macdonald.—With reference to the proposal that there should be a joint meeting of the American and British Medico-Psychological Associations, the British Committee appointed to consider this has met and has reported to the Council of our Association.

At the recent meeting of the latter I was instructed to write and ask you to be good enough to convey to the members of the American Association a most cordial invitation to attend the next meeting of the British Medico-Psychological Association which will be held in London on the 25th of July next year, and succeeding two days. (We understand that in the week following this one, the British Medical Association hold their annual meeting at Exeter in Devonshire.)

The President and Council of our Association will welcome the contribution of papers from their American confreres to the programme of the medical work of the annual meeting. They would like such of your members as propose to come over to understand that accommodation will be offered them during our annual meeting by such of our members as live in or near London.

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I am also directed to add that, while the Council feels it is not possible to pledge the action of future Councils and members at distant dates, it may be taken as certain that members of our Association would gladly avail themselves, in a future year, of an opportunity to attend and take part in a meeting of the American Association.

I should mention that the idea of two joint *official* meetings—one over here and a return one in America—was duly considered. But partly because of the difficulty of pledging future Councils and partly because the necessary arrangements seemed cumbrous and inconvenient, it was felt that the idea could be as pleasantly and as fully carried out in the manner above suggested.

The President and Council would be much obliged if you will kindly let me know at an early a date as possible the number of your members that we may expect to have the pleasure of receiving at our annual meeting. I am,

Faithfully yours,

(Signed) C. HUBERT BOND,

Hon. General Secretary.

THE PRESIDENT.—If there is no objection, the reports of the Secretary and Treasurer will take their usual course and the report of the Council will be adopted. This carries with it the recommendation in regard to the appointment of delegates to the foreign associations engaged in our particular specialty.

I will say in this connection that these gentlemen have been taken as representative men of the Association and because it is convenient for them to attend the meetings. Should any other members of the Association be able to go, we would be very glad to appoint them also, and provide them with the credentials of the Association.

There being no objection, the various reports were declared accepted and adopted.

THE PRESIDENT.—The next is the report of the editors of the AMERICAN JOURNAL OF INSANITY.

DR. BRUSH.—Mr. President, I find I have with me the vouchers for the year, but unfortunately, I find I have left my report at the hotel. May I ask the indulgence of the Association until to-morrow morning?

THE PRESIDENT.—If there is no objection, Dr. Brush's request. will be granted and we will receive the report to-morrow morning. The next in order is the appointment of the Nominating Committee. The chair appoints as such committee the following members:

Dr. T. J. W. Burgess of Montreal, Canada; Dr. B. D. Evans of Morris Plains, N. J.; Dr. M. J. White, of Milwaukee, Wis.

Having now concluded the formal exercises, we will now declare a recess of fifteen minutes for the purpose of registration. The gentlemen will please register with the Secretary so that we may have a record of the names and addresses of those present.

The following members registered as being in attendance during the whole or part of the meeting:

Allen, H. D., M. D., Superintendent, Allen's Invalid Home, Milledgeville, Ga.

Anglin, J. V., M. D., Medical Superintendent, The Provincial Hospital, St. John, New Brunswick.

Ashley, Maurice C., M. D., Medical Superintendent, Middletown State Hospital, Middletown, N. Y.

Ballintine, Eveline P., M. D., Woman Assistant Physician, Rochester State Hospital, Rochester, N. Y.

Bancroft, Charles P., M. D., Medical Superintendent, New Hampshire State Hospital, Concord, N. H.

Beutler, W. F., M. D., Superintendent, Milwaukee Asylum for Chronic Insane, Wauwatosa, Wis.

Bradley, Isabel A., M. D., Assistant Physician, Columbus State Hospital, Columbus, Ohio.

Brown, W. Stuart, M. D., Physician in Charge, Sanford Hall, Flushing, New York City.

Brown, Sanger, M. D., Physician in Charge, Kenilworth Sanitarium, 100 State St., Chicago, Ill.

Brush, Edward N., Physician in Charge and Superintendent, Sheppard and Enoch Pratt Hospital, Towson, Md.

Buckley, Rev. James M., D. D., LL. D., Morristown, N. J.

Bullard, E. L., M. D., 402 Camp Building, Milwaukee, Wis.

Burgess, Thomas J. W., M. D., Medical Superintendent, Protestant Hospital for Insane, Montreal, Canada.

Burr, C. B., M. D., Medical Director, Oak Grove, Flint, Mich.

Busey, A. P., M. D., Medical Superintendent, Colorado State Insane Asylum Pueblo, Colo.

Caples, B. M., M. D., Superintendent, Waukesha Springs Sanitarium, Waukesha, Wis.

Chase, Robert H., M. D., Superintendent, Friends' Asylum, Franktord, Philadelphia, Pa.

Clark, J. C., M. D., Superintendent, Springfield State Hospital, Sykesville, Md.

Coe, Henry Waldo, M. D., Medical Director, Crystal Springs, Portland, Oregon. Crumbacker, W. P., M. D., Superintendent, Independence State Hospital, Independence, Iowa. Dill, D. M., M. D., Superintendent, Essex County Hospital for the Insane, Newark, N. J. Drewry, Wm. F., M. D., Superintendent, Central State Hospital, Petersburg, Va. Dewey, Richard, M. D., Medical Superintendent, Milwaukee Sanitarium, Wauwatosa, Wis. Dunton, Wm. Rush, Jr., M. D., Assistant Physician, Sheppard and Enoch Pratt Hospital, Towson, Md. Elliott, Robert M., M. D., Medical Superintendent, Willard State Hospital, Willard, N. Y. Evans, B. D., M. D., Medical Director, New Jersey State Hospital, Morris Plains, N. J. French, Edward, M. D., Superintendent, Medfield Insane Asylum, Harding, Mass. Gorst, Chas., M. D., Superintendent, Wisconsin State Hospital, Mendota, Wis. Gundry, Richard F., M. D., The Richard Gundry Home, Catonsville, Md. Gundry, Alfred T., M. D., Medical Director, Gundry Sanitarium, Catonsville, Md.

Guth, Morris S., M. D., Superintendent, State Hospital, Warren, Pa.

Hamilton, S. W., M. D., Assistant Physician, Manhattan State Hospital, Ward's Island, New York City.

Hancker, William H., M. D., Superintendent, Delaware State Hospital, Farnhurst, Del.

Harmon, F. W., M. D., Superintendent, Longview Hospital, Cincinnati, Ohio.

Harrington, Arthur H., M. D., 224 Second Avenue, New York City.

Harris, Isham G., Acting Superintendent, Hudson River State Hospital, Poughkeepsie, N. Y.

Hawke, W. W., M. D., Chief Resident Physician, Insane Department, Philadelphia Hospital, Philadelphia, Pa.

Hildreth, John L., 14 Garden St., Cambridge, Mass.

Hill, Charles G., M. D., Physician-in-Chief, Mt. Hope Retreat, Baltimore, Md.

Hills, F. L., M. D., Superintendent, State Sanitarium, Rutland, Mass.

Houston, John A., M. D., Superintendent, Northampton State Hospital, Northampton, Mass.

Hurd, Arthur W., M. D., Superintendent, Buffalo State Hospital, Buffalo, N. Y.

Hutchings, Richard H., M. D., Medical Superintendent, St. Lawrence State Hospital, Ogdensburg, N. Y.

Klopp, Henry I., M. D., Assistant Superintendent, Westboro Insane Hospital, Westboro, Mass.

Lawlor, F. E., M. D., Assistant Superintendent, Nova Scotia Hospital, Halifax, Nova Scotia, Canada.

Lawton, S. E., M. D., Superintendent, Brattleboro Retreat, Brattleboro, Vermont.

McDonald, Wm., M. D., Clinical Director, Butler Hospital, Providence, R. I.

Mabon, William, Superintendent and Medical Director, Manhattan State Hospital, Ward's Island, N. Y.

Mead, L. C., M. D., Medical Superintendent, South Dakota State Hospital, Yankton, South Dakota.

Mills, Chas. K., M. D., Professor of Neurology, University of Pennsylvania, 190 Chestnut St., Philadelphia.

Millspaugh, Daniel F., M. D., Riverlawn Sanitarium, Paterson, N. J.

Montgomery, W. H., M. D., Assistant Physician, Willard State Hospital, Willard, N. Y.

Mosher, J. M., M. D., Attending Specialist in Mental Disease, Albany Hospital, 170 Washington Avenue, Albany, N. Y.

Noble, Alfred I., M. D., Superintendent, Michigan Asylum for the Insane, Kalamazoo, Mich.

Noyes, William, M. D., Superintendent, Boston Insane Hospital, Mattapan, Mass.

O'Brien, John D., M. D., Pathologist and Assistant Physician, Massillon State Hospital, Massillon, Ohio.

Packard, F. H., M. D., Assistant Physician, McLean Hospital, Waverley, Mass.

Page, Chas. W., M. D., Physician and Superintendent, Danvers Insane Hospital, Hathorne, Mass.

Perry, Middleton Lee, M. D., Superintendent, State Hospital for Epileptics, Parsons, Kansas.

Pilgrim, Charles W., M. D., President of the State Commission in Lunacy of New York, Poughkeepsie, N. Y.

Potter, E. B., M. D., First Assistant Physician, Rochester State Hospital, Rochester, N. Y.

Powell, Theophilus O., M. D., Superintendent, Georgia State Sanitarium, Milledgeville, Ga.

Redwine, J. S., M. D., Medical Superintendent, Eastern Kentucky Asylum, Lexington, Ky.

Richardson, Wm. W., M. D., Chief Physician, Male Department, State Hospital for the Insane, Norristown, Pa.

Rowe, J. T. W., M. D., First Assistant Physician, Manhattan State Hospital, Ward's Island, N. Y.

Russell, William L., M. D., Medical Inspector for the State Commission in Lunacy, 112 Market St., Poughkeepsie, N. Y.

Scribner, Ernest V., M. D., Medical Superintendent, Worcester Insane Asylum, Worcester, Mass.

Shepard, Arthur F., M. D., Superintendent, Dayton State Hospital, Dayton, Ohio.

Shirres, David A., M. D., Consulting Neurologist to the Protestant Hospital for the Insane, 670 West Sherbrooke St., Montreal, Canada.

Smith, G. A., M. D., Superintendent, Central Islip State Hospital, Central Islip, L. I., N. Y.

Stockton, George, M. D., Superintendent State Hospital, Columbus, O. Tuttle, Geo. T., M. D., Medical Superintendent, McLean Hospital, Waverley, Mass.

Voldeng, M. N., M. D., Superintendent, Cherokee State Hospital, Cherokee, Iowa.

Wade, J. Percy, M. D., Medical Superintendent, Maryland Hospital for the Insane, Catonsville, Md.

Wagner, Chas. G., M. D., Medical Superintendent, Binghamton State Hospital, Binghamton, N. Y.

Wentworth, Lowell F., M. D., Deputy Executive Officer of the State Board of Insanity, 36 State House, Boston, Mass.

White, Wm. A., M. D., Superintendent, Government Hospital for the Insane, Washington, D. C.

Williams, B. A., M. D., Senior Resident Physician, Cincinnati Sanitarium, College Hill, Cincinnati, Ohio.

Woodman, Robert C., M. D., First Assistant Physician, Middletown State Hospital, Middletown, N. Y.

Work, Hubert, M. D., Medical Superintendent, Woodcroft Hospital for Mental Diseases, Pueblo, Col.

The following visitors and guests of the Association registered their names with the Secretary:

Anglin, Mrs. J. V., St. John, N. B. Canada.

Ashley, Mrs. M. C., Middletown, N. Y.

Ashley, Rhea E., Middletown, N. Y.

Ashley, Miss Reta L., Middletown, N. Y.

Atherton, Mr. H. H., Trustee, Danvers Insane Hospital, Lynn, Mass. Bancroft, Mrs. Charles P., Concord, N. H.

Beutler, Mrs. W. F., Asylum for Chronic Insane, Wauwatosa, Wis.

Briddle, T. C., M. D., Superintendent Topeka State Hospital, Topeka, Kan.

Brunk, O. C., M. D., Superintendent, Eastern State Hospital, Williamsburg, Va.

Bryce, Miss, Montreal, Canada.

Burgess, Miss, Montreal, Canada.

Burgess, Miss, Montreal, Canada.

Chapin, Charles W., M. D., Junior Physician, Manhattan State Hospital, Ward's Island, N. Y.

Conover, Allan D., M. D., Member Board of Control, State Charitable and Penal Institution, Madison, Wisconsin.

Crumbacker, Mrs. W. P., Independence, Iowa.

Crumbacker, J. B., Independence, Iowa.

De Jamette, J. S., M. D., Superintendent, Western State Hospital, Staunton, Va.

Drewry, Mrs. W. F., Petersburg, Va.

Elliott, Mrs. R. M., Willard State Hospital, Willard, N. Y.

Elliott, Sherman G., Member of Board of Control, State Charitable Institutions, Topeka, Kans.

Fairbanks, Mrs. James P., Holles St., Halifax, N. S., Canada.

French, Mrs. Edw., Medfield Insane Asylum, Harding, Mass.

French, Miss Anita, Harding, Mass.

Gundry, Lewis H., M. D., Superintendent, Relay Sanitarium, Relay, Baltimore, Md.

Guth, Mrs. Morris S., State Hospital, Warren, Pa.

Hopkinson, Mr. S. W., Trustee, Danvers Insane Asylum, Bradford, Mass. Horton, Elizabeth H., Agent Sub-Committee on After-Care of the In-

sane, State Charities Aid Association, 105 East 22d St., New York City. Hutchings, Mrs. R. H., Ogdensburg, N. Y.

Kinnicutt, Mrs. Francis P., Member of the Board of Managers of the Manhattan State Hospital, 39 East 35th St., New York City.

Lawlor, Mrs. D., Nova Scotia Hospital, Halifax, Nova Scotia, Canada. Louden, Mr. William T., Proprietor Knickerbocker Hall, Private Sanitarium for Mental Diseases, Amityville, L. I., N. Y.

Potter, Marion C., M. D., Woman Assistant, Staff of Rochester City Hospital, Rochester, N. Y.

Priddy, A. S., Superintendent, South Western State Hospital, Marion, Va.

Redwine, Mrs. J. S., Lexington, Ky.

Scribner, Mrs. E. V., Worcester Insane Asylum, Worcester, Mass.

Shattuck, Chas. S., Trustee, Northampton State Hospital, Hatfield, Mass.

Sherman, Adin, M. D., First Assistant Physician, Northern State Hospital for the Insane, Winnebago, Wis.

Woodman, Mrs. R. C., Middletown, N. Y.

THE PRESIDENT.—Gentlemen, the Committee of Arrangements desires that a very important announcement should be made. It is that the members who contemplate going down to Jamestown should call at the earliest convenience at the office of the steamboat company, Colorado Building, 14th and G streets, and make specific arrangements regarding staterooms, etc., so that there will be no confusion on starting out. A large part of the boat has been reserved for this Association, but the rooms have not been assigned, so those who desire to get accommodations should arrange at once for their staterooms. DR. BANCROFT, in the Chair:

Members of the Association, it becomes my pleasure to present to you Dr. Charles G. Hill, our President, who will deliver the presidential address. (Applause.)

The President read his address, which was greeted with much applause.

DR. BURGESS.—Mr. Chairman, ordinarily speaking, I am strongly opposed to proposing a vote of thanks to any officer or member of the Association who simply does his duty. It is the duty of the President to present an annual address, and we naturally expect him to give us his very best. But there are occasions on which this rule, like custom, is better honored in the breach than the observance, and I think this is one of them. I therefore have no hesitation whatever in proposing a vote of thanks from this Association to Dr. Hill for the extremely interesting and very practical address which he has given to us this morning.

DR. BANCROFT, in the Chair.—Gentlemen, you have heard the comments of Dr. Burgess. I am sure they will appeal to you all. Have they been seconded?

DR. BURR.—Mr. Chairman, in seconding the motion by Dr. Burgess, I would make the amendment, with his consent, that the recommendations contained in the President's address be referred to the Council.

DR. BURGESS.—I heartily concur in the amendment.

DR. BANCROFT, in the Chair.—Dr. Burgess' motion as amended by Dr. Burr and seconded, is before you. What is the pleasure of the Association?

Dr. Burgess' motion as amended was carried unanimously. On motion, the meeting adjourned.

WEDNESDAY, MAY 8, 10.00 A. M.

The meeting was called to order by the President.

THE PRESIDENT.—The first in order is the report of the Council.

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DR. PILGRIM.—There has been no meeting of the Council since our last session, and there is nothing to report.

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THE PRESIDENT.—The Council, having no special report, the next in order is the election of members. The list was read yesterday of those who were duly proposed and have complied with all the requirements of the constitution. You have had the list distributed among you. The constitution requires that these members be elected by ballot. If there is no objection and no member objects to any person proposed, it will be in order to have the Secretary cast the ballot to conform with the law.

Dr. BURGESS.—I move that the Secretary be empowered to cast the ballot of the Association for the list of physicians already named in yesterday's report.

Which motion was duly seconded.

THE PRESIDENT.—You have heard the motion of Dr. Burgess, that the Secretary be empowered to cast the ballot of the Association, electing these physicians as members. The Secretary will read the names. (This list is given in the first report of the Council.)

Dr. Burgess' motion unanimously prevailed.

THE PRESIDENT.—The Secretary announces that the ballot has been cast and the candidates elected. The names you have heard read will be placed on the rolls of the Association.

The next in order is unfinished business. Under this comes the amendment to the constitution proposed by Dr. Clarke last year, which the Secretary will please read.

DR. PILGRIM.—The proposed amendment is as follows:

Article 4, third line: Substitute the word "three" for "two" before the word "auditors."

Article 8, second paragraph, ninth line: Insert after the word "elected," "One auditor shall be elected for one year, one for two years, and one for three years."

THE PRESIDENT.—Gentlemen, this amendment has been duly proposed and has laid over one year as required by the constitution, and is now before you for action. What is your pleasure?

DR. BURGESS.—Personally I am of the opinion that the amendment should be made, for this reason: Heretofore, the Auditors have been changed every year. Under such conditions a man got a little knowledge of the books and the work to be done. He

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was then changed and a new man who knew nothing about it had to do the work the next year. If the proposed amendment prevails, two men will be carried over yearly who will have some knowledge of the books. I think the resolution an excellent one.

DR. MABON.—I move its adoption.

Which motion was duly seconded and unanimously prevailed.

THE PRESIDENT.—The amendment has been adopted as read, and will be made a part of our constitution.

We have next the report of the Committee appointed at our last meeting on training schools in State hospitals.

DR. TUTTLE.—Mr. President, members of the Association: I will not take your time to read this report. Its nature is such that it would scarcely be worth while. The Committee held a meeting in New York, in March, and came to a substantial agreement as to what the report should be. It has been written out on those lines and, because of its nature, it was thought better to print it for the members to read, if they wish to, before accepting or rejecting it. I simply formally present the report to the Association.

DR. BURR.—I move that the report be accepted and adopted, and that the Committee which has undertaken this work and carried it on so successfully be thanked for its careful and painstaking labor.

Which motion was duly seconded and unanimously prevailed.

DR. FRENCH.—Mr. President, I move that the Secretary of the Association be instructed to have it printed and see that every member of the Association is furnished with a copy. Carried.

DR. MABON.—Mr. President, I would like to ask if publishing the report in the proceedings would not save some expense to the Association? Every member receives a copy of the Transactions.

THE PRESIDENT.—If it is published in the proceedings, it would carry out the spirit of the motion. The Secretary will use his discretion about how it shall be done. (See page 119 for report.)

THE PRESIDENT.—The next is the report of the Nominating Committee.

DR. BURGESS.—The Nominating Committee begs to report as follows:

For President, Dr. Charles P. Bancroft, of New Hampshire. For Vice-President, Dr. Arthur F. Kilbourne, of Minnesota. For Secretary and Treasurer, Dr. Charles W. Pilgrim, of New York.

For Councilors: Dr. W. H. Hancker, of Delaware; Dr. Charles G. Wagner, of New York; Dr. Byron M. Caples, of Wisconsin; Dr. Henry W. Coe, of Oregon.

For Auditors: For one year, Dr. J. Percy Wade, of Maryland. For two years, Dr. James V. Anglin, of New Brunswick. For three years, Dr. Richard H. Hutchings, of New York.

> (Signed) T. J. W. Burgess, B. D. Evans, M. J. White.

THE PRESIDENT.—You have heard the report of the Nominating Committee. Following it is the election of officers.

Dr. BRUSH.—I move that the Secretary be instructed to cast the ballot of the Association, electing these gentlemen as our officers for the ensuing year. Carried.

THE PRESIDENT.—The Secretary announces that the ballot has been cast. These gentlemen will constitute the officers of the Association for the ensuing year.

The next is the report of the Auditors.

DR. WADE.—Mr. President, owing to the delay occasioned by the non-report of the editor of the AMERICAN JOURNAL OF INSAN-ITY yesterday, the Auditing Committee beg leave to postpone their report until to-morrow.

THE PRESIDENT.—If there is no objection, the request of the Auditing Committee will be granted.

We will now receive the report of the editors of the AMERICAN JOURNAL OF INSANTIY. Is Dr. Brush ready to make the report?

To the Members of the American Medico-Psychological Association:

On behalf of my associates on the editorial board I respectfully present the following report relative to the AMERICAN JOURNAL OF INSANITY, the official organ of this Association:

The members of the board, and particularly the managing editor, have

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felt the loss, occasioned by his absence from the country on a well-earned vacation, of the advice and assistance of the senior editor, Dr. Henry M. Hurd.

Volume sixty-three of the JOURNAL, closing with the number for April, 1907, contains a trifle over six hundred pages. Over thirty original articles have been published, in addition to annual addresses delivered at the last annual meeting, and the proceedings of that meeting. In addition a large number of abstracts from home and foreign journals, book reviews, correspondence, etc., have appeared in the various numbers issued.

At this point I may be permitted to touch upon one department of the JOURNAL, which should, I feel, receive more general support than it does. I refer to the Half-Yearly Summary.

In this department it is aimed to present semi-annually brief items of interest concerning the various institutions for the insane in this country and Canada—keeping our readers in this way in touch with what is going on in other hospitals—with the changes and improvements being brought about by their fellow members of the Association. New plans for buildings, or changes looking to the better adaptation of those now in use for the care of patients—new features in clinical or laboratory work, methods of training nurses—are all points upon which we desire for the JOURNAL, and through it for our readers, items of news.

Many readers have expressed great satisfaction with this department of the JOURNAL and yet we are sure it could, by a little effort on the part of many who now send us nothing, be made more satisfactory and of greater value.

The department of clinical psychiatry also deserves support, and the presentation of well worked out clinical studies of individual cases or groups of cases is urged.

In the report which was presented last year the suggestion was made that the editorial board be authorized to issue six, rather than four numbers a year. It is believed that material to fill six numbers annually can be had and it is evident that the increase in frequency of the JOURNAL'S appearance will tend to keep our readers in more intimate and earlier touch with the literature of our profession.

The finances of the JOURNAL are in a comfortable condition; the receipts from both subscriptions and from advertisements are materially greater than last year, and the expenses, although covering payment for five numbers as compared with four numbers included in the last financial statement, is but a trifle more than last year. The balance on hand is not large, but I am informed that there are several unpaid subscriptions and other outstanding accounts.

The JOURNAL, as has been intimated before in reports from the editorial board, deserves, as it is your property, better support than some of you give it. Every member should subscribe and pay for it, whether the institution with which he is connected takes it or not, and indeed, he should make it a part of his duty to see that the institution takes it also.

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It is quite possible, with an increased subscription list, and every member should make himself a subscription agent, and a small annual contribution from our treasury, which is gratifyingly full, to reduce the price of the JOURNAL to members of the Association; but this should not be undertaken until all the members take the JOURNAL as well as the library of every hospital for the insane.

The expense of printing and editing the JOURNAL would be diminished in a degree if contributors would send their manuscript in the form they wish it printed. Proof is not infrequently returned with considerable parts of the matter rewritten. Changes of this kind in proof sheets are more expensive than the original type setting, and then a word more—please read proof carefully and send back promptly. The delay of two or three pages of proof after a number is made up causes vexatious delay and sometimes added expense.

Your editorial board is at all times ready, indeed anxious, to receive and consider suggestions looking to the improvement of the JOURNAL.

Respectfully submitted,

EDWARD N. BRUSH, Managing Editor.

THE PRESIDENT.—Gentlemen, you have heard the report from the editors of the AMERICAN JOURNAL OF INSANITY. The report is before you. If there is no objection, the report stands accepted and adopted as read.

Dr. White wishes to give us some information in regard to the proposed visit to the Government Hospital.

DR. WHITE.—I have arranged with the street car company to furnish two special cars to take those who want to go to the hospital to-day. They will leave from the corner of F and 11th streets. I could not have them leave from the front of the hotel, because there is no switch on which to side-track them. You can walk to 11th street and the cars will leave there at half past two. It is about twenty-five minutes ride. You will have to change cars at the foot of the hill as the current will not carry the special cars up.

THE PRESIDENT.—Ladies and gentlemen, we always on these occasions reserve the best until the last. I take great pleasure in introducing to you a gentleman who needs no introduction to any American audience. He is probably better known and more extensively read than any gentleman in America. The Reverend Dr. Buckley will now address us. (Applause.)

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Rev. James M. Buckley, D.D., LL.D, then delivered the Annual Address, entitled, "Shakespeare's Lunatics," which was greeted with much applause.

DR. BURR.—Dr. Buckley has spoken of the danger of a "tie" during a medical consultation. I dare say that in the vote upon the motion, which it is my privilege to make, there will be no tie; there will be no division. The sentiment of this audience, I am sure, will be unanimous in extending a cordial vote of thanks to the learned Dr. Buckley, our distinguished honorary member, for this delightful address. I move a rising vote of thanks to the doctor.

Carried unanimously.

DR. BUCKLEY.—Gentlemen, I simply say that, like St. Peter, "Such as I have, give I unto thee."

THE PRESIDENT.—We have all enjoyed the very delightful and very complete address. Coming, as it does, on an occasion of this kind, when almost every speaker, and every paper read, refers to Shakespeare's maniacs, and coming from such a Shakespearean scholar as Dr. Buckley, we would like to have him dwell a little longer on some special lines he has brought out. Thank you, doctor, very much.

The next on the programme is the discussion on the "After-Care of the Insane," which will be opened by Dr. Mabon.

DR. MABON.—Mr. President, Ladies and Gentlemen: I will endeavor to be as brief in the presentation of this subject as possible, but a large part will have to be left to the printing.

The following papers were then read: "After-Care of the Insane," by Dr. William Mabon, New York City; and Dr. Robert M. Elliott, Willard, N. Y.

THE PRESIDENT.—I regret very much that Hon. Homer Folks, Secretary of the State Charities Aid Association of New York, is not here, but we have to represent him Miss E. H. Horton, the special agent of that Association in New York City, who no doubt will be able to give us very valuable information on this subject.

Dr. Mabon's and Dr. Elliott's papers were discussed by Miss Horton, Dr. Mabon, Dr. Stedman, and Dr. Wentworth.

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DR. MABON.—I wish to announce that the State Charities Aid Association of New York has contributed one hundred reports, showing the plan of organization and the work of the Association. The reports are here for those who may be interested.

Adjourned.

WEDNESDAY EVENING, MAY 8, 8.30 P. M.

The meeting was called to order by the Secretary, who called Dr. Burgess to the chair, pending the arrival of the President, who had been unexpectedly detained.

The following papers were read: "Alcohol as an Etiological Factor in Mental Disease," by Dr. G. H. Kirby, New York, N. Y.; Dr. Harry A. Cotton, Hathorne, Mass.; and Dr. C. W. Chapin, New York, N. Y. "The Polyneuritic Psychosis or Korsakoff's Disease," by Charles K. Mills, M.D.; and A. Reginald Allen, M.D., Philadelphia, Pa.; read by Dr. Allen. "Arterio-Sclerosis in Mental Disease," clinical paper by Dr. C. Macfie Campbell, New York, N. Y.; anatomical paper by Dr. Glanville Y. Rusk, New York, N. Y.

The papers of the evening were discussed by Dr. Meyer.

THE PRESIDENT.—There will be a meeting of the Council immediately after the adjournment of this meeting in Room 130, at which the editors of the AMERICAN JOURNAL OF INSANITY will be present.

Adjourned.

THURSDAY, MAY 9, 10.00 A. M.

THE PRESIDENT.—The Association will please come to order. The Secretary will read the report of the Council.

REPORT OF COUNCIL TO ASSOCIATION, MAY 9, 1907.

The Council recommends that the question of publishing the JOURNAL OF INSANITY bi-monthly be referred to the editorial board of the JOURNAL, together with the President-elect and Secretary, with power for final action.

The Council has appropriated the sum of two hundred dollars to be awarded as a prize for an essay on original work, under conditions to be in future prescribed by the President, Secretary, and Programme Committee. It is recommended that the dues of the Association remain as at present, namely, five dollars for active membership and two dollars for associate membership.

The Council recommends the appropriation of two hundred dollars, or as much thereof as may be needed, to be used in the discretion of the editorial board of the AMERICAN JOURNAL OF INSANITY.

The Council has authorized the Secretary to publish the Transactions of this meeting.

The Council recommends for active membership the following named associate member:

Dr. Isador H. Coriat, Boston, Mass.

The Council recommends for associate membership, the following named physicians:

Dr. Samuel W. Hamilton, New York, N. Y.; Dr. J. M. Whitaker, Milledgeville, Ga.; Dr. Samuel T. Orton, Columbus, O.; Dr. Charles B. Rogers, Cincinnati, O.; Dr. Clyde R. McKinniss, Norristown, Pa.

The Council has informally considered the applications of the following named physicians for active membership. In accordance with the constitution, final consideration will be deferred until next year:

Dr. Graeme M. Hammond, New York, N. Y.; Dr. John J. Twohey, Buffalo, N. Y.; Dr. Lewis H. Gundry, Relay, Md.; Dr. Thomas Coke Biddle, Topeka, Kans.; Dr. A. S. Priddy, Marion, Va.; Dr. William Pritchard, Gallopolis, Ohio.

The Council recommends that the President-elect be authorized to appoint a Programme Committee, whose duty it shall be to arrange for the programme of the next annual meeting.

On motion, the report of the Council was accepted and adopted.

THE PRESIDENT.—Those physicians who have been recommended by the Council for membership in the Association will be voted upon at the session to-morrow morning.

The next is the report of the Auditing Committee.

The following report was read by Dr. Wade, Chairman of the Committee:

WASHINGTON, D. C., MAY 9, 1907.

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To the American Medico-Psychological Association:

Your Auditing Committee respectfully reports that it has examined the books of the Treasurer, compared the vouchers with the checks drawn and paid, and footed the totals, and finds his statement submitted to the Association correct, namely, a balance of \$1,405.18 in the Emigrant Industrial Savings Bank, and a balance of \$836.57 in the New York Produce Exchange Bank, including \$12.00 banked since the book was balanced, a total balance of \$2,241.75.

We have also audited the report of the editors of the AMERICAN JOURNAL OF INSANITY, compared the vouchers with the payments made, and find the statement submitted to the Association correct, namely, a balance in cash now on hand of \$123.09.

Respectfully submitted, (Signed) J. PERCY WADE, Chairman.

On motion, the report of the Auditing Committee was accepted and adopted.

THE PRESIDENT.—First on the programme, we have the paper of Dr. Stedman, "Some Remarks on Public Lectures on Insanity."

DR. BRUSH.—It seems to me that the important suggestions made by Dr. Stedman should not be allowed to pass without some action on the part of the Association. It occurred to me while he was reading that I had noticed at our annual meetings on more than one occasion persons who were not connected with the profession who seemed more or less interested, sometimes from morbid curiosity, doubtless, but occasionally from genuine interest in the subjects treated.

We might inaugurate at our meetings a series of popular lectures on insanity, one each year. I move, therefore, that Dr. Stedman be appointed Chairman of a committee to take this matter into consideration—not committing the Association to the suggestions by any means—but simply to take it into consideration and report at the next meeting. The committee which I suggest might confer with the Committee on Programme, and as a tentative measure, if the suggestion meets the approval of the Committee, a lecture might be arranged for at our next annual meeting, to which the public could be invited.

Adopted.

THE PRESIDENT.—I will appoint as such committee, Dr. Stedman, Chairman, as provided in the motion, Dr. Brush and Dr. Arthur Hurd. Dr. Stedman's paper was discussed by Dr. Dewey, Dr. Bancroft, Dr. A. Meyer, Dr. Burgess, Dr. Busey, Dr. Wentworth, Dr. Mabon, and by Dr. Stedman in closing.

DR. BURGESS.—Mr. President, with your permission, I would like to interrupt the course of proceedings long enough to introduce a resolution. Since coming to this meeting, I have learned with deepest regret, that one of our old and most valued members is very ill. It is doubtful if he will ever again be with us. I refer to Dr. P. L. Murphy, of North Carolina.

I have been connected with this Association a great many years. My first meeting goes back to 1870, I think, and during that time I have never found a better, more thoroughly upright member, to my mind, than Dr. Murphy. In fact, if we should be unfortunate enough to lose him, which I hope we will not, it may truthfully be said, we shall not look upon his like again. By his strength of character and honesty of purpose he has been a tower of strength in this Association and in the care of the insane of North Carolina. With your permission, I would ask that the Secretary be instructed to send a telegram, expressing our sympathy with him, and our earnest hope that he will be again permitted to be with us.

THE PRESIDENT.—I am sure that this meets with the thorough concurrence of all of us.

Dr. Burgess' resolution was duly seconded and unanimously adopted.

The following telegram was sent:

WASHINGTON, D. C., MAY 9, 1907.

DR. P. L. MURPHY, Morganton, N. C.

On motion of Dr. Burgess, unanimously resolved that Association extends sympathy and best wishes for speedy recovery.

(Signed) CHARLES G. HILL, President,

CHARLES W. PILGRIM, Secretary.

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Papers on "Reception Hospitals, Psychopathic Wards, and Psychopathic Hospitals," were read by the following named physicians: Adolph Meyer, M. D., Ward's Island, New York, N. Y.; Albert M. Barrett, M.D., Ann Arbor, Mich.; M. S. Gregory, M.D., New York, N. Y.; Charles P. Bancroft, M.D., Concord, N. H. The symposium on reception hospitals, etc., was discussed by Dr. Burgess, Dr. D. C. Meyers, Dr. Coe, Dr. Burr, Dr. Stockton, Dr. Crumbacker, Dr. A. Meyer, and Dr. Barrett.

The following papers were read:

"Metabolism in the Insane, with Special Reference to General Paralysis," by Otto Folin, M. D., Waverley, Mass., which was discussed by Dr. A. Meyer.

"Opsonins and the Employment of Therapeutic Vaccines in the Treatment of General Paralysis," by John D. O'Brien, M.D., Massillon, O. Discussed by the President, Dr. Burr and Dr. Coe.

"Megalomania in General Paralysis," by Joseph Clement Clark, M.D., Sykesville, Md.

End of morning session.

AFTERNOON SESSION.

The meeting was called to order by the President.

The following papers were read:

"The Melancholia-Mania Group of Psychoses," by Edward Cowles, M.D., Boston, Mass. (By title.)

"Some Observations in General Paralysis and Cerebral Syphilis," by C. B. Dunlap, M.D., New York, N. Y. (By title.)

"Relationship between Aphasia and Mental Diseases," by William McDonald, M.D., Providence, R. I. Discussed by Dr. Burgess.

"The Forms of Dementia Praecox," by William Rush Dunton, M.D., Towson, Md.

"Prognosis in Cases of Mental Disease, Showing the Feeling of Unreality," by F. H. Packard, M. D., Waverley, Mass.

THE PRESIDENT.—This closes the programme for to-day. I would like to ask all who have not already registered to be kind enough to do so before they leave us this afternoon. I do not believe our registration is quite complete.

The meeting will stand adjourned until ten o'clock to-morrow morning at the Inside Inn, Jamestown Exposition.

End of afternoon session.

FRIDAY, MAY 10, 10.00 A. M.—INSIDE INN, JAMESTOWN Exposition.

THE PRESIDENT.—The Association will come to order. I take great pleasure in introducing Mr. Robert H. Sexton, Commissioner of Special Events of the Jamestown Exposition.

Mr. Sexton:

Mr. President, Ladies and Gentlemen:

I am here representing Mr. Tucker, President, and Mr. Lanson, both of whom desired to be with you this morning. Mr. Tucker was called last night to Washington and I have just received a telegram from Mr. Lanson that he is unable to be present, so I am here to extend the best wishes of the Exposition and to hope that you will have a good time.

We have arranged for reserved seats for all the members of your Association at the organ recital, which will be given at four o'clock this afternoon by Mr. Clarence Eddy, a very noted artist, as you know. The recital will be held in the auditorium of the Administration Building, and it is hoped that all will arrange to attend.

At eleven o'clock this morning, we are to have a carrier pigeon contest just opposite the grand stand on Lee's Parade. At that hour two thousand homing pigeons from Washington will be released. I think it will be quite interesting.

I hope you will all look upon our incompleted Exposition with a charitable eye. We have a great deal yet to do, yet I am sure you will find much of interest in the various exhibits already in place. I thank you all for your courtesy. (Applause.)

THE PRESIDENT.—The first order of business, gentlemen, is the report of the Council. The Secretary will make the report.

DR. PILGRIM.—I am very sorry not to be able to make the detailed report of the Council, but the grip containing the Secretary's notes has been lost somewhere in transit. The first thing in order is voting upon the names proposed to the Association yesterday for membership.

(This list is given in the report of the Council May 9.)

On motion, the Secretary was instructed to cast the ballot of the Association for these gentlemen.

THE PRESIDENT.—The Secretary announces that the ballot has been cast, and I, therefore, declare these gentlemen members of the Association, upon their qualifying in accordance with the constitution. DR. PILGRIM.—The Council has unanimously voted for Cincinnati, O., as the next place of meeting, the time to be arranged by the President-elect and the local Committee of Arrangements. This completes the report of the Council.

On motion, the report was accepted and adopted.

THE PRESIDENT.—The Chair appoints the following named gentlemen as the Committee on Resolutions: Dr. Burgess, Dr. Work, and Dr. Mabon.

Dr. Evans.—Mr. President, in view of the small number here, and some other invitations before us, I move that we adjourn to meet at 2.30 this afternoon, and then take up such business matters as may come before the Association.

Dr. Evans' motion was duly seconded and carried.

THE PRESIDENT.-We now stand adjourned until 2.30 this afternoon.

AFTERNOON SESSION.

THE PRESIDENT.—Having finished the routine business at this morning's session, we will proceed now to the reading of the papers.

The following papers were read:

"Hysteria, a Much Abused Neurosis," by C. Eugene Riggs, M.D., St. Paul, Minn. (By title.)

"The Manifestations of Hysteria as Insanity," by Robert C. Woodman, M.D., Middletown, N.Y.

"Hysteria in the Male," by Ernest L. Bullard, M.D., Milwaukee, Wis.

"The Rest Treatment as Applied in Mental Disease," by Frank P. Norbury, M.D., Jacksonville, Ill. (By title.)

"The Treatment of Excitements by Continuous Baths," by Samuel W. Hamilton, M. D., New York, N. Y.

"The Care of Imbeciles in Hospitals for the Insane and Elsewhere," by J. M. Keniston, M. D., Middletown, Conn. (By title.)

"Our Duty to the Chronic Insane," by J. T. W. Rowe, M.D., New York, N. Y. Discussed by Dr. Burgess.

"Toxaemia as a Factor in the Etiology, Prognosis and Treatment of Insanity," by E. H. Pomeroy, M.D., Monterey, Tenn.

"Simplified Spelling and Some Medico-Psychologic Terms," by William C. Krauss, M.D., Buffalo, N. Y. "Borderland Insanity," by John Punton, M.D., Kansas City, Mo. (By title.)

"Recidivation in Mental Disease," by George Villeneuve, M.D., Montreal, Que. (By title.)

"A Few Fallacies in the Treatment of Epilepsy by Drugs," by A. L. Skoog, M.D., Pueblo, Colo. (By title.)

Papers on "Shorter Hours for Attendants and Nurses," were read by the following: Alfred I. Noble, M.D., Kalamazoo, Mich.; Arthur V. Goss, M. D., Taunton, Mass. (by title); Charles G. Wagner, M. D., Binghampton, N. Y. (by title).

These papers were discussed by Dr. Bancroft, Dr. Gorst, Dr. Hurd, Dr. Pilgrim, Dr. Richardson, and Dr. Noble in closing.

THE PRESIDENT.—We now come to the memorial notices. How shall these be read?

DR. BURGESS.—Mr. President, owing to the lateness of the hour and the slimness of the attendance, I think myself it better be by title. I deeply regret to have to make such a suggestion. because I have always maintained that the memorial notices should take precedence over everything else, but under the circumstances I think it is the wisest course to pursue. This is the only association of scientific men that disgraces itself by putting memorial notices at the end of the last day's business. In every other association they precede every other thing, and they should do so as a just tribute to men we have known and esteemed, and whose loss we deplore. To my mind, our practice is wrong—utterly wrong, and I sincerely trust it will henceforth be changed.

THE PRESIDENT.—If there is no objection, the memorial notices will be read by title.

The following memorial notices were read by title:

Dr. Alexander E. Macdonald, by Arthur W. Hurd, M.D.; Dr. Joseph Manning, Cleveland, by Theodore H. Kellog, M.D.; Dr. R. J. Preston, by William F. Drewry, M.D.

THE PRESIDENT.—We will now receive the report of the Committee on Resolutions.

DR. BURGESS.—The Committee on Resolutions begs to report as follows: That the thanks of this Association are justly due and hereby tendered to the Committee of Arrangements for the care taken of our interests; to Dr. William L. Russell and the

Programme Committee for the excellent and instructive series of papers provided for our benefit; to Dr. William A. White for the delightful afternoon spent at St. Elizabeth; to the manager of the New Willard Hotel for his kindness in furnishing us with an assembly hall; and to the management of the Jamestown Exposition for the various courtesies extended to us.

> (Signed) T. J. W. Burgess, Wm. Mabon, Hubert Work.

On motion, the report was accepted and adopted.

THE PRESIDENT.—At the request of the President-elect, I announce the following as the Committee on Arrangements for the next meeting:

Dr. F. W. Harmon.

Dr. F. W. Langdon, and others whom they shall select to cooperate with them.

Also with the suggestion and cooperation of the incoming President, I announce the following Programme Committee:

Dr. Owen Copp, Boston, Mass., Chairman.

Dr. Arthur W. Hurd, Buffalo, N. Y.

Dr. William F. Drewry, Petersburg, Va.

Dr. H. A. Tomlinson, St. Peter, Minn.

Dr. T. J. W. Burgess, Montreal, Que.

This closes the order of exercises of this meeting. Will Dr. Coe and Dr. Burgess conduct the President-elect to the chair?

DR. BURGESS.—Mr. President, Ladies and Gentlemen: I have great pleasure in presenting to you our new President, Dr. Bancroft. He is so long and so well known to all of you that it is hardly necessary to say anything, but one thing I can assure you which is, that he will certainly reflect lustre upon the chair he has been elected to fill and of which he has now taken possession.

THE PRESIDENT.—Gentlemen, before transferring my insignia of office to my most worthy and excellent successor, I want to tender my thanks to the various committees who have contributed so much, in fact all, to the success of this meeting, and to express my high appreciation of the courtesy and consideration of the members during my brief term of office. I take great pleasure in transferring my office to the President-elect Dr. Bancroft. (Applause.)

THE PRESIDENT-ELECT:

Mr. President, Ladies and Gentlemen: I wish to express to the Association my profound appreciation of the great honor you have conferred upon me. No member of this society can receive this appointment without feeling that it is one of the greatest compliments that can fall to him in his professional life.

It so happens that this spring marks the twenty-fifth year of my service as an active member of the American Medico-Psychological Association, and it is especially gratifying to me that the official honor you have conferred upon me comes at this particular milestone of my service. I wish to thank you all most heartily for the confidence you have reposed in me. (Applause.)

I now declare this meeting adjourned, to meet next year in Cincinnati, O., at a time to be announced later by the Secretary.

THE NEW YORK PSYCHIATRICAL SOCIETY.

STATED MEETING, MARCH 6, 1907.

Allan McLane Hamilton, M. D., in the Chair.

Dr. August Hoch read the paper of the evening, the subject being, "The Psychogenetic Factors in Some Paranoiac Conditions, with Suggestions for Prophylaxis and Treatment."

Dr. Hoch pointed out that among the paranoiac states there were cases, and that they probably represented a large proportion, in which the psychogenesis could be clearly traced, when the facts of the cases were really accessible. The theory of the development of paranoiac states Dr. Hoch summarized briefly as follows, stating that besides basing his ideas upon facts of his own studies, he had been influenced by the work of Adolf Meyer, Freud, Bleuler, and Jung:

Every person has certain points on which he is especially sensitive. He has ideas or complexes of ideas which are associated with very strong feelings. These complexes refer either to personal defects, shortcomings, limitations, or to feelings of guilt, remorse, shame; on the other hand to certain longings and desires. We may, therefore, generally speaking, say that they belong either to the realm of self-assertion or to the sexual sphere, in the broadest sense of the term. Now most people are able to get square with such things, partly because their nature is such that these feelings never reach anything like a great intensity, or partly because they have a healthy way of dealing with these matters.

Other people do *not* get square with such difficulties. They do not acquire balancing, healthy habits, such as a healthy turning away from one's difficulties to outside interests, or a habit of unburdening or a certain aggressiveness and the like. While then such undercurrents, as we may call these complexes, when they are of any intensity have themselves a tendency to set narrower and narrower limits to the interest and to create a certain fascination, they often become a menace to the sanity of mind,

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also because they are not balanced sufficiently by sound mental tendencies. In this way there develops a growing disharmony which gradually, or sometimes under the influence of acute causes, physical or mental, may suddenly lead to an unbalancing of the mind, when, finally the undercurrents break through to the surface.

But the mind, even in the cases in which the undercurrents are not handled properly, makes certain miscarried attempts at readjustment. Thus, the feelings of defect and the longings do not come to the surface as such, but are transformed; the former give rise to a general suspiciousness and delusions of persecution, probably for the same reason that we are inclined to blame everyone else except ourselves, when anything which we do goes wrong; the latter give rise to ideas that the innermost longings are fulfilled. And there are still other forms of such miscarried adjustments.

We see then that we have two things, the undercurrents and the abnormal manner of dealing with these undercurrents, upon which we should lay stress as important in the causation of these paranoiac states. To a certain extent this division is of course artificial and the two principles often enough overlap greatly. Then again, it is difficult often to find a correct or definite formula for that which we have called abnormal mental habits, or difficult to pick out from among the complex fabric of mental reactions, those which are disastrous or estimate the dangers of certain combinations, or to correctly gauge the value of saving traits. Naturally it will often be a combination of traits rather than single traits which we have to consider and while we speak of some reactions as dangerous mental habits they may exist in certain combinations in which they are sufficiently safe-guarded.

It is also very evident that other causes than an unhealthy manner of dealing with the undercurrents may enter into the causal constellation as well—such as influences which increase the strength of the undercurrents or influences, which, in other ways than those indicated, lessen the resistance, such as the action of alcohol, the menopause, and the like. The principles were demonstrated by means of careful analysis of four cases and certain indications for treatment were discussed.

DISCUSSION.

Dr. H. R. Stedman, of Boston, was inclined to lay more stress on the influence of heredity in affecting the progress of genuine paranoia than did Dr. Hoch. Numbers of cases of the disorder were seen in patients who had been sensibly brought up and who were treated affectionately by their families, nothing being left undone to make their surroundings congenial and their lives smooth and happy, yet in spite of it all they developed paranoia. Little could be hoped for, he believed, in the way of materially modifying the psychogenetic factors so as to make any real impression on these cases of typical paranoia, a disease arising on a defective constitutional basis and gradually and logically developing into an inflexible system of delusional thought and conduct.

He thought, however, that after the disease had developed when family, friends, and a normal environment had proved powerless to influence the disease and the patient was sent to the hospital, his condition was more susceptible of improvement than is generally thought to be possible. He had not infrequently found the paranoiac to be rendered decidedly more manageable and his life made far more comfortable by regular friendly and explanatory talks, answering his questions, making the endeavor to set him right, and satisfying such of his minor demands as were not wholly unreasonable. The fact that many of them are hopeless and cannot be reached at all by such means-in fact only become worse in consequence-accounted, he thought, for the tendency that exists to pay them as a class little or no systematic attention, such as Dr. Hoch adopts with his cases. Dr. Stedman questioned if the reader had not chiefly in mind the paranoid state rather than the paranoiac, that symptomatic, persecutory condition so often found in dementia precox. If so, he was wholly in accord with his view that much might be done in the way of prophylaxis. Dr. Hoch's masterly analysis of the psychogenetic conditions in his cases showed this plainly and he believed it to be due to the fact that the morbid direction of their thought had become less impaired than in the true paranoiac. Dr. Stedman felt the same confidence that he had expressed at length several years ago, that not a few cases of this kind, when recognized early by the psychiatrist while yet the patient is comparatively comfortable, may be saved from an attack by well-directed medical oversight and

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guidance and regulation of his habits and surroundings. He attached little importance to the menopause as a special causative factor in insanity, as individual experience and statistics seem to show quite conclusively that paranoia develops to the same extent in both sexes during the period of life in which the menopause occurs.

Dr. Charles L. Dana had been interested in Dr. Hoch's analysis, which was instructive as showing that in a certain group of cases of paranoia conditions might be improved by careful therapeutic He had not been in a position to carry out this method of effort. treatment, which could not be very successfully employed by those not connected with institutions. He agreed with Dr. Stedman as to the importance of hereditary taint in all these cases, and that a goodly proportion of paranoiacs develop in spite of careful bringing up. Few of these patients could be influenced unless they were taken in hand very early. He had been much interested in two or three cases of paranoia which illustrated that the undercurrent does not always break through in a way that particularly disturbs the mental make-up or general life of the patient. Such a case was a woman, about fifty years of age, now under his care, who was first seen by him when she was forty years old. She was married and the mother of two healthy children. About fifteen years before he first saw her she had developed delusions of a certain kind of persecution-that when she went out on the streets people made remarks about her, trying to annoy her and to injure her. She had these delusions throughout her married life and during her pregnancies. She was a good mother, however, and to most people who knew her she remained a good, kindly woman, about whose mental condition no one had suspicions except her husband, some members of her family, and Dr. Dana. She was probably preserved from a general paranoiac state by the fact that she was able to stay in the house and keep away from sources of irritation. He had had under observation also a man, now forty years old, who had been engaged in business all his life. For fifteen or twenty years this patient had had similar delusions of persecution-that the police and detectives were after him and that attempts were being made to watch him. But this undercurrent delusion never broke through except in one little spot in his brain. One or two of his children developed dementia precox at the age

of sixteen. Such very limited types of paranoia certainly lent themselves to treatment by instruction and by careful selection of environment, which was all essential. As to the general correctness of Dr. Hoch's analysis there could be no question.

Dr. Maurice C. Ashley, of Middletown, N. Y., agreed with Dr. Hoch in the main, but he questioned whether the therapeutic talks with paranoiacs would accomplish very much as a curative measure. In his experience there had been no such beneficial results. He recalled one paranoiac who, for ten years, had believed that he had been giving him poison. At first the patient was inclined to retaliate, he threatened, and made definite efforts to take the life of the doctor's children. The man had some somatic symptoms which he himself attributed to the poison which he thought had been given him. He still has the delusions but no longer attempts to execute his threats.

Another patient, a woman, for eight years had believed that he had been turning an electric current upon her for the purpose of annoying her. Every argument had been used to convince her that this was impossible, but without effect. As the disease progresses the reason of such patients becomes enfeebled and less active, and while they continue to have their delusions they become accustomed to them and cease to react much to them.

Dr. William Hirsch thought that in forming a definite opinion concerning the cases analyzed by Dr. Hoch it must first be determined whether one had to deal with genuine paranoia, or with a paranoiacal state of another disease. Genuine paranoia is always a congenital and not an acquired disease, although the true paranoiacal symptoms often do not manifest themselves during the earlier part of life. But there is always a congenital condition, a constellation of mental factors, which not only predisposes to, but which necessarily develops, at some time of life, such a combination as to produce that mental condition known as paranoia. When such a point in any given case would be reached cannot be determined in advance, but we are, in most cases, able to predict the development of a true paranoia. Various conditions, such as environment, worry, etc., might have something to do with it, at kast with a premature manifestation of the condition. He did not believe, however, that in any given case anything could be done to prevent the manifestation of the paranoiacal condition,

even though it were recognized that the development of such a condition existed. This opinion was not based merely on theory. In his practice he had had children brought to him whose parents realized that they were a little peculiar, nothing more, but whom he recognized as abnormal individuals who in later life would become paranoiacs. In such of these cases as he had been able to follow ten or fifteen years he had found that they developed genuine paranoia in spite of all the precautions which had been taken. He had warned the mother not to let the child have any impressions which would stimulate the imagination or fancy of the child, not to let it read any fiction, to guard it against any undue emotions; all this was carried out with the greatest care. But at some time in life, generally after an unusual emotion, such as falling in love, slight business troubles-something which otherwise would be of no importance-would develop a true paranoia A normal individual, normal from the start, would never develop paranoia. A normal individual might develop melancholia, or some other acute disease, but never paranoia. When he said one must differentiate between types he meant cases in which there was genuine paranoia and those in which there was a paranoiacal state. The paranoiacal state might occur in a great many psychoses. He had seen such a case lately. A man of sixty years of age, a good business man, perfectly normal all his life, suddenly developed a paranoiacal condition; he had delusions and hallucinations, imagined there was a conspiracy against him, that his neighbors tried to kill him, etc. After remaining in this condition for nine months he gradually became demented. He is still living, and is suffering from a condition of general arterio-The case could be defined as dementia senilis, but not sclerosis. as paranoia.

Dr. P. C. Knapp, of Boston, thought it a mistake always to regard delusions of persecution, with hallucinations of one form or another, as constituting paranoia, and that we should be guarded in speaking of such conditions as paranoiac states. He agreed entirely with Dr. Hirsch's opinion that true paranoia, while not a congenital condition, is dependent upon a congenital condition, is dependent upon a congenital mal-arrangement, so to speak, of the brain. Tanzi had taken the same position, viz., that, whereas other forms of mental disease might be spoken of

as true diseases, paranoia was not a disease but a morbid congenital state, which, later in life, under the influence of various factors, might develop into typical paranoia with hallucinations and delusions. He thought that the "undercurrent" did not always "break through." In this connection he cited the case of a woman who for years had had a limited type of delusion. She had lived a secluded, narrow life in one of the smaller New England cities; for many years she had been active in the care of her household and family, and in church work; she had been trained in the old New England habit of keen theological discussion and argument, and for many years she had had the very definite idea that she had been excommunicated from the church. In the main the idea had been suppressed, many of her church associates did not know of it, and those who did kept it secret. The idea existed for many years without going on to any real mental disturbance. Cases were not uncommon in which the delusions occupied a limited field in the consciousness and affected but little the conduct. With a true paranoiac, however, he questioned very much the real importance of any emotional stress, or of any psychical ideas as materially influencing the genesis of the disorder. They might influence the development in so far as changes in modern belief influence the character of delusions. As Dr. Hirsch had suggested, it was impossible to protect these patients from all influences that might give rise to the condition. Not infrequently delusions of persecution developed in normal individuals in connection with hallucinatory conditions having a distinctly physical basis. He had recently seen such a case, a man with well systematized delusions on an alcoholic basis, derived largely from tactile disturbances, which proved to arise from the paresthesize of a very mild alcoholic neuritis.

Dr. L. Pierce Clark was of the opinion that the cases cited by Dr. Hoch might be called paranoid states rather than typical or true paranoia. The therapeutic suggestions outlined would be of undoubted value in these paranoid states. During the past three years he had been treating several cases by analyses and talks and the method had been very advantageous. He thought the method was of little use in true paranoia as the mental state was too fixed; his experience in asylum service had proved this fact to his entire satisfaction.

Dr. Swepson J. Brooks, of Harrison, N. Y., was very glad to know of the success Dr. Hoch had had with therapeutic talks. He had tried this plan and found it productive of results in many cases, but the patients would relapse into the old condition after being released from institutions. He presumed that Dr. Hoch had reference in his paper to simple paranoid states. The question of paranoia was a hard one to go into, and sometimes one almost concluded that paranoia and paranoid states were the same, only differing in degree. The forcing of patients to do things, as suggested by Dr. Hoch, was often neglected. He had in mind two cases in which it certainly had a very salutary effect. One case was a woman, forty-five years of age, who had delusions of persecution. She was put in a very quiet hall. She complained that she was merely brought to the place to be put in jail, that there were no sick people there, and that she would like to see some sick people. She was allowed to see some sick patients; the next morning she was convinced, and she got well. That was four years ago and she had remained well since. The other case was of the manic-depressive type. The patient confessed after her recovery that her family physician had had to force her to take medicine, that he would stand her up against the wall and knock her head against it if she did not take the medicine, and that she believed his method did good.

Dr. Smith Ely Jelliffe said that Dr. Hoch's paper had offered glimpses into a large and but partly explored territory. To him four different trends of thought were suggested, all of which were the subjects of much investigation. In the first place, the importance of the study of the mental development of the child was emphasized. The work of Weygandt, on "Abnormal Children"; of Koch, on "Pathological Inferiority"; of Hall, in his masterly work on "Adolescence"; and of Sommer, on "Character and Personality," were instances in point as to the activity of these lines of investigation. As to the psychogenic origin of certain types of delusions, Dr. Jelliffe was in accord with Dr. Hoch. He spoke of the help that might come from the literary side, as evidenced by the stories of Henry James, "The Turning of the Screw," and the "Two Magics"; Weir Mitchell's "Constance Trescott"; and Ansty's "Statement of Stella Maberly." In all these this type of delusion formation is beautifully brought out, with great literary

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charm, if not with scientific pedantry. Therapeutically, he deemed Dr. Hoch's paper as stimulating, and he himself regarded certain phases of the subject with optimism. Paranoia, he said, was too large a term to use in a general blanket manner. While it is true that little can be accomplished by the most tactful of psychotherapeutic conversations in chronic lunatics who have been in the asylums for years, yet the important factor in the whole problem is to recognize the beginning stages, before the delusional ideas have become too firmly crystallized. Greater success had not been attained because the psychogenic origin of many delusional states had not been sufficiently understood. It required a rare tact to work on these patients, and the outlines given by Dubois, Dejerine, and Oppenheim were but the beginnings of a scientific psychotherapy which for sometime had been grasped at by pseudo-scientists. Dr. Jelliffe desired to rank himself with those who saw a hopeful outlook for the amelioration, if not cure, of certain cases of dementia precox, and of the paranoid states, by early and intelligent psychotherapy.

Dr. George H. Kirby had been interested of late in the management of paranoiac states along the lines suggested by Dr. Hoch, and thought that much could be accomplished in this way toward the correction of morbid trends. Dr. Hoch's work was particularly important in regard to the study of delusions in general. Such a method of analysis opened the way to an understanding of certain mechanisms which heretofore had been practically inaccessible.

Dr. Hoch, in closing the discussion, stated once more that what he wished to bring out was the fact that certain paranoiac states were produced by purely mental causes, i. e., by conflicts and unhygienic ways of dealing with them, and that they were more or less amenable to treatment early in the course, but that naturally he did not mean to claim that old cases of paranoia could thus be influenced. It was necessary in order to help such cases that one could still get at the root of things and explain to the patient the genesis of his delusions and train him to healthy mental habits. The criticism that his cases were not cases of typical paranoia, he could not quite understand, because he was unable to see where the line could be drawn between cases such as his and cases of so-called typical paranoia. Again, to say that paranoia was caused by heredity was an exceedingly unsatisfactory way of stating the situation because it did not mean enough. He had claimed that some paranoiac states were due to an unhealthy dealing with conflicts. Such an unhealthy dealing may be due to tendencies which were more or less inherited, but it was time to make an attempt at determining what these tendencies were, because the mere statement of heredity was absolutely barren, that the same may be said about the statement which has been made that paranoia was due to a congenital mal-arrangement. If Dr. Hirsch said that a normal individual would not develop paranoia, this was doubtless true, if, by normal individual was meant one who had perfectly healthy mental habits.

STATED MEETING, MAY 1, 1907.

The President, Dr. Adolf Meyer, in the Chair.

"Recommendations Concerning the Improvement of Medico-Legal Methods." Dr. Pearce Bailey, of New York City, read this paper. It was not difficult to point out glaring defects in our Code of Criminal Procedure, judged by the standards of modern psychiatry, but legal, judicial, and even medical obstacles stood in the way of remedying these defects. Any change from existing conditions would be possible only after a severe and prolonged contest by concerted forces. The fundamental error in procedure in criminal lunacy cases was the test of responsibility, i. e., the knowledge of right and wrong as to the act at the time of its commission. This had been condemned by medical writers as being no test at all. Should the letter of the law be strictly observed, no lunatic could, under it, escape the full punishment for his offense, unless it could be shown that, at the time of the commission of the act, he suffered from distinct clouding of consciousness. Under this law, nevertheless, many murderers had been acquitted by reason of insanity. A loophole had been left in certain States-not New York-by adding the "uncontrollable impulse" clause. When this clause did not exist the fate of the prisoner depends upon the construction which the jury sees fit to place on the knowledge of right and wrong as mentioned in the law. The question would naturally arise why, if so unsatisfactory, this test had stood so long with so little variation. The reasons were evident. Defective as is the knowledge of right and

wrong as a test of responsibility, no better substitute had ever been offered. Another reason why this law had stood might be found in the fact that the matter is always in the hands of laymen to whom the science of psychiatry is practically unknown. This test would have to endure so long as the Code of Criminal Procedure remained what it is to-day, for the reason that this test is as good as any single test of insanity could be. Modern psychiatry demanded that this test be, not replaced by another, but be done away with altogether. No criminal procedure could be at harmony with modern views of mental disease as long as there was no middle course between responsibility and irresponsibility, and no means of judging between them except those furnished by the knowledge of right and wrong. Nothing had been more plainly taught by recent advances in psychiatry than that different mental states make different degrees of responsibility. No law which failed to take cognizance of this fact could be satisfactory to alienists. Before undertaking any legislation in the line of amending the Code of Crimminal Procedure, the society should bend its energies toward the passage of a law which emanated from the society and which was in the hands of the committee at Albany. This law, if passed, would do away with many of the present evils of court procedure. It was suggested that the model plan for procedure in criminal cases would be that the question of lunacy be referred by the court to a committee of three, two members at least of which should be medical men. These men should have been certified as to their moral character and should have passed an examination as to their qualifications to pronounce on the mental conditions. There should be several such experts appointed in every judicial district.

The commission thus appointed should examine into the mental state of the prisoner and report to the court. They should determine the degree of responsibility, that is, they should determine the character of the mental disease, if any, from which the defendant was suffering, and report in accordance therewith that he was fully responsible, partially responsible, or irresponsible. Partial responsibility in capital cases should be sufficient to remit the death sentence, but no one who had committed murder and who was acquitted on the ground of partial responsibility should be restored to liberty under ten years. In other felonies the cases of partial responsibility should have the shorter sentence optional with the judge. The report of the committee should be handed to the court and become part of the evidence, and should be the only medical expert evidence.

Dr. William Hirsch, of New York City, was of the opinion that no law, however good, would remedy the present condition of affairs so long as we have not to deal with honest men. If it be possible for corruption or any kind of dishonesty to enter legal procedures, then the best law could not be carried out in an ideal way. On the other hand, laws, no matter how defective, could be so handled that they would answer the purposes of humanity and truth if we have to deal with honest men. This society should direct its attention to its own profession and endeavor to raise the standard of expert testimony to such a point that dishonesty and incapacity would not be brought to bear in criminal procedures.

Dr. William Mabon, of New York City, thought the present law unsatisfactory, but so many questions were involved that it would be difficult to formulate anything that would improve conditions as they exist. He advocated referring the matter to a committee who should investigate conditions not only in this country but abroad. Nothing could be accomplished until the legal profession could be brought into closer touch with the medical profession.

Dr. A. R. Dieffendorf, of Middletown, Conn., asked Dr. Bailey to state, in closing the discussion, just what standards physicians would have for determining the degree of responsibility. He believed that neither the legal profession nor the community would permit a commission of alienists to pass upon that matter without knowing the rules which the physicians applied. He asked further if Dr. Bailey, in looking up the matter, had been able to determine how the criminal procedure in Great Britain had brought about the remarkable condition to which he referred, viz. that there were just as many men found not guilty of first degree murder on account of insanity as were found guilty and hung.

Dr. L. Pierce Clark, of New York City, was heartily in accord with the suggestions made by Dr. Bailey, and favored the appointment of a committee to study the matter very thoroughly. The law in the main was far better than that which is in force at the present time, but a proper statute could be worked out only after careful study from a legal as well as from a medical viewpoint.

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Dr. William L. Russell, of Poughkeepsie, N. Y., was, on the whole, in accord with the suggestions presented in the paper and believed that a committee might, by prolonged study and the presentation of preliminary reports, bring out a discussion of the whole matter that would be very helpful. He referred to the committee appointed two or three years ago by the American Medico-Psychological Association to confer with the American Bar Association, and thought it would be well for the committee under consideration to confer with this and other similar committees. A special procedure might be instituted to determine the advisability of detaining those who have committed murder or homicide and who have been acquitted on the ground of partial responsibility.

Dr. August Hoch, of White Plains, N. Y., said it was not so much a question of making, or urging the making of a different law in regard to the matter of responsibility, as it was of urging that a better basis be furnished for forming a medical opinion. In most cases experts would not differ so much about a given case if all had the same facts, and enough facts. The divergence of opinion arose because, in many instances, the experts were working with an utterly insufficient knowledge of the case, so insufficient, very often, that in everyday practice no conscientious psychiatrist would think of forming an opinion upon it.

Dr. Allan McLane Hamilton, of New York City, thought there should be some *rapprochement* between the medical and legal professions, and to this end suggested that a committee be appointed to confer with the Appellate Division of the Supreme Court with reference to the question in hand. Dr. Bailey had been misinformed concerning English laws. In the question of murder the facts were left to the jury, which enquired into the matter, the question of insanity coming up later. Expert witnesses were not objected to, but the final decision was left to some representative of the Crown. He agreed with Dr. Bailey concerning the ten years' confinement of individuals acquitted of murder on the ground of partial responsibility. In disputed cases, however, the time of confinement need not necessarily be ten years.

Dr. Charles L. Dana, of New York City, did not take quite so pessimistic a view of the matter as did Dr. MacDonald. The committee, if appointed, should confer with prominent judges and lawyers, particularly criminal lawyers. The question of partial responsibility was an important one, and if all alienists would accept the idea that there is such a thing as partial responsibility it would have its effect upon the method of procedure. It would be useful for the committee to undertake work along the line of devising a test for insanity which might be accepted by the legal profession.

Dr. Adolph Meyer, of New York City, said that in practically all European countries partial responsibility had been recognized in some form. The question was whether this could be so formulated as to be satisfactory to the community, for after all our laws were not absolutely bad. There had been heretofore too much expression of mere opinion on the part of alienists without enough attention paid to the determination of the actual facts. The relative looseness in the determination of facts and the too liberal acceptation of hypothetical questions on the part of physicians had led to the unfavorable impression existing to-day. It was extremely difficult to form an idea as to what should be considered sufficient facts to justify an expert in giving an opinion. Adequate observation of the persons should be in some manner invited if not enforced, and alienists should raise among themselves the standard as to what facts are necessary to justify an opinion. It was the work of the physician to determine, whether the individual had any mental disorder, and whether this disorder had anything to do with the commission of the act. The question of responsibility should be decided by the physician.

Dr. Pearce Bailey, of New York City, in closing the discussion, said the question of responsibility should be referred to medical men, but they would have no authority more than communicating their findings to the jury. While it might be impossible to change the present procedure, yet it was well enough to look into the matter to see what could be done.

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Rotes and Comment.

THE WASHINGTON MEETING OF THE ASSOCIATION.—The sixtythird annual meeting of the American Medico-Psychological Association, at Washington, with its adjourned sessions at Jamestown, Va., was, both as to interest and attendance, a satisfactory one.

Held in conjunction with the other large special associations forming the Triennial Congress of American Physicians and Surgeons, it gave those in attendance at the meeting an opportunity to learn what was being done in other departments of medical science, and at the same time permitted the medical men in affiliation with other organizations, and interested in other departments of medical investigation and work to gather some knowledge of the importance and broad scope of psychiatric medicine.

The programme was too long to be carried out, and unfortunately many papers were merely read by title. The topics put down for discussion, and the gentlemen selected to lead the discussions were well chosen, and awakened much interest—but unfortunately not a very active debate. This lack of more general participation in the discussion of papers is a feature of our meetings which we in common with many others regret.

The reasons for this, and we believe also the remedy, are not far to seek.

Except for those experienced in polemical discussions, it is difficult from the reading of an ordinary paper to grasp the salient points with sufficient clearness and sequence to warrant one engaging in a discussion thereof. If the programme committee would announce that no paper would be considered, or put upon the programme for a meeting of the Association unless an abstract thereof, sufficiently complete to give the reader a conception of the argument and conclusions of the writer, was furnished the Committee, for distribution among the members of the Association at least two months in advance of the meeting, these difficulties would be met. A regulation of this kind would also have another beneficial result, in that it would exclude from the programme those hastily written papers, which are occasionally presented, opening with the stereotyped excuse, "this paper has been undertaken under stress of so many distracting duties, and so hastily put together that the author feels that he must apologize for its many evident defects."

It would not seem to be a difficult task, nor one involving material expense to institute a plan such as we have suggested. The abstracts should form part of the programme to be used at the annual meetings, but should also be sent to each member six weeks or at least a month in advance of the session. The papers read at an annual meeting, all of them, deserve a better reception and more general discussion than they receive. While upon this point we would like to point out that discussion of a paper does not by any means necessitate an agreement with any or all of its conclusions or arguments. We would like to see at our meetings an imitation of that full, free, and critical debate which characterizes the sessions, particularly of many foreign societies, and which is productive not only of increased interest in the sessions, but of more carefully prepared papers.

In a body of scientific gentlemen, critical discussion should be welcomed and can be and is carreid on without acrimony or the production of any ill feelings.

The address of the President emphasized the necessity for more and better clinical work and was well received. The JOURNAL came in for a little more than its usual share of attention but the suggestion that it be turned over to the tender mercies and commercial exploitation of a publishing house did not receive any favorable comment.

Suggestions looking toward its more frequent publication, which have now been made to the Association at two meetings, were referred to the Editorial Board and the incoming officers.

The selection of Dr. Bancroft as President places in the chair a gentleman who well deserves the honor, and who will occupy it to his own and the Association's credit.

CONGRESS OF ALIENISTS AND NEUROLOGISTS AT GENEVA AND LAUSANNE.—The Seventeenth Congress of Alienists and Neurologists of French-speaking Countries will be held at Geneva and Lausanne August I to 7. The opening session will be held at Geneva August I. A discussion will be held upon Medico-legal Experts and Questions of Responsibility, to be opened by a report by M. Gilbert Ballet. On the second day M. Antheaume will open the discussion on Periodic Psychoses. The remaining two days of the Geneva session will be given up to discussions of general subjects not definitely announced, visits to bathing establishments, hospitals, and asylums, and social functions. On August 5 the session will open at Lausanne when MM. Claude and Schnyder will open a discussion on the Nature and Definition of Hysteria.

The remaining days at Lausanne will be given up to inspections of neighboring institutions, excursions, a dinner, and receptions.

HEADS OF FAMILIES OF THE FIRST U. S. CENSUS.—Many of our readers will welcome the announcement made by Mr. S. N. D. North, Director of the Census, of the publication of the names of heads of families as shown by the census of 1790.

From the circular issued by the Census Bureau we take the following:-

"Congress recently authorized the Director of the Census to publish during the present fiscal year the names of heads of families and accompanying information, shown on such schedules of the Census of 1790 as are in existence. Unfortunately the appropriation for the Bureau does not permit the publication of this information for all the states the schedules for which are still in existence, but the returns for the states of New Hampshire, Vermont, and Maryland are now in press and will be issued as parts, or pamphlets. Each of these parts will form an attractive publication consisting of about 150 pages, fully indexed, printed upon laid antique paper, sewed, and bound in especially handsome and durable semipamphlet binding. Each part will contain as a frontispiece a map of the state represented, 11 by 17 inches in size, reproduced by lithography from an atlas published in 1796.

"In accordance with the law these pamphlets are offered for sale by the Director of the Census, and the price has been set at \$1 each."

Book Reviews.

Department of Neurology, Harvard Medical School. Contributions from the Massachusetts General Hospital, the Boston City Hospital, the Long Island Hospital, and the Neurological Laboratory. (Boston, 1907.)

In this attractive volume are gathered reprints of articles by the neurological staff of the Harvard Medical School which appeared during the year 1906. The original publication of the nine papers collected here has been in the Journal of Abnormal Psychology, the Journal of Nervous and Mental Diseases, and the Boston Medical and Surgical Journal. The authors are: J. J. Putnam, P. C. Knapp, G. A. Waterman, E. W. Taylor, and G. L. Walton, and to one knowing the excellence of the work of these men it were almost superfluous to say that the present papers are quite up to their several standards. Possibly to the psychiatrist the most interesting paper would be one by P. C. Knapp upon the Mental Symptoms of Cerebral Tumor, which is a most careful study, but it is difficult to single out any one which will better repay perusal than the others.

W. R. D.

Transactions of the College of Physicians of Philadelphia. Third Series, Vol. XXVIII. (Philadelphia: Printed for the College, 1906.)

This volume quite comes up to the excellence of contents and mechanical details which have made this series noteworthy. In addition to the President's Address, List of Members, etc., there are 23 papers upon various subjects connected with medicine, surgery, and neurology. In the latter group are: Cerebral Decompression—Palliative Operations in the Treatment of Tumors of the Brain, by Wm. G. Spiller and Charles H. Frazier; Is Neuralgia a Functional Disease? A Study Based upon the Pathological Findings of Eight Cases, by Alfred Gordon; and Cases Allied to Amaurotic Family Idiocy, Apropos of Two Patients, One of Whom Presents Among Other Stigmata Polydactylism of the Four Extremities, by the same. All of these are of considerable interest, and the majority of the other papers will repay perusal. W. R. D.

Textbook of Psychiatry. A Psychological Study of Insanity for Practitioners and Students. By Dr. E. MENDEL. Authorized translation, edited and enlarged by WILLIAM C. KRAUSS, M. D. (Philadelphia: F. A. Davis Co., 1907.)

This book will probably meet with considerable success, and deservedly so because it is a good one. Dr. Mendel has been too long a teacher to 1907]

put forth a work which does not have many points of excellence. The greatest of these is brevity, and this is also the greatest defect, for while the book may be useful to the student who is in the hands of a good teacher who has plenty of clinical material upon which to point out the multitude of symptoms of which Dr. Mendel speaks, and who is able to show the relationship that mental symptoms bear to one another in particular cases; in the hands of a student who has not such a teacher the book must prove confusing because he first learns of a vast number of isolated symptoms before he learns of particular diseases in which they may occur.

The grouping of mental diseases is rather unsatisfactory to those who are accustomed to that of Kraepelin, as it does not appear quite so exact, and there is a tendency now and then to run one group into another which may be confusing at times. Fortunately, however, these instances are rare. The term dementia præcox is limited to a rapidly occurring dementia which is only found in young people, a limitation which is not generally accepted at the present time. As is well known, Mendel has made a special grouping of paranoia, which, while interesting, we believe is not justified, and many of the varieties are more properly placed elsewhere. His grouping is as follows:

- (a) Rudimentary paranoia.
- (b) Typical paranoia.
 - 1. Acute simple paranoia.
 - 2. Chronic simple paranoia.
 - 3. Acute hallucinatory paranoia.
 - 4. Chronic hallucinatory paranoia.
 - Varieties :
 - I. Hypochondric.
 - 2. Primitive.
 - 3. Paranoid melancholia.
 - 4. Paranoid dementia.
 - 5. Katatonic.
 - 6. Periodical.

In treatment many dangerous procedures are advocated. For example: Mendel recommends the administration of bromide of potash in doses of 8 to 10 grams daily in cases of periodical mania. With such treatment it is not to be wondered that cases of mania may end in terminal dementia. The free use of the bromides is advocated throughout the book. Duboisin and morphia are also used as hypnotics. There are so many better methods of securing sleep than by the use of these two drugs that it seems a pity that they should be mentioned in this connection.

As a rule the translation has been well done and the additions even better, but now and then a crude expression jars the continuity of thought, and the following sentence (page 273) requires a knowledge of the subject for its proper understanding: "From this [demented form of paresis] it [arteriosclerotic psychosis] is distinguished by its later appearance, the lack of the reflex rigidity of the pupils, of the paralytic disturbance, the development to a high degree of the arterio-sclerotic phenomena, in the full, bounding arteries, in the heart, the kidneys (arterio-sclerotic atrophied kidney), the moderate degree of weak-mindedness with much disturbed memory and a strong feeling of disease with the absence of clearly defined delusions, and the very slow, unprogressive course."

The supplementary guide for examination is well arranged.

W. R. D.

Starr on Nervous Diseases. Organic and Functional Nervous Diseases. By M. ALLEN STARR, M. D., PH. D., LL. D., Professor of Neurology in the College of Physicians and Surgeons, New York; ex-President of the American Neurological Association and of the New York Neurological Society. Second edition, thoroughly revised. Octavo, 824 pages, with 282 engravings and 26 full-page plates. (Philadelphia and New York: Lea Brothers & Co., 1907.)

American neurologists will welcome the appearance of the new and thoroughly revised edition of this important work on organic and functional nervous diseases. The book has been brought up to date and much new material has been added.

In the first edition the work was limited to organic nervous diseases, but in the present volume the whole field of neurology is covered, the last hundred pages being devoted to the main types of functional nervous diseases, including chorea, epilepsy, paralysis agitans, neurasthenia, hysteria, and migraine.

The presentation is everywhere clear and concise, so clear and concise at times that the sensitive critic might complain almost of dogmatic statement, but this is probably a good fault in a book which is intended for the average medical student and the general practitioner.

As might have been expected from the author's special experience and from the original contributions he has made in neurology, two sections of the volume stand out with prominence, one the section dealing with multiple neuritis and the other that discussing cerebral tumors. Dr. Starr has done his colleagues in the profession a great service by giving them the benefit of his rich store of observation in these two fields.

There may be some who will quarrel with the mode of classification of nervous diseases adopted in the book. In the first place, the tendency is growing to do away with the conception of functional disease as contrasted with organic disease, and yet the distinction must be regarded in the present state of our knowledge as still a helpful one. Again, since histological studies have shown the inadequacy of the division of the nervous system on gross anatomical lines into spinal cord, cerebellum, cerebrum, etc., there are others who feel that a classification of diseases upon this gross anatomical basis is objectionable; any classification, however, on an anatomical or histological basis has its own drawbacks, and if one attempts a neuronal classification he will find almost as many difficulties in arranging his materials as when he divides his maladies under the cap-

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tions followed in the work before us. Classifications after all are mere conveniences for pigeon-holing ideas, and each writer does well to use the kind of pigeon-hole which best agrees with his training and experience.

There are some 282 engravings in the text of the volume, and 26 plates in colors and monochrome; these are very helpful to readers of the book. The volume may be warmly recommended to physicians and students as representative of the better American clinical neurology.

L. F. B.

Abstracts and Extracts.

The Diagnostic Value of Lumbar Puncture in Psychiatry. By J. L. POME-ROY. Journal of Nervous and Mental Disease, Vol. 34, pp. 225 and 312, April and May, 1907.

This is an extremely interesting and careful study and gives the results of a year's observation made upon doubtful cases at the Manhattan State Hospital.

The technique used was that of Widal and Ravaut. In all, 131 cases were observed, a number of whom it was possible to observe over a considerable period. The paper is well worth perusal, but the author's conclusions follow:

I. Patients should not be punctured unless they can be put to bed.

2. To be of definite value the puncture must be repeated two or more times, at an interval of at least ten days.

3. A constant negative finding is of more value than a positive one, for it rules out the presence of brain syphilis and parasyphilitic conditions.

4. In general paralysis the lymphocytosis is a constant and early sign and is usually associated with a heightened albumin content. The same can be said for tabes.

5. Lymphocytosis may occur in secondary and tertiary syphilis without clinical evidences of involvement of the nervous system, also it may occur in patients who give evidences from scars or other signs of old syphilitic infection. As a rule the cellular increase in such cases is far behind that observed in paresis and there is very slight albumin increase. Where inflammatory brain syphilis exists albumin increase may also appear.

6. In arteriosclerotic insanity a positive finding points to a syphilitic process, such as softened foci following specific arterial disease. In brain tumors a negative finding is the rule. If a positive finding occurs, a syphilitic basis for the process can be taken for granted.

7. Epilepsy shows negative findings; if otherwise the suspicion of brain syphilis is justified.

8. Alcoholism in all its varieties gives negative results, if the finding is positive and there are no signs of nervous involvement an old syphilitic infection is to be taken for granted. Where symptoms of involvement of the nervous system are present general paralysis or brain syphilis is to be suspected. It is questionable in some cases even when symptoms of involvement of the nervous system are not present, in a positive finding with albumin increase, whether we are not dealing with an early paresis.

9. A differential diagnosis is to be made between brain abscess and meningitis by the presence in the latter of increased cellular material.

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10. It cannot be enough emphasized that the lymphocytosis presents a singular disease sign, and only after consideration of all other clinical symptoms of the disease, should it be used to construe the case. When the findings are considered with due care to the possibilities, the results obtained from lumbar puncture are an important and ofttimes an invaluable aid to the diagnosis of obscure nervous and mental diseases. It is of especial importance in differentiating alcoholism, general paralysis, dementia przcox, epilepsy, brain tumor, and finally brain syphilis. With the advancement of our knowledge of the occurrences of lymphocytosis in syphilis of tissues other than the nervous system, with further autopsy reports, and improvement in technique, we can look forward to the solution of many, at present, doubtful phases of the subject. W. R. D.

Operative Treatment of Traumatic Psychosis. By BERNARD HOLLANDER. The Lancet, Vol. CLXXII, p. 657, March 9, 1907; also Medical Press & Circular, Vol. LXXXIII, p. 419, April 17, 1907.

This is a brief abstract of an interesting case of mental symptoms followed trauma of the head.

In 1898, a man received a kick from a horse on the right side of the chin, followed by severe frontal headache and neuralgic pains. A year later he had a heavy fall from his cycle on the right side of his head, which while leaving no visible sign of injury, was followed by hemicrania of great severity, preventing any intellectual work and causing the patient to become emotional, anxious, and depressed; he developed suicidal ideas and self-accusation. Later he grew suspicious, easily offended, irritable and profane, erotic and subject to uncontrollable fits of sexual excess. He also suffered from obstinate constipation and had sensory disturbances in the left arm as well as persistent insomnia.

In the spring of 1905, he had symptoms of word blindness and a transient attack of paralysis of the right side of the face and left half of the body.

The author from the above symptoms concluded that the disease was originally limited to the neighborhood of the supermarginal and angular gyri and that it had subsequently spread over the posterior temporal area.

On October 9, 1905, trephining was performed and the bone over the angular gyrus was found thickened and hardened, with scarcely any diploe and the dura mater was adherent to it. When the bone was removed the dura mater bulged into the opening, but showed no signs of pulsation, although the pulse of the patient at the time was quite strong. On cross incision of the dura mater a stream of clear fluid escaped. The membrane was opaque and thickened, but the brain appeared normal, and on examination the neighboring parts revealed no pathological changes. A drainage tube was kept in the scalp wound for three weeks and during this period the patient had occasional attacks of depression and irritability, beadache and trigeminal neuralgia, but with the closing of the wound all symptoms disappeared. Patient last reported himself, February 20, 1907, and even the symptom of obstinate constipation had disappeared.

W. R. D.

The Function of the Prefrontal Lobes. By ALFRED GORDON. Journal of the American Medical Association, Vol. XLVIII, p. 1421, April 27, 1907.

The author here reports briefly the clinical symptoms, including mental phenomena, and pathologic findings in the case of a man who died as the result of a hemorrhage into the white substance of the left prefrontal lobe.

The possibility of the prefrontal region being the site of the higher psychic functions is suggested, and the work of Phelps, Welt, Bianchi, Flechsig, Jastrowitch, and Oppenheim is mentioned.

The emotional state of the patient is spoken of, it being one of Euphonis and the analogous symptom Witzelsucht having been observed by several German writers, lends to it additional interest. The other symptoms of psychiatric interest in the case were: Early confusion, later partial disorientation with motor restlessness and outbreaks of violence, but the above mentioned affect coloring of the psychic reaction was the most conspicuous feature in the case. FITZGERALD.

Is Eyestrain Ever an Etiologic Factor in Epilepsy? By H. O. Rux. Journal of the American Medical Association, Vol. XLVIII, p. 1501, May 4, 1907.

In this article Reik reports several cases in which eyestrain appeared to be the causative factor in the production of epilepsy, and cases in which the correction of refractive errors led to a relief of the condition. Spratling's assertion that he was "unable to recall a case of epilepsy in all my experience in which I felt that defective ocular conditions alone caused the disease," is called to account and the author feels that the cases reported by thoroughly competent opthalmologists where epilepsy has been either cured or greatly modified in its severity by the use of satisfactory lenses, must be taken as a sufficient guarantee that eyestrain is an etiologic factor of undoubted importance. The writer's consideration of this debated question is eminently exact and scientific, and though only a brief paper, merits consideration at the hands of every student searching about for the cause of epilepsy in his patient.

Occupation in the Treatment of the Insane. By THOMAS J. MOHER. Journal of the American Medical Association, Vol. XLVIII, p. 1664, May 18, 1907.

This article read by Moher in the psychological section of the British Medical Association at the last annual meeting, deals briefly with occupation as a curative agent in the treatment of the psychoses.

He advocates work for nearly all cases except paretics in the stage of exaltation, cases in early stages of maniacal excitement, and those physically unfit. As a rule, it is thought advisable to so arrange that the patient's remedial occupation may not be the same as the one by which be obtains a livelihood; it is noted, however, that some cases show interest only in an occupation with which they are familiar. The early use of oc-

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cupation in deteriorating psychoses is wisely advocated, and the additional value of sunshine and fresh air in combination with work is touched on. Careful medical supervision is naturally insisted on and care in the selection of the quality and quantity of work required of the patient is of considerable import. The question is one of extreme interest especially in the chronic asylums, and although the author suggests nothing that is diffoult to carry out it seems that the scientific value of this method of therapy would be greater if it were worked out on more exact lines the nature and progress of a psychosis being indicated, and the minute details of the improvement in the mental condition being noted.

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Sopra alcune varietà della demensa precoce. Del Prof. SANTE DE SANCTIS. Rivista Sperimentale di Freniatria, Vol. XXXII, p. 141.

The author first briefly discusses the somewhat varying views held by Kraepelin, and by English, French, Italian, and American writers. He then gives a discussion of certain cases in his experience from which he elaborates three forms of dementia præcox which have not hitherto been proposed. In the first place he states that he has been interested in the relationship existing between dementia præcox and congenital weak-mindedness (phrenasthenia). He reviews certain opinions expressed by older writers, and asks: I, if dementia præcox may occur in phrenasthenics? and, 2, if there is a prepuberal dementia præcox, may it not be properly called dementia præcocissima? He then discusses the occurrence of dementia præcox in the fourth and fifth decennium of life, and proposes the following questions for discussion:

L Is there a *dementia pracox subsequens* or *comitans*, following or complicating phrenasthenia?

3. Is there a dementia pracocissima (of children)?

3. Is there a dementia pracox retardata (occurring in middle life)?

4 Has dementia præcox in the forms subsequens or comitans and reterdata, any premonitory signs in the evolutional period of life.

Dementia przecox subsequens or comitans is first taken up for discussion and De Sanctis makes the following statements concerning cases which he has personally observed:

a Dementia przecox subsequens or comitans, a form fairly frequent occurs more often in females than in males. In the author's six cases, four were females.

b. These six cases occurred between 12 and 20 years.

c. The immediate causes are apparently, in one case a febrile disease, in another overwork, in two intense emotion, and in the other two cases inknown.

d. In the six cases, in one alone was there marked phrenasthenia in the ancestry, and in four there was a moderate degree of mental weakness. One of the patients was of sufficient mental capability to learn by special pedagogic methods to read and write, and even acquire the elements of a foreign language. The other five were able to pass through the first three

elementary classes after a varying period of years. In all the mental insufficiency was quite marked.

e. All of the cases belonged to the aparetic form of phrenasthenia, but in two cases observed by the author elsewhere the mental insufficiency was accompanied by epileptic attacks.

f. The symptoms are in order of frequency as follows: Capriciousness and change in character, apathy, depression, scrupulosity, negativism, hallucinations, restlessness. In only one of the six cases were catatonic symptoms present.

g. Usually in phrenasthenics with dementia præcox the intellectual deterioration begins during the eleventh or twelfth year, and becomes progressively worse, so that it is necessary to discontinue pedagogic treatment. In the most severe cases the characteristics are those of the hebephrenic or paranoid forms, though the majority of cases may be classified as simple dementia.

An abstract of a typical case is given, and the author proceeds to a discussion of *dementia præcocissima*, first citing a number of authors who have admitted the possibility of dementia præcox occurring sometime before the puberal period. He then gives abstracts of a typical and of a doubtful case and proceeds to a discussion of *dementia præcox retardata* in which he holds that the initial symptoms occur after 40, during the climacteric, or even after 50 years of age. Numerous authorities are cited in proof of this statement and an abstract of a typical case is given.

In conclusion he discusses the question whether dementia przecox generally shows premonitory symptoms early in life, answering this in the affirmative. W. R. D.

Dementia Pracox. By JOHN MACPHERSON. Review of Neurology and Psychiatry, Vol. V, p. 185, March, 1907.

The author briefly discusses the name and says: "It would perhaps be better for psychiatry in our own country if less attention were directed to the name, and a little more criticism devoted to the substance of the entity which Kraepelin has presented to us under the name of "dementia præcox."

Having been "struck with the fact that among the many criticisms of Kraepelin's presentation there has been but scanty attempt to describe his main propositions in his own words," the author "resolved in the interest of clearness and fairness to present an epitome of the main facts upon which Kraepelin has founded his belief in this clinical entity. This has been done most successfully and to anyone desirous of reviewing these points recommendation of a perusal of this paper is made.

W. R. D.

A Medico-legal Definition of Insanity. By CLEMENT H. SERS. Medical Press and Circular, Vol. LXXXIII, p. 564, May 22, 1907.

The author calls attention to the fact that insanity is not the only word which has not an exact meaning to all minds and gives a number of ex1907]

amples in illustration. He refers to a previous communication in which he defined insanity "as a morbid condition of mind requiring supervision," and which he would now amend to read "as a morbid condition of mind subject to legal intervention," concluding with arguments to show its adequacy. W. R. D.

Constipation et Troubles Mentaux. Par Dr. PERPERE. Progrès Mèdical Tome XXIII, p. 98, 16 Fevrier, 1907.

Constipation is a constant symptom of a number of the psychopathies and usually complicates the clinical picture. In epilepsy it increases the number of convulsions, and it is imperative to prevent constipation in caring for these cases. In hysteria cases have been reported who have not had an evacuation for two or three months. It is frequent in alcoholics and melancholiacs. It may be said that the constipated paretic is a candidate for a convulsion. In hypochondriacs the presence of feces in the digestive tract may give rise to delusions of animals, etc. The psychic cause of constipation as elaborated by Dubois cannot be ignored, but it cannot be said to apply to all cases. As a cause of auto-intoxication constipation is well recognized and is frequently seen in typhoid fever. A case reported by the author would give basis to the belief that the cause of Korsakoff's Syndrome is an intestinal intoxication. An abstract of this case is given and a resumé of the symptoms presented is given as follows: Profound confusion with many transitory delusions, visual, and auditory hallucinations, motor agitation, anxiety and sudden seizures. The patient was so much constipated that the abdomen was greatly distended, and after free purgation the mental symptoms were much less marked.

W. R. D.

L'herédité dans l'hémorragie cérébrale. Par PAUL RAYMOND. Le Progrès Médical, Tome XXIII, p. 197.

In this brief note after a number of quotations and comment, the author presents the following interesting table:

J. P. Bar ; Died at 36 of cerebral hemor- rhage following a fall in a pond.		M. Bar; No information on the cause of death; no other information on the he- redity of these three brothers, who lived nearly 100 years ago.		X. Bar; No informa tion on the cause of death.
J. Bar ; 1 strack at 52, 2 59.	Francoise Bar ; 1 attack at 51, 2 and death at 57.	M. Bar. ; 3 years has had hemiplegia. 57 years.	Daughter; Died of cerebral hemorrhage	J. B. Bar ; Died at 49 yrs. of cerebral c. hemorrhage.
Marie Bar ; Jean ; Hemiplegia at 43 yrs. 39%.	Josephine L.; Emmanuel L. 1 attack at 49, Hemiplegic 2 "and for 8 mos.; death at 56. 53 years.			

W. R. D.

Etude statistique sur les formes cliniques de la Paralysie Génerale. Par P. SERIEUX et MAURICE DUCOSTÉ. Le Progrès Médical. Tome XXIII, p. 161, 16 Mars, 1907.

This paper begins with references to the forms of paresis differentiated by Bayle, Calmeil, J. Falret, Schüle, Kraepelin, Weygandt, Regis, and Lissauer. The authors state that paresis may occur in eight forms which may be pure or may be mixed. In 150 paretics observed at Ville-Evrard from 1898 to 1906, the forms were differentiated as follows:

Form.	Number.	Percentage.
Demential	36	24
Maniacal	9	6
Expansive	40	27
Depressive	3	2
With persecutory ideas	4	3
Circular	10	7
Hypochondriacal	II	7
Sensory	37	24
	150	100

Comment is made upon each of these forms and an occasional illustrative case is given. It is stated that the hallucinations of paretics may involve one sense or many, but among the isolated ones those of hearing are most frequent (26 per cent), then those of general sensation (14 per cent), and of sight (11 per cent). In 8 per cent all sensations were disturbed, and in 10 per cent hallucinations of hearing and of sight on the one hand, and of hearing and general sensation on the other, were concomitant. Seven of the 58 paretics who showed hallucinations had an alcoholic history, three of whom had hallucinations of hearing, one of general sensation, one of hearing and general sensation, one of hearing, general sensation and taste, and one of all senses. W. R. D.

To What Extent Can the Gynecologist Prevent and Cure Insanity in Women? W. O. HENRY. Journal of the American Medical Association, Vol. XLVIII, p. 997, Mar. 23, 1907.

In this article Henry reviews the subject of gynecological procedure as agents in the prevention and cure of the psychoses, and states his own views on this much-discussed topic.

After quoting various authorities' definition of insanity, the author gives the results of the work of different gynecologists in the treatment of pelvic disorders in insane women. Summing these up, the writer is inclined to believe that in many cases the results obtained would have been much better had the operative measures been more thorough.

The author's own cases are then cited, 28 in number. Operations on 27 of these patients were done 9, 10, and 11 years ago. Sixteen cases made a perfect physical and mental recovery, one died soon after operation;

one was temporarily benefited; of the others the writer adds "none were made worse."

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In conclusion the author gives it as his opinion "that the gynecologist can prevent the occurrence of insanity in many women with very unstable nervous organizations, if he will by treatment or operation remove all pelvic irritation, and that he may cure various forms of insanity in women if such irritation is entirely removed."

It might be mentioned that certain statistics which are used by this writer in support of his own sanguine view are not actually in accord with the fact, as several cases reported as cured by an observer quoted, are at the present time inmates of insane hospitals with prognoses that are distinctly unfavorable.

It would seem that all are agreed that insane women should have all local pelvic disorders treated when such exist, but that these measures *per se* cure or prevent insanity is not the opinion of such good observers as Dr. W. P. Manton, of Detroit, or Dr. Le Roy Broun, of the Manhattan State Hospital consulting staff, who took part in the discussion of the paper. FITZGERALD.

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The Atypical Child—Its Instincts and Moral Status. By Waldemar Heinrich Groszman. Reprint from Bulletin of American Academy of Medicine, April, 1907.

Is Sexual Perversion Insanity? By Harold N. Moyer. Reprint from Alienist and Neurologist, May, 1907.

Is Genius a Sport, a Neurosis, or a Child Potentiality Developed? By Jas. G. Kiernan. Reprint from Alienist and Neurologist, May, 1907.

The Tramp as a Social Morbidity. By Harriet C. B. Alexander. Reprint from Alienist and Neurologist, May, 1907.

The Bulletin of the University of Nebraska, April, 1907.

Thirteenth Annual Report of the Managers of the Gowanda State Homeopathic Hospital at Gowanda, N. Y., for the year ending September 30, 1906.

Fourteenth Annual Report of the State Charities Aid Association of New York.

Annual Report of St. Joseph's German Hospital of Baltimore, for the year 1906.

Twenty-ninth Annual Report of the Worcester Insane Asylum, for the year ending November 30, 1906.

Fifty-eighth Annual Report of the Central Indiana Hospital for Insane, for the year ending October 31, 1906.

Nineteenth Annual Report of the Southwestern Hospital of Virginia, for the fiscal year ending September 30, 1906.

Special Report by Groszmann School, Inc., on the Occasion of the Seventh Anniversary of the Groszmann School, April 1, 1907.

Official Reports of the Trustees and Officers, State Hospital (Danville, Penn.), from October 1, 1904, to September 30, 1906.

Ninth Biennial Report of the State Hospital, Ingleside, Neb., for the Biennial Period ending November 30, 1906.

Thirty-sixth Annual Report of the Managers of the Middletown State Homeopathic Hospital, for the year ending September 30, 1906.

Ninety-third Annual Report of the Trustees of the Massachusetts General Hospital, including the General Hospital, in Boston, the McLean Hospital and the Convalescent Home in Waverley, 1906.

Annual Report of Dr. D. Brochu, of Beauport Asylum, for the year 1905. Eleventh Annual Report of the Macon Hospital, year ending December

31, 1906. Thirty-sixth Annual Report of the Buffalo State Hospital, for the year ending September 30, 1906. Twenty-eighth Annual Report of the Managers of the Binghamton State Hospital, for the year ending September 30, 1906.

Thirty-eighth Annual Report of the Board of Managers of the Willard State Hospital, year ending September 30, 1906.

Abstracts of a Year's Contribution to Internal Medicine, by G. W. McCaskey, from March 1, 1906 to March 1, 1907.

University of Oregon, Medical Department, Twenty-first Annual Announcement, 1907-1908.

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RECEPTION HOSPITALS, PSYCHOPATHIC WARDS, AND PSYCHOPATHIC HOSPITALS.³

By ADOLF MEYER,

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The excellence of the provisions for the care of the insane, which are offered by our State and private institutions, makes it practicable at last to turn with all our energy to a range of problems which will be the chosen field of work and achievements of the beginning of the twentieth century. The nature of mental disorders implies many issues which need not be considered in ordinary diseases. These special needs have determined the character of our State Hospitals and private institutions with their special regulations about commitments. But we need more, and among all the plans of improvement the most forcible has been for some years that of obtaining psychopathic hospitals or hospital wards in or close to the cities, similar to the European university clinics and city asylums. Dr. Frederick Peterson has been among the first to advocate measures of relief with his proposition concerning psychopathic hospitals. In Ann Arbor the late Dr. J. J. Herdman, and in Albany, Dr. M. J. Mosher actually achieved a solution; many other localities are seriously interested in the matter, so that to-day the problem is one of the most actual and commanding the greatest attention.

The mainsprings of the movement for psychopathic hospitals were the feeling that the existing *State* Hospitals did not fully answer the needs, owing to the distances and to the compulsory commitments; that the existing *local* measures mostly were insufficient; that *medical schools* should get better opportunities; that the medical *profession* outside of the State Hospital System should get better chances to promote special psychotherapeutic

¹Read at the sixty-third annual meeting of the American Medico-Psychological Association, Washington, D. C., May 7-10, 1907.

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work and to provide for patients for whom the asylum demanding legal commitment was not essential and therefore not desirable. The movement is largely to be credited to men not officially connected with the State monopoly which the legal issues about the insane had created, and in not a few of the recommendations it is easy to see a spirit of critical comparisons which, however, has more and more passed away since the alienists of the State Hospitals have taken an active and helpful interest in the matter, such as has recently been shown by a most excellent paper on the Care of the Insane preceding commitment, by Dr. H. L. Palmer, before the conference of the Commission and Superintendents of the State of New York.

We realize that there is justified discontentment about the chances of the physician outside of special institutions. He is forced to surrender the patient and to send him away too far for further supervision, on account of lack of local provisions, and without feeling satisfied that the best is being done. He may justly object to having his patient exposed to the frequently trying legal procedure of commitment and to his becoming associated with the so-called asylum class. He realizes more and more the real progress that has become evident in the State hospitals and he knows that for certain cases they render admirable service; but he would like to have provisions for emergencies. chances for prolonged and safe observation, and for such treatment as might spare the patient the stigma of a commitment. We may either look to general hospitals to be more liberal with their admission rules; or a free adaptation of the European city asylums is proposed as a desirable solution for the sake of the patient and the longing of certain physicians to get opportunities for clinical work and for teaching, akin to what can be had in every other branch of medical work.

The solutions arrived at in Ann Arbor and Albany and the problems of New York, Boston and other places vary according to local conditions, and as we shall see, for good reasons. Where a medical school is to be provided with a psychiatric clinic matters are relatively pointed. The problem then is the organization of a small hospital, independent or coordinated with other clinical divisions, or as part of a general hospital. When it is more the needs of the patients and of local physicians that

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demand attention, we meet especially with the question of who shall support the enterprise and what type of patients should be considered. This question is also prominent where medical schools have not their own hospitals and clinics. We therefore do well to consider specifically the question of 1st. State care and municipal care; 2d. The organization of the hospital or the division from the point of view of the medical service and the probable needs of the patients; and, 3d. The legal provisions, which necessarily play an important role.

I. The Question of State Care and Municipal Care.-Municipal efforts of the past have suffered through the notion that the insane form a definite class of *dependents*, an idea fostered by the number of chronic insane and of cases with recurrences and the relative frequency of close association with the same exciting factors as also lead their victims to the local almshouses and penal institutions. Alcoholic intoxication will always tend to be a matter for police wards and jails; and alcoholic delirium and even less acute psychoses, more or less connected with alcoholism, will yield borderland cases between what calls for penal and curative attention; moreover, in some acute outbreaks with "disturbance of the peace" the police will continue to be called until the routine of calling physicians and nurses will be properly established. All these relations have tended to give many local efforts either the stamp of an appendix to a jail, or the appendix to a poorhouse, either of which must be thoroughly condemned. To my mind we should have very good provisions for alcoholic and police cases, to be paid for by impressive fines, heavier than is customary to-day. Jails must always have provisions for doubtful cases. Poorhouses will have to have provisions for chronic cases where State care is not carried through. But under no circumstances should a provision for emergency cases and for early treatment even of the poor be connected with a poorhouse or get the stamp of the jail. The alternative is either an independent plant or one in connection with a general hospital. In admission wards such as those of Bellevue and wherever a relatively large number of suspects are held under the order of the police, the general tone is apt to be seriously influenced and can only be mitigated by developing things so that these cases gradually do form more or less the exception.

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So far the State has not concerned itself with any cases which were not either adjudged insane and committed or provided with papers which merely required formal sanction and already contained all the material and evidence calling for commitment. All other cases are really not within the jurisdiction of the State and should be looked upon as a problem of the local community. If the State opens its hospitals more liberally to voluntary and emergency commitments, it may have to assume responsibility for the expenses, and it should be willing to carry the burden in accord with the laws of the State especially where hospitals are close to medical centers. Where special provisions are to be created it would seem to belong to the system of municipal education and avoidance of paternalism to demand that the locality provide for the outgrowths of its own kind of social hygiene or lack of it, with the condition that the provisions come up to a required standard. If it is possible to interest some physicians and members of the community to follow the plans of places where things work efficiently, ever so much more is attained than by merely implanting a government branch. The members of the community must be led to feel responsible and proud of meeting the conditions which belong to their sphere and in which the State cannot be equally efficient. The whole matter of prophylaxis ultimately depends on local initiative, and since as a rule poverty and destitution go parallel with sufficient wealth, local movements can be expected to get sufficient support for provisions in emergencies and patients who still are able to assert their own needs.

Where the Government or State maintains a medical school, it is of course incumbent upon the authorities to provide a psychiatric clinic; and where, as in Toronto, the community has been depending on a local Government institution which should be eliminated from the city, it will be well to obtain a Governmentclinic especially if local medical schools and other agencies fail to come to the front. But, under all circumstances there should be as much utilization of local interests and local help as possible. Prophylaxis and access to the sore spots of the community will make the progress in this field, and nothing but work with the real difficulties will rouse our public to mind the dangers of alcohol, of syphilis, of insufficient hygiene of work and recreation. In these matters the State is too remote.

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It is, of course, inevitable that the expense for maintenance of acute cases is relatively very high. The per capita cost in State hospitals can only be maintained at its low figure because so large a proportion of patients are really maintained at a much lower rate than the divisions for the acute cases. This ought to be made plain to the public, who should not be given lump figures only, but an idea of the actual conditions. Even if the ordinary method of lump figures is easier and sufficient in dealing with the public, it is a harmful substitution for actual information and the gain is heavily paid for. Unless this is understood, institutions which care especially for cases in need of therapeutics will have a difficult stand whether they be run by a locality or by the State.

2. The arrangement of a medical service for mental difficulties and mental disorders makes undoubtedly considerable demands in excess of other hospital services. The propositions to be dealt with are as a rule more subtle and requiring more judgment and time so that they cannot very well be left to the common arrangement of a relatively untrained house-officer and a hurried visiting physician. It is, therefore, very questionable whether such a service should at all be tolerated without a guarantee that the physicians in charge have sufficient training and time. By far the safest plan where conditions warrant it is to have one or more experienced resident physicians with full responsibility and with adequate help. The co-operation of consulting physicians from the community and also from State Hospitals is very much to be encouraged, and also the co-operation with medical schools and everything that will add to general knowledge and better information of the profession and of the public. In smaller cities or towns general hospitals should be encouraged not to discriminate against mental cases by building strong-rooms, or where a somewhat larger division can be organized, by marking a special division too much.

The needs of psychopathology will always require considerable independence of the physician in charge and specific rules for the nurses and the general running. To attempt to make compromises is as a rule disastrous on account of dangers of suicides or of escapes or calamities which are more readily forestalled than remedied. Ease of transfer from one division to another is, however, very desirable. General hospitals will always have delirious

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cases, frequently disgracefully handled to-day because under the extreme paternalism nobody knows any better. On the other hand, cases with symptomatic deliria or any others may need surgical or other attentions, and it is very important that all the facilities be at hand. Where the number of psychopathic patients is sufficiently large, the difference of regime of the psychopathic division suggests the provision of an independent plant, but as far as possible connected with a general hospital or close to it. Propinquity and co-ordination is ideal; amalgamation, a concession to circumstances, and demanding a plain and efficient recognition of the need of certain special provisions. In very crowded cities, central location should, however, not be urged at any price. Even surgical hospitals tend to put their operative divisions into the country or at least quieter locations, and the central places are reserved for emergencies.

As to the types of patients to be provided for, there should in the first place be provisions for emergency cases, such as so far have given the impression that only police stations or "strongrooms" would be adequate. We know to-day that these cases are to quite an extent artefacts, aggravated by injudicious management by the friends and by those who are called to help them. As soon as a larger proportion of the public feel that places are provided which are really desirable in cases of mental upset or nervousness, and not lock-ups for the protection merely of the public, and equivalents of the jails, in other words, matters abt to call for a struggle and resistance even in the mentally sane, it will be much easier to induce the patients themselves to submit to what should be called a temporary quarantine. Certainly police interference must be reduced to a minimum and this can be obtained only by making persuasion easier, the places more efficient and inviting, the conditions of admission and discharge more reasonable, the available general hospitals and their ambulances more helpful, and the relatives and the public more ready to take a calm and sensible attitude instead of the warlike panic, and the assertion of superiority of might over right.

There are, moreover, cases which should be induced to come away from their homes voluntarily so as to be removed from unfavorable home influence. It will of course be difficult for some time to overcome the feeling created by the occasional presence

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of excited patients (which, however, will decrease in frequency under proper management), and it will be especially necessary to avoid getting the new provisions stamped too definitely with the much misunderstood term "insane." A great advantage of many of the foreign university clinics and special hospitals lies in their admitting a fair number of simple nervous disorders.

For a considerable number of cases annexes to convalescent homes in the country would be most serviceable. They would have to provide habit-training and occupation such as a hospital in the city can rarely furnish.

Where a psychopathic hospital is directly associated with a larger hospital for the insane, it is very desirable that the cases should be kept from being assimilated in the institutionalized mass of chronic cases. We know, of course, that a line should not be drawn between the "recoverable" and the "chronic," but that some line should be between those for whom something can be done (even if it is not a recovery) and those who belong to the organized boarding house. Twenty-five per cent of the recoveries occur among patients of over one year's residence at a hospital. But there is a wider range of classification possible, and as soon as it will be attained more patients will go out with a different account of the work of our hospitals and ready to come again and to advise others to trust the steadily improving provisions.

3. Legal Provisions.-The hospitals and reception hospitals should make voluntary admission as desirable as possible. More cases will then yield to mere persuasion. In most States detention against the patient's will will always require a legal order. Ten days' limit for detention or quarantine is practically allowed by the law. The protection of the rights of the patient should be helped in two ways: By obligatory report to the State Board of the occurrence of cases of mental disorder even if not committed, and by legal protection of the mail of the patients, if addressed to the Commission or other authorities, with severe punishment for any suppression. "Commitment" should become a legal decision to be rendered when asked for as an extension of a quarantine or restriction of personal liberty. Committed cases should not remain in local or city institutions unless special standards be provided. In States with State care it would seem best to restrict the care of committed or legally restricted patients to

State and licensed institutions. Under all circumstances, the *State* must reserve the right of *supervision* of local efforts and of their standards.

4. Construction and sites are too specific matters for a general discussion. It goes without saying that provisions must be ample for space, for recreation rooms, for general and single rooms, divisions for continued bath and hydrotherapy and gymnasium; that examination rooms and laboratories be furnished; that the construction avoid unnecessary dangers for injuries, suicide, etc. To assure all this, central supervision by a State Board is absolutely necessary; i. e., by a body which has not only good will but also experience.

These are topics of discussion and points which, no doubt, will have to be settled in many communities. It is especially important to insist on the necessity of adapting decisions to local conditions, and yet of keeping up standards such as will exclude the working of the antisocial political instincts. It is equally important to realize that such movements must not be based on sentiment merely and on false promises of improbable results usually at the expense of the existing hospitals and those who already come near doing their best with their opportunities. False promises have already vitiated public expectations and have produced undesirable contrasts to the larger hospitals in the country. We must further realize that those who know the facts must take a firm initiative. The human race of to-day is so opportunistic and ready to gamble with its chances, that we can not expect much spontaneous realization of the seriousness of the whole problem especially if it is veiled to the disadvantage of the people under the soothing and impersonal terms of heredity, degeneracy and strain. It will take persons with much actual knowledge and with very strong conviction and determination to shape the conditions for prophylaxis and organization of early remedial work. The mere psychopathic hospitals will, therefore, not be a panacea unless they have the inspiration and well-balanced judgment of convinced and trained workers and leaders. It is personality rather than system, or perhaps better, the necessary combination of personality and system, that will make for success in such movements, as a history of their development would readily show.

Honesty and moderation in promises, and greater honesty

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ADOLF MEYER

about the purposes and the means needed are equally essential whether we build on the good will and intelligence of the people or of private donors. In many places private funds will shorten the process of education of the public to see things as they are and must be met. But I feel sorry for him who has to carry the burden of false promises.

My theses would be:

1. Promotion of *local interest in the prophylaxis* of mental disorders is urgently to be desired, and it is best furthered by guiding the responsibility concerning local provisions for emergency cases, for cases which give rise to reasonable doubt as to need of commitment, and those who would profit from treatment with the principles of a general hospital and special hospital combined. Such opportunities will create interest in a much needed reform of the attitude of the profession and the public towards beginning mental disorders, and a better knowledge of the facts as they are.

2. Local provisions will depend in their organization on the talent available and on the most propitious combination of circumstances. Where the community or a college can do so, it had best carry the burden; where the State shows willingness to help and subsidize, the State may co-operate in the work. The special hospital or hospital division requires a sufficient independence from the usual general hospital methods. Under no circumstances should a poorhouse be allowed to have an annex for mental cases.

3. Special laws will be required to determine the standards of local efforts, and to assure supervision by well-trained central authorities. The cases admitted under persuasion or principles of temporary quarantine must also get all the desirable protection by law of any appeal to the Commission and to authorities. It would be better to provide punishment of injustice than force a commitment on each case.

4. The public must be informed of the cost of these cases and the demands made by them; and as far as possible, we *alienists of State institutions* should help with our experience and encouragement along the lines of greatest benefit to the community. The obligation of *initiative* will often rest with us, because we see the needs, and have the best opportunities to get experience.

With good will and good judgment, with more demonstration

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to the profession of what we do in our State Hospitals and what the actual cases and localities need, with better training of our medical students, and a growing interest of the profession in psychopathology, we have good reasons to feel convinced that ten years will bring psychiatric hospitals to many of our medical schools, and occasionally small State Hospitals to meet special needs, and that our communities and their general hospitals will show an increasing readiness and fitness to help in times of need, to their advantage and that of a growing efficiency in practical psychiatry.

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APHASIA AND MENTAL DISEASES.¹ By WILLIAM McDONALD, A. M., M. D., Clinical Director, Butler Hospital, Providence, R. I.

Since 1861 and 1864, when Wernicke and Trousseau used respectively for the first time the words "aphemia" and "aphasia," the studies embraced under these terms have remained among the most abstruse of medical problems. It has been the neurologist particularly rather than the psychiatrist who has interested himself in the so-called aphasic conditions, and the student seeking knowledge concerning them must consult the text-book on neurology and not his psychiatry. It seems to have been due largely to the fact that aphasias could often be attributed to a focal lesion, which has consigned them to the hands of the neurologist; for neurology has been first to lay claim to those diseases and disturbances of the nervous system-even of the brain-for which an evident and tangible pathological condition could be demonstrated, while it was the business of the psychiatrist to study those more diffuse and functional disturbances of attention, memory, volition, perception, emotion, reason, and judgment which, according to the prevalent psychological view, formed the elements of mental activity. Thus it happens that in systems of classification neurology is placed unhesitatingly among the useful arts and under the sub-head of medicine, while psychiatry is often found under the heading "philosophy." So long, then, as aphemia and asphasia could be explained by disturbance of the motor function of speech and could be attributed to a lesion of a definite center, such as Broca's, just so long did aphasia remain without the pale of the psychiatrist's researches. Wernicke was the first to show that aphasia could exist without involvement of the purely motor functions of speech and that aphemia, anarthria, and motor aphasia could be distinguished from conditions in which defects in expression were dependent upon disturbance in the sensory-psychic or of the intra-psychic elements of thought. Proceeding still farther, Wernicke with

^a Paper read at the sixty-third annual meeting of the American Medico-Psychological Association, Washington, D. C., May 7, 8, 9, and 10, 1907.

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one bold stroke brought aphasia into the field of psychiatry and at the same time mental diseases unmistakably within the bounds of neurology, thus destroying forever the imaginary line between psychiatry and medical science. "Every mental disease," says he, "so far as it makes itself known through the perverted expressions of the patient, is for us an example of transcortical aphasia."

He made a sharp distinction, however, between focal smyptoms and diffuse symptoms, both in aphasia and in mental diseases. Focal symptoms he attributed to disturbance of the projection system-either of the projection pathways or of the projection fields-by which latter he meant the point of origin or termination of the sensory or motor tracts. Diffuse or general symptoms were those which resulted from disturbance in the association pathways. Mental diseases he held for the most part to be due to interference with the association tracts, though meningitis and general paresis were distinguished as peculiar mental diseases characterized by many focal symptoms. Transcortical aphasia he also attributed to associational disorder. He divided aphasia first into two great classes: one dependent upon diseases of the projection system (under which are grouped the sensory aphasias as well as the motor), and the other upon disturbance in associational pathways. An auditory aphasia may thus consist of failure to recognize the word sound-a defect of primary identification due to disturbance in the projection system-or there may be defective secondary identification consisting of lack of comprehension of the meaning of words, dependent upon disorder in the associational system. This last form of aphasia and mental disease, therefore, would both be consequent to a lesion in transcortical or associational pathways.

Wernicke did nevertheless find a difference between mental diseases and the aphasias, the distinction being that in the former, isolated tracts are attacked selectively, while in the latter, compact masses are destroyed. "Exceptionally, however, the summation of individually affected tracts produces the same effect as the focal diseases bring about, and then a transcortical aphasia can result from a mental disease."³

Holding up his remarkably logical scheme of aphasia as a pattern, Wernicke then attempted to construct along similar lines

^aGrundriss der Psychiatrie in klinischen Vorlesungen, Leipzig, 1900, S. 9.

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a classification scheme of mental diseases which, although still concerning defective secondary identification alone, should include the three great classes of sensory-psychic, intra-psychic, any psychomotor disturbance. Analogous to disorder in the receptive aspect of the speech function in aphasia, impaired recognition and comprehension of all varieties of sensation might take place at one end of the pathological arc, while abnormal voluntary activity at the other end would correspond to the affected psychomotor elements of speech in the aphasia scheme. Between these two varieties would be found all the complicated disorders of conscious reasoning in like situation to those of the elaborative speech processes in the aphasia cycle.

Thus was built up the framework of the first and only existing rational nosological scheme of classification of mental dis-Having laid his ground plan, the master labored to the eases. end of his life to find in clinical psychiatry the exemplification and the justification of his purely theoretical though thoroughly scientific system. Experience as well as adverse criticism presented obstacles to the realization of his ambition, and the very intricacy of his premises formed the most formidable barrier to the establishment of a clinical proof of their correctness. His own staff of assistants, trained, directed, and stimulated by his magnetic and inspiring personality did not find it always easy to follow the subtle windings of the master's thought, while one of these gentlemen assured the writer that he had never been able to understand Wernicke's classification and, moreover, that he at times wondered if Wernicke understood it himself. Certain it is that there were many missing links in the chain of practical clinical experience which he hoped would demonstrate the truth of his theory. He sought far and wide in literature and in his daily observations for these missing links and had gone far toward forging the complete chain when the hand of Death suddenly cut short his labors and stilled forever the voice of a most remarkable man and the greatest of psychiatric teachers. It was left for his pupils to complete his work, and already in the short time since his death cases have been reported and studies pursued which would have gladdened the heart of Wernicke and have caused him to attack the problem with renewed hope of its final solution.

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Gradually analysis and clinical experience, following the lines of the aphasia studies, have enlarged the group of known focal symptoms and have narrowed to a considerable degree the vast unknown territory heretofore occupied by non-localizable mental diseases. As soon as it became evident that defective expression could result from loss, not only of the motor images of speech, but also from the loss of many other memories, especially the memory of the sound images of words, attention turned quickly to the receptive aspect of mind and inevitably the conclusion was reached that focal disease might not only result in loss of word memories, as spoken, as heard, as seen, and as written, but that independently of the function of speech there could be isolated loss of memory for things as seen, heard, touched, smelled, tasted, and as handled. From visual, auditory, and tactile anomia it is but a step to the consideration of mind blindness, mind deafness, and mental tactile anæsthesia; that is, to the agnosias, and but another step hence to visual, auditory, and tactile apraxia.

Wernicke, in employing for apraxias the scheme already applied to aphasias and agnosias, was troubled by the want of a clinical exemplification of pure motor apraxia. Liepmann' has recently published an account of the further clinical course and anatomical findings of his case of one-sided apraxia which fills this gap. Kleist, a former pupil of Wernicke, taking Liep mann's and others' cases as text, widens Wernicke's scheme still further, to accommodate certain of the clinical details for which no allowance had been made. With this publication the practical application of Wernicke's apraxia studies has been perfected and his formulæ has been justified, as had already been done for the aphasias and agnosias. There are, then, real cases of psychosensory apraxia (both cortical and trans-cortical sensory agnosias), of intra-psychic or ideational apraxia (as exemplified in many psychoses), and finally of pure motor apraxia (or, as it has been called by Kleist-to distinguish disturbance in voluntary acts tactile-kinæsthetic-motor apraxia"). Since the death of Wernicke, significant cases, reported with much closer analysis than ever before employed, have been appearing on all sides and the

^a Monatschrift für Psychiatrie und Neurologie, Band XVII, S. 289. Ibid., Band XIX, Heft 3, S. 217.

[•] Ibid., Band XIX, Heft 3, S. 269.

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indications are that in the near future we shall have progressed in our knowledge of mental disturbance beyond Wernicke's fondest dreams. It would seem that even the sharp distinction which he made between focal and diffuse symptoms, between mental disease on the one hand and the aphasias, agnosias, and apraxias on the other, is becoming less and less real. There is something unpleasantly arbitrary and unnatural about that distinction at best, and there is always a note of embarassment, though of dogged persistency, in his frequent reiteration of that difference. It is as though he were unwillingly forced by practical clinical experiences to draw a line across the plan of a beautiful theoretical structure otherwise unmarred by the inconsistent quibbles of theory and practice. That there are indeed diffuse mental troubles and focal symptoms, no one can doubt for an instant, any more than one could question the possible general effect of a poison like alcohol and the local action of a single miliary tubercle, or the existence of an isolated area of cortical softening and the extended seat of hydrocephalus; but there is a jarring discord in the distinction which he gives to general paresis and meningitis as being mental diseases characterized now by focal, now by diffuse symptoms, and again by both, whereas he stoutly maintains that all other mental disease can never have other than a diffuse symptomatology. After all it must be admitted that the terms "general" and "focal" are but relative and that if the limits of each were to be sought they would be found fading into each other like the dissolving views of a stereopticon. To illustrate the untenability of Wernicke's position, recent studies of senile dementia may be mentioned. While he maintained almost dogmatically that senile brain atrophy is always diffuse and that focal symptoms therefore never develop, Pick * and others have not only reported cases of senile dementia in which there were various symptom complexes conditioned by particularly intense brain atrophy of a circumscribed area, but have also been repeatedly able correctly to diagnosticate during life the so-called left-sided temporal lobe complex first described by Pick, consisting of agrammatic, amnestic, and paraphasic disturbances of speech.

At Butler Hospital our attention has recently been directed

⁴Monatschrift für Psychiatrie und Neurologie, Band XIX, Heft 2, S. 97.

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toward the focal character of mental symptoms and especially of those exhibited by senile patients. These studies have led not only to the conclusion that focal symptoms can and do occur in senile dementia, but to the belief that there is no senile dement who on closer study will not be found to present aphasias, agnosias, and apraxias. Two cases in particular have proved of greatest interest since both have lived quietly in the hospital, one for $2\frac{1}{2}$ and the other for $1\frac{1}{2}$ years, and no focal symptoms had been noted. It was a great surprise to all that such symptoms were found when a special series of tests was systematically employed. Since the two cases were quite similar, it will be sufficient to mention the positive morbid signs of one alone.

(1) Of course there was a loss of memory for recent events; that is, a loss of impressionability which is characteristic of senile dementia and which might easily be recorded as a general symptom due to diffuse senile cortical atrophy. But on examination the visual impressionability was found to be diminished out of all proportion to the auditory or to the cutaneous; in other words, the loss of impressionability is rather sharply focalized. (2) There is a degree of mental deafness (auditory agnosia) or lack of comprehension of the nature of objects as judged by the characteristic sounds which they emit; for example, singing of birds, rattling of keys, etc. (3) Auditory anomia (inability to name objects from these sounds). (4) Marked auditory aphasia (inability to comprehend many familar words). (5) Visual agnosia (inability to comprehend the nature of objects seen). (6) Visual anomia (inability to name objects seen). (7) Astereognosis (tactile kinæsthetic agnosia). (8) Stereognostic anomia. (9) Psychic anosmia. (10) Gustatory anomia. (11) Olfactory anomia. (12) Psychic ageusia. (13) Paraphasia. (14) Dictation agraphia for numbers.

In seeking to analyze and synthesize these defects it was found extremely convenient to assume, as Mills has done, the existence of a higher center which concerns itself with the focalization of associated percepts into concrete conscious concepts. Differing from Mills, however, it has seemed to me more advantageous not to think of such an area as inclusive of the "memory fields related to all the senses," but as separate from these though in touch with them and as particularly accessible to the visual

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and the kineto-kinæsthetic centers. The reason for assuming the existence of such a center is that the areas dealing alone with the higher visual kineto-kinæsthetic and other sensory impressions seemed to be undisturbed and yet no concept of an object, such as a match, for example, could be aroused either from within or without, regardless of the sensory field attacked. The sensations relative to an object were registered, but an adequate comprehension was lacking. All the various subsidiary ideas connected with a match, e. g., could be aroused; patient could repeat the word, spell it, or criticize the odor of the fumes, describe the shape, size, etc., of the object, taste the phosphorus, see the flame, hear the sound of scratching, and tell that it was made of wood; but felt and declared that it was an unfamilar object, the name or uses of which she did not know. It has been thought not improbable that such a center exists in one hemisphere (in most persons in the left) and involves the cortex situated between and composed of portions of the parietal, temporal, and occipital lobes. Involvement of such an area would explain all of the various focal symptoms in these two cases. It seems quite probable that post mortem examinations will be permitted in both and it is to be hoped that the cases may later be reported in full. But whether these largely theoretical suppositions should be found to be correct or not, the fact remains that these are focal symptoms and that they compose a very large part of the apparently diffuse mental defect of the patients. It is well enough to say that there is a general lack of comprehension; but how else does lack of comprehension become evident except through the defective understanding of particular things? It is easy to say, "Oh, yes, but there is general loss of memory"; but how does this make itself known except in concrete amnesias of particular words, numbers, letters, things, faces, times, or events, each of which elements is composed of particular sensory images? It may seem proper to object that attention on the whole is insufficient; but what is attention but the reenforcement of an idea with certain particular ideas and the enforced absence of others, *i. e.*, a matter of association? If a general disturbance of volition be considered a hall-mark of dementia, that means that particular acts are abnormally inhibited or performed, which is to say that ideas involving motion toward

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or away from an object are not properly associated; and who can observe the hesitating, clumsy, incomplete motions of a catatonic attempting to carry out some act, without becoming convinced of the existence of an ideational apraxia?

But, after all, the question of the state of consciousness is the greatest hindrance to those who balk at a focal theory of mental They say, "In dementia there is a general alteration diseases. in the content, the character, breadth, depth, volume, and intensity of consciousness. How can these changes be localized when no one can tell us even what consciousness really is?" This question brings us again in contact with a strife concerning the terms in which thought is carried on. Do we think in terms of silent verbal images? If so, we may expect to find the solution to the problem of thought disturbance in the study of the aphasias and of the function of speech. Alas! the evidence is that conscious thought and reason stretch far beyond the possible limitations of silent subjective language. Do we think in terms of sensory images and their fainter reproduction? Unfortunately, it must be admitted that there are qualities of consciousness distinct and totally different from any quality of sensation. Even the theory that thought is composed of both sensory percepts and silent linguistic images is far from satisfactory, and Dr. Woodworth[•] seems to have hit the nail on the head when, in speaking of the Non-Sensory Components of Sense Perception, he introduces the conception of mental reactions, these reactions being "the mental effect of some, often conscious, cause." He says, "A mental reaction has its own identity, its own peculiar quality. A certain mass of sensations, itself aroused by light reflected from a printed page, suggests a word. The word consciousness is a new event, not describable in terms of the sensations that aroused Nor is it describable in terms of auditory imagery, in case it. this should also be aroused. . . . One may think of three shades of red, and afterwards pick them out from a miscellaneous lot of colors, and yet have had nothing like a reproduced experience of the reds nor necessarily any names for them." There are new qualities, "not sense qualities, nor syntheses of such, but percept qualities." In another place he says, "Our definite knowledge comes mostly from the study of aphasias and similar losses of

⁶ The Journal of Philosophy, Psychology, and Scientific Methods. Vol. IV, No. 7.

function." In aphasias it is not the pure sensory function that is lost, but the power to perceive through a given sense. "The word blind individual has lost not only a function, but he has lost certain facts of consciousness that normally go with reading. ... The perception of an object through sight depends not only on the visual area, and not on the associated activity of other sensory areas, such as might reproduce other sensations from the same object—and not, it should be added, on the activity of the motor area—but on the activity of a special area, the function of which is simply to perceive a certain sort of object." If mental reactions are the effects, then there must be causes, and if we can detect and locate the causes then we shall have acquired a sufficient working knowledge of mental diseases. For whatever be the nature of that which is morbidly affected, we shall be in possession of all the factors productive of the evil.

General medicine has passed through an analogous stage. Even in our own times and memories physiologists have queried again and again, "What is life?" Many of us can to-day recall the unusual hush and awed silence of the class which listened to the honored teacher of physiology as he declared the nature and origin of life to be beyond human ken. "Gentlemen," he was wont to say. "when we seek to solve the riddle of life we, with finite fingers and finite eyes, are seeking to touch and to see the infinite. We shall never know what life is until we cease to live a mortal life." Notwithstanding such discouraging prophecies, general medicine, the science of life and death, has survived and has progressed beyond all expectations. What does it care about the nature of life if it can but know how one form of life acts upon another, destroying or building it up, or if it can but understand the reproduction, expression, and reactions of life? The morbid effects, the pains, the inflammations, the breaks and sprains, can be localized with sufficient accuracy even though the seat and nature of life remain forever a mystery. And so with consciousness. Let it remain through all time a forbidden ground, the phenomena of its expression are given to man for an ever present study. It is permitted to search for and to find those things which work for good or for evil upon that greatest of all mysteries, the human consciousness. These reactionary elements of consciousness we have already partly localized and many more will be localized.

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There are more focal symptoms in mental diseases than Wernicke ever dreamed of, and we shall one day localize and understand our mental diseases even as we know a pneumonia or an appendicitis. Just as there are premature general atrophies of bone, muscle, nerve, brain, and skin, of which we do not know the cause and concerning which we can only say that these tissues, like the muscles in juvenile muscular atrophy, have for some unknown reason come into existence with a durability relatively less than that of the other parts and have accordingly grown old before their time, so perhaps always will there be incomprehensible general mental deterioration concerning which the most that can be said is that the patient's mind has aged and deteriorated before the allotted three score years and ten had run their course. But even as the seat of precocious weakness can be located exactly in definite muscle or nerve groups and the atrophy recognized and studied in all its aspects, so shall we some day be able to detect the particular elements responsible for the weakness of mind and be able to locate and study the corresponding physical areas in the brain, disease of which goes hand in hand with the disturbance of function.

The moral of this paper is that the alienist can no longer afford to be a philosopher alone; he can no longer profess to be master of a subject which is superior to the anatomy, physiology, and pathology of the brain; he must know the structure and the formation of the cerebral cortex and its underlying parts and be familiar with the most recent researches in cerebral localization and function. For it is along the lines of research in these directions that the most marked progress in psychiatry will develop. It is no easy task that we have before us. The days of passive observation of patients, no matter how acute that observation. have passed. We have arrived at the place where active study and analysis of individual symptoms will afford the greatest progress and where the patient is no longer to be studied under the conditions which may exist, but where new conditions must be created, unusual tests applied and energy directed into the channels of experimentation and research.

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A COMPARATIVE STATISTICAL STUDY OF GENERAL PARALYSIS.

BY CHARLES RICKSHER, M. D.,

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The following comprise all the cases of general paralysis admitted to the Sheppard and Enoch Pratt Hospital since its opening in December, 1891, to the present date, September 18, 1907. In this time there have been 1623 cases admitted, and of these, 108 were diagnosed as general paralysis. Many of the histories, especially the earlier ones, are incomplete and information on many points could not, therefore, be obtained. Also, the information on many special topics is lacking, which render the statistics rather imperfect. It can be easily comprehended, however, that no group of histories taken at random and extending over many years, can contain all the points which one would desire in an extended statistical study. As far as possible, an attempt has been made to compare our statistics with those collected by various observers in different hospitals.

In making comparisons of statistics drawn from different hospitals and from different countries, one must take into consideration in every case, the various peoples, their habits and dispositions, their alcoholic and sexual excesses, and their degree of civilization.

Frequency.—In this hospital, the cases of general paralysis comprise 6.62 per cent of all admissions.

Total admissions	1623
General paralytics:	
Men	103
Women	5

Griedenberg, at the Asylum at Symperopol, Crimea, collecting the statistics for 10 years, from 1885 to 1895, found that there were 2914 admissions, 12.85 per cent of which were general paralytics. Regis, quoting Caboureau, gives 15 per cent as the proportion in 103,486 insane patients. Clouston says that every sixth patient admitted at the Durham County Asylum is a general para242

lytic (163/3 per cent). The total number of all cases admitted to the Pennsylvania State Hospitals for the year 1904 was 1426, of which 91, or 6.3 per cent were paralytics. Of the first admissions in the Massachusetts State Hospitals in 1906 there were 2016 cases of all forms of mental disease, 202, or 10 per cent, of which were general paralytics. In comparison with these statistics, it may be seen that the ratio of general paralytics to other insane patients is higher in foreign countries than in the United States.'

Sex.—In our cases, the ratio of men to women is 20.6 to I. That the ratio is so high is probably due to the fact that in this hospital, we do not receive the lower classes in which female paresis occurs most frequently. In the cases collected by the Philadelphia Hospital for 18 years, the ratio was 6.56 to I. Griedenberg, in the Tarus, found the proportion of at least 10 men to 4 women. v. Hiss, cited by Paton, gives the ratio as 30.3 to 1, while Ringe gives it as 5.6 to 1.

Age of Onset.—According to Kraepelin, the greatest frequency is between the ages of 40 and 50 years. Before 25 and after 55, it is rare. Eighty-one per cent of all cases occur between the ages of 30 and 50. Pickett, cited by Paton, gives a chart showing the greatest frequency between the ages of 40 and 45 years, the majority of all cases occurring between 30 and 50. In the following table is compared the cases in this hospital, the cases collected by Hunt in the Vanderbilt Clinic, New York, and the cases collected by Soukhanoff and Gaunouchkine in the Moscow Clinic.

	8. & E. P. H. Per cont.	Vanderbilt. Per cent.	Moscow. Per cent.
At 21	o	0	0.60
21 to 25	0.9	7.01	1.34
26 to 30	4.8	1.75	11.29
31 to 35	23.35	21.05	26.15
36 to 40	33.0	24.56	30.31
4I to 45	14.56	21.05	15.01
46 to 50	14.5	14.03	9.06
51 to 55	6.8	1.75	3.86
56 to 60	0	5.26	1.93
Above 60	I.9	3.50	0.43

¹ The smaller percentage of paretics in our admissions is in a measure accounted for by the fact that applications for hopeless cases are as a rule declined, when the nature of the case can be definitely determined before admission.

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By decades we may compare the cases collected by Griedenberg at Symperopol, those collected by Phillips, and those in this hospital.

	Pennsylvania. Per cent.	Symperopol. Per cent.	Sheppard. Per cent.
20 to 30	9.50	9.3	5.7
30 to 40	48.50	43.00	56.3
40 to 50	32.00	32.00	29.0
50 to 60	9.00	0	6.8
60 to 70	I. 00	4.3	1.9

These statistics all agree in that the greatest frequency is between the ages of 30 and 40 years, and that the disease is comparatively rare before the age of 20, and after 60.

TIME OF PROGRESSION PRIOR TO ADMISSION TO HOSPITAL.

This varies considerably, and our figures are compared with those of the Pennsylvania Hospital (Phillips).

				Pennsylvania. Per cent.	Sheppard. Per cent.
Less than	6	mos.	 		0
u u	I	year.	 	22.0	35.16
Over	I	66	 	21.5	40.73
Under	2	u	 	26.5	• • • • •
Over	2	66	 	33.0	16.66
"	3	"	 		1.85
"	4	"	 	• • • • • • • • • • • • • • • • • • • •	2.75
66	5	"	 • • • • • • • • • • • •		1.85

DURATION OF DISEASE.

This also varies greatly. Three of our cases have a much greater duration than the average. According to Kraepelin, the usual duration is from three to four years; occasionally, however, it lasts over seven years. In the Pennsylvania Hospital the general average duration in all cases was two years in men and two years and nine months in women. According to statistics collected by Wagner, the fatal termination is most frequent in $2\frac{1}{2}$ years. Baird, in the Wakefield Asylum, found the average duration after admission to be 13.9 months, and at Newcastle City Asylum, 18 months. Raencke found the average duration in 136 cases to be $2\frac{1}{4}$ years; and Sprengler, in 337 cases found the average

age duration to be $2\frac{1}{2}$ years in men, and $3\frac{1}{2}$ years in women. The duration in our cases was as follows:

I	year	15	cases		Per cent. 26.8
2	**	15	44		26.8
3	**	II	**		19.5
4	**	6	**		10.7
5	**	5	44		8.9
8	"	2	**		3.6
13	**	I	**		1.7
18	66	I	**	•••••••••••••••••••••••••••••••••••••••	1.7

SOCIAL CONDITION.

The rather mature age at which this disease begins would naturally point to the fact that it is more frequent in married men, or men who have been married, than in single men, and this is borne out by the statistics of this hospital. In our cases, the social condition is as follows:

	Cases.	Per cent.
Married	72	66.66
Widowed	5	4.61
Divorced		1.85
Single	29	26.85

This gives 73.12 per cent who have been married or divorced. Baird, in his statistics, in cases at Horton, found that 72 per cent were married, 5.7 per cent widowed, and 22.2 per cent single. Phillips, in the Pennsylvania Hospital cases, found 68 per cent married, 12 per cent widowed, and 20 per cent single. Hunt, in the cases of the Vanderbilt Clinic, and quoting the results of Soukhanoff and Gaunouchkine from the Moscow Clinic, gives the following table:

	Moscow. Per cent.	Vanderbilt. Per cent.
Married	79.19	67.85
Single	19.01	32.14

NATIVITY.

The Sheppard Hospital draws the great majority of its cases from the Southern States, the North Atlantic and East Central States. Baltimore has a very large foreign population consisting of German, Hebrew, and the Slavic races, which are, as a rule, of the poorer classes, and are, however, rarely admitted to this hospital. The geographical distribution of our cases is as follows:

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Southern States.

	Cases.		Case	8.
Maryland	. 50	North Carolina	• • •	I
West Virginia	2	District Columbia		2
Virginia	12	Louisiana		2
South Carolina		Georgia		I

Northern States.

	Cases.	Ca	Ses.
Delaware	2	Connecticut	I
		New York	
New Jersey			

East Central States.

	ases.	Cas	
Kansas Ohio Illinois	3	Indiana Wisconsin	I I

Foreign.

	ases.	Case	
Germany	4	Ireland	2
Canada	I	Austria	I
England	I	Poland	I
France			

RELIGION.

Beadles, in the Journal of Mental Science, October, 1900, says that in the cases examined by him in the London County Asylums and other sources, 21 per cent of all male Jews admitted were the subjects of general paralysis, and that this disease is much more frequent among Jews than among the English and Welsh patients in the same institution. The percentage of Jews in our cases is comparatively small, notwithstanding the large proportion of Jews admitted to this hospital. The following table gives the relative frequency of the disease in the various religions and denominations.

Beligion.	Cases.	Percentage.	Religion.	Cases.	Percentage.
Methodist	15	13.88	Baptist	. 4	3.70
Roman Catholi		7.40	Christian	. 2	1.85
Episcopal	21	19.44	Polish	. I	0.93
Hebrew	13	12.00	Quaker	. I	0.93
Presbyterian .		9.35	Protestant	. 2	1.85
Lutheran		4.63	None given	. 26	24.00

Although Baltimore and the surrounding country have a large Roman Catholic population, the percentage of Roman Catholics is relatively small, due doubtless to the fact that the majority of Catholic paretics in this locality go to the Catholic Hospital which is situated near Baltimore. The percentage of Episcopalians is rather large, probably owing to the fact that the greater number of the "fast set" in society belong to this denomination, and paresis is comparatively frequent in this class.

OCCUPATION.

This disease is pre-eminently a disease of the brain-worker and is most frequent in those classes in which mental stress and dissipation, both sexual and alcoholic, are most common. Our statistics and those of Phillips of the Pennsylvania Hospital are as follows:

Male.	Pennsylvania. Per cent.	Shep Cases	pard. Per cent.
Mechanics		10	9.70
Laborers		7	6.79
Merchants	65	41	39.80
Physicians	3	4	3.88
Lawyers	2	6	5.82
Military officers	5	2	1.94
Civil officers		2	1.94
Musicians	5		• • • •
Clerks		19	18.44
Journalists	•••••	5	4.85
Dentists		I	0.97
Retired		I	0.97
Clergymen	•••••	2	1.94
Farmers		I	0.97
Unascertained	2	2	1.94
Female.	Per cent.	Cases.	Per cent.
Housekeepers	86	5	100.00
Saleswomen	10	••	
Domestic service	4	••	•••••

HEREDITY.

While heredity plays a less unimportant rôle in this disease than in many other psychoses, it has nevertheless, a certain place. In all statistical studies of general paralysis, heredity, in connection with the excesses of various kinds, is a factor not to be neg-

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lected. Ziehen says that while signs of degeneracy are more common in paretics than in normal individuals, they are less common than in those suffering from other psychoses. Clouston says that the hereditary predisposition to insanity or to the neuroses, is less common in this disease than in the ordinary forms of insanity. Regis holds, with Magnan, Sérieux and many others, that general paralysis is not a hereditary disease, "the general paralytics are only rarely true degenerates." When an insane person or true degenerate becomes a paralytic, some other factor intervenes, especially syphilis. Griedenberg, from his study of the cases in the asylum at Symperopol, concludes that heredity, especially when alcohol and syphilis are present, is a very strong factor in the causation of the disease. v. Scarbó, in 115 cases, observed heredity in 10 per cent. In our cases, psychoses had occurred in 12 cases, or 11.11 per cent of paternal ancestors, and in 11 cases, or 9 per cent of maternal ancestors, and in 12 cases, or 11.11 per cent, of brothers and sisters. Neuroses were noted in paternal ancestors in five cases, or 4.61 per cent; in maternal ancestors, in six cases, or 5.5 per cent, and in brothers or sisters, in four cases, or 3.7 per cent. Alcoholism in the father was noted in four cases, or 3.7 per cent.

HABITS.

Intemperance in all of its phases, alcohol, sexual life, work, has a great influence on the disease, as have all sorts of mental shocks and traumata. In our cases alcohol only is noted in deciding whether the patient was temperate or intemperate, and only marked excesses in this.

	Cases.	Per cent.
Temperate		53.7
Intemperate		41.6
Unascertained	5	4.63

SYPHILIS.

Practically all authors agree that syphilis is a most important factor in the causation of the disease, either alone or in combination with alcoholic and sexual excesses or mental stress. According to Paton, Gudden found a definite luetic history in 35.7 per cent; Hirsch, in 56 per cent; Jolly, in 69 per cent; Mendel, in 75 per cent, and Alzheimer, in 90 per cent of all paretics examined. Stanziale, in 100 cases, found lues in 87 per cent; 70 cases were positive, and 17 cases were doubtful. For a long time, Krafft-Ebing has maintained that general paralysis is a disease of civilization and syphilization. According to Kraepelin, Sprengler obtained a certain history of lues in 57.3 per cent and a probable history of lues in 20.9 per cent. Hougberg found from 75.7 to 86.9 per cent luetic. Hirschl found certain lues in 56 per cent, and probable lues in 25 per cent in 175 cases of general paralysis. Eisath found certain lues in 27 per cent, and doubtful lues in 34 per cent of general paralysis, and certain lues in 1.3 per cent and doubtful in 1.8 per cent of other psychoses.

Hoppe, in male paretics, found lues in 34.6 per cent; in female, 23.5 per cent. In other psychoses, he found that 10.9 per cent of the men, and 2.6 per cent, of the women had a luetic history. v. Scarbó, in 115 cases of general paralysis, found syphilis in 40 per cent, and in 225 cases of other nervous diseases, it was present in only 6.6 per cent. Collins, in 100 cases of general paralysis, found certain lues in 55 per cent, fairly certain lues in 77 per cent, and probable lues in 37 per cent. Fournier considers all cases of general paralysis to be a special form of late syphilis. The tables of Hunt, for the Vanderbilt Clinic, and Soukhanoff and Gannouchkine for the Moscow Clinic, and those for the Sheppard Hospital are as follows:

·	Vanderbilt. Per cent.	Moscow. Per cent.	Sheppard. Per cent.
Admitted	·· 59·37	61.54	53.62
Denied, or unascertained	1. 40.62	19.61	46.38

The time between the syphilitic infection and the breaking out of general paralysis varies greatly. Kraepelin, in 21 cases, found 8 in which the interval was less than 10 years, and 8 in which the interval was from 10 to 20 years. The shortest interval was 2 years, and the longest 31 years. Bär gives the interval as from 3 to 26 years; Hoppe, between 3 and 23 years. Hirschl, in 78 cases, found that 23 cases began in the first 10 years, and 40 cases began between 10 and 20 years after the luetic infection. Sachs notes two cases at Bellevue Hospital occurring in less than one year, and a number of cases developing within three years after the initial lesion. In Hunt's cases at the Vanderbilt Clinic, the disease appeared after an interval of from 5 to 18 years, usually about 15 years. In the Moscow Clinic the interval was given as from 6 to 10 years. In our cases the date of luetic infection

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was obtained in 18 instances, and the interval between it and the outbreak of general paralysis was as follows:

6	years		t cases.
8	**	1	case.
9	"		case.
10	**		case.
12	"		2 cases.
13	66		case.
14	"		3 cases.
15	**		cases.
30	"		t case.

This gives an average of 12.2 years between the luetic infection and the outbreak of general paralysis.

SUPPOSED CAUSE.

"There is one cause above all others, predisposing or exciting, viz., the syphilitic poison; and two exciting causes, sexual excess, especially if indulged in at or after middle life, and alcoholic intemperance, especially if impure and bad drinks are used." (Clouston.)

Practically all authors agree that syphilis is the fundamental cause, alcoholism, sexual excesses, and mental strains being exciting causes. According to Griedenberg, the fundamental causes are syphilis, alcohol, and heredity. Wagner also gives heredity, alcohol, and syphilis as the three important factors in the causation. The causes as tabulated by Phillips and as given in our histories, are as follows:

	Pennsylvania Per cent.	Cases.	Sheppard. Per cent.
Ill-health and worry	26	7	6.49
Lues and alcohol	12	11	10.10
Lues	• • • • • •	34	31.49
Lues and heredity		6	5.55
Lues, heredity, and alcohol		2	1.85
Lues and overwork		5	4.63
Alcohol	29	12	10.00
Alcohol and heredity		4	3.70
Ill-health		4	3.70
Overwork		3	2.77
Trauma	37	3	2.77
Insolation	3	••	
Unascertained	11	27	25.00

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Thus, in 53.62 per cent of our cases, syphilis is admitted to be a factor, but in only 31.49 per cent is it the only assignable cause. Alcohol is a factor in 15.85 per cent of cases presented, and heredity is one of the causal factors in 10.1 per cent. Trauma, according to some authors, is supposed to be a very potent factor in the causation of the disease, but it is probably never the sole active cause. Hurd considers that trauma renders paralytic, only those subjects formerly syphilitic. In our cases, there were three in which an injury to the head was given as the cause, but it is to be doubted whether some other agency was not also in play.

Onset.-The first symptoms of the disease are very hard, probably impossible, to obtain. As a usual thing, the patient passes through an indefinite period of vague physical ailments before his friends and relatives, and often the physician, realizes that there is a serious disease at work. Very often the first symptom noted is a convulsion, which indicates that the disease has progressed to a comparatively high point. Regis calls the prodromal period the pré-paralytique in analogy with the pré-ataxique period of tabes. The prodromal symptoms may consist in a change of facial expression, convulsion, preceding sometimes more than a year the other signs of the disease; spasms of the various muscles, automatic movements, tics, ocular paralyses, hyperæsthesias and anæsthesias, exaggeration of the tendinous reflexes, a diminution of the Cremasteric reflex, headache, insomnia, various gastrointestinal disorders, and trophic disturbances. Mentally, there is a slight diminution of the psychical energy, sometimes anxiety, indecision, and irritability, and the patients show themselves indifferent to the things which affect them most. The following symptoms were given as those of onset in our cases:

· 1	0			
		Cases.		Cases.
Convulsions		I	Depression	27
Sensory hype	eræsthesia	26	Apathy	7
Persecutory	ideas	10	Confusion	22
Irritability .		51	Euphoria	6
Memory defe	ects	• • 49	Self-accusation	2
Grandiose id	eas	40	Headache	10
Speech defec	ts	30	Aphasia	6
Ataxia-walk		11	Paralysis	5
Excitement .		37	Vertigo	8
Religiosity .		4	Judgment defective	8
Insomnia		32	Hallucinations	3
Writing chai	nged	16		

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Irritability is the symptom most frequently occurring and it is one that is most easily noticed by friends. Convulsions occurred in 26 cases before they were admitted to this hospital. In 10 of these cases, the convulsion was the first symptom of the disease noticed. Grandiose ideas occurred in 40 cases, in 7 of which they were the first symptoms, the patient suddenly having extravagant ideas of his wealth and power and ordering vast quantities of goods for which he had no use, and giving away his money with a lavish hand. Defect in speech occurred in 30 cases before admission and was the first noticeable change in 10 cases.

Physical Signs .- These are usually quite marked in general paralysis, and, as a rule, are to be observed early in the disease. Among the first of the somatic symptoms to attract attention are disturbances in speaking due to the tremor of the tongue and of the lips. This disturbance consists in the repetition of the final syllables, the elision of various syllables, and slurring of consonants, especially the labials, and also hesitation in speaking. This dysarthria is considered by Regis to be a pathognomic symptom of general paralysis. Baird, in 202 cases at Wakefield, found slurring of speech in 159 cases (79 per cent). Speech was clear in 33 cases (16 per cent), and in 10 cases (5 per cent) it was not recorded. Thirty-four, or 56 per cent, of Hunt's 60 cases at the Vanderbilt Clinic showed marked speech defect, and only one case was normal. In the cases at this hospital, defect in speech was noted in 90, or 81.48 per cent, and in 32 individuals, it was especially marked.

Gait and Writing.—Paton says the gait of the paralytic is, as a rule, characterized by some uncertainty depending largely upon the extent of the involvement of the cord centers. The disturbances in gait are slight in the beginning, but increase as the disease progresses. Quite a few cases run the complete course of the disease and show only very little disturbance in locomotion. This symptom is shown quite markedly and early in the taboparalytics. As with the gait, the writing may be affected early or late. As a rule, however, the fine muscular tremors affect the writing comparatively early, and the changes may also be shown in the omission of certain letters of a word, or certain words of a sentence, and the motor tremulousness is especially noticed in a certain wavy undulatory curve in the letters. In our cases, there

are notes on 21 cases in which the writing was markedly changed. In 16 cases it was well developed before admission to the hospital.

Ocular Changes.—The pupillary disturbances are the best known and the most apparent of the ocular troubles in this disease. These consist in an irregularity of the pupillary outline, an inequality in the two pupils, an exaggerated contraction or dilatation and disturbances in the reflex activity. Regis says that pupillary inequality exists in two-thirds of the cases, without rule as to the eye affected. This sign is not peculiar to the disease, but is valuable in diagnosis when taken with the other signs. Mignot, Schrameck, and Parrot, in 300 general paralytics, found pupillary inequalities in 205 cases (68 per cent). Baird found that 45 per cent of his patients had unequal pupils, 50 per cent equal, and in 5 per cent there was no record.

In our cases, there were 17 instances in which the pupils were irregular and 33 instances in which they were unequal. The percentage cannot be given because so many histories were lacking in information on this point, and there can be no doubt but that many cases presented pupillary irregularities and inequalities of which there is no record.

The most frequent pupillary reflex disturbance is the loss of the reflex to light with preservation of the accommodation reflex. This sign, however, is rather late in appearing, and is not nearly so constant as in tabes. In the early stages of the disease the light reflex is apt to be sluggish; it may, however, be active and be accompanied by a definite hippus movement. Marandon de Montyel has made an extended study of the light reflex in general paralysis and found that exaggeration of the reflex was never present as the sole change in the course of the disease, but was always preceded or followed by a diminution. Abolition of the reflex is never established at the beginning of the disease, but is always preceded by a diminution, the abnormality increasing from the first to the second, and from the second to the third stage. Abnormal pupils exist in half the cases from the beginning.

The same author, in a second article on the accommodation reflex, found that this reflex was always altered at some time in the course of the disease. In the first two stages the tendency is to a diminution of the reflex, in the third, to an abolition. Exaggeration of the accommodation reflex is seen only in the first period, and the differences in the two eyes only in the first and second periods, in the third period only enfeeblement and abolition are seen.

According to Kraepelin, Siemerling gives the frequency of pupillary stasis as 68 per cent. Westphal saw it in 50 per cent, Räcke, in 58.27 per cent, differences in 83.6 per cent. Baird found the pupils fixed—one or both—in 31 per cent, normal in 20 per cent, not recorded in 2 per cent. v. Scarbó found 66 per cent of his patients with absence of the light reflex, 32 per cent reacted, and 2 per cent dilated. Mignot, Schrameck, and Parrot in 300 paralytics found :

	Cases.	Per cent.
Light reflex diminished on one side	35	11
Light reflex diminished on both sides	79	26
Total having light reflex diminished	114	38
Light reflex abolished on one side	28	9
Light reflex abolished on both sides	133	44
Total having light reflex abolished	161	53
Total having light reflex altered	275	91
Accommodation reflex diminished on one side	23	7
Accommodation reflex diminished on both sides	29	9
Total having accommodation reflex abolished	52	17
Accommodation reflex abolished on one side	12	4
Accommodation reflex abolished on both sides	26	8
Total having accommodation reflex abolished	38	12
Total having accommodation reflex altered	<u>9</u> 0	30
-	-	-

In 20 cases of tabo-paresis, the same authors found:

	Cases.	Per cent.
Inequality	. 11	55
Abolition of light reflex	. 19	95
Diminution of accommodation reflex	. 3	15
Abolition of accommodation reflex	• 7	35

Hunt, in the Vanderbilt Clinic, and quoting Saukhanoff and Gaunouchkine, gives the following table:

	Moscow. Per cent.	Vanderbilt. Per cent.
Pupils re-acting badly, or not at all	. 82.05	71.15
Pupils re-acting	. 17.95	28.84

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Direct Light Reflexes.	Cases.	Per cent.
Diminished	39	36.11
Normal	11	10.18
Absent	27	25.00
Not noted	31	28.70
Consensual Light Reflex.		
Normal	13	12
Diminished	28	25.92
Absent	31	28.70
Not noted	36	33-33
Accommodation Reflex.		
Normal	26	24.00
Sluggish	30	27.77
Absent	8	7-49
Not noted	44	40.74

In our cases the reflexes were as follows:

Tendon Reflexes.—According to Regis, the tendinous reflexes are altered in from 80 to 90 per cent of the cases, and are usually exaggerated. According to Marandon de Montyel they gradually diminish and in the last period are greatly reduced or abolished. This author, in an extended study on the patellar reflex at various periods of the disease, finds that it is more often abnormal than normal, exaggeration is most frequent and slight exaggerations are more common than marked ones, that the reflex is more frequently altered in the first than in the second or third periods, it is more frequently exaggerated in the depressive form of the disease, and that the exaggeration from the point of frequency, is in inverse ratio to the speech defect. This exaggeration is not due to the suppression of the cerebral influence, since its minimum frequency is in the third period where the cerebral influence is most suppressed.

In alcoholics, compared with syphilitics, the patellar reflex is most often altered, either exaggerated or diminished. Baird, in 202 cases at Wakefield, found:

	Cases.	Per cent.
Knee-jerks, normal	• 39	19
absent	. 40	20
exaggerated	. 95	47
diminished	25	12
not noted	• 3	2

v. Scarbó in 115 cases found:

•	
•	Per cent.
Knee-jerks, present	15
exaggerated	51
absent or diminished	20

Hunt, in the Vanderbilt Clinic cases, and quoting Soukhanoff and Gaunouchkine of the Moscow Clinic finds:

		Moscow. Per cent.	Vanderbilt. Per cent.
Knee-jerks,	exaggerated	. 50.5 7	53.57
	diminished	. 9.09	3.57
	abolished	. 19.89	30.35
	normal	. 12.31	1.78

In our cases the results were:

		Cases.
Knee-jerks,	exaggerated	. 35
	diminished	. 18
	abolished	• 5
	normal	. 7
	not noted	· 33

Regis says the exaggeration of the arm reflexes is more marked than those of the other tendon reflexes. In our cases the arm reflexes were:

	Cases.
Present in	8
Active in	10
Exaggerated in	20
Diminished in	11

v. Scarbó notes that the Achilles reflex was absent in one or both sides in 38 per cent of his 115 cases. In our cases it was:

	Cases.
Exaggerated in	. 11
Diminished in	. 17
Normal in	. 14
Not noted in	. 66

In three cases it was irregular on the two sides. The plantar reflex was noted present in one case.

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McCarty's supra-orbital reflex was found:

	Cases.
Exaggerated in	. 3
Diminished in	
Normal in	. 15

The abdominal skin reflex was found:

	ABCS.
Exaggerated in	15
Diminished in	10
Normal in	13

Marandon de Montyel was not able to find any constant relation at the different periods of the diseases, between the skin reflexes and the tendinous reflexes.

The cremasteric reflex was found:

	~	8865.
Exaggerated in	•	10
Diminished in	•	10
Irregular in	•	15
Normal in	•	15

Romberg's symptom was present in 23 cases, and absent in 23 cases.

In many cases the *sexual power* is exaggerated in the early stages of the disease, and gradually diminishes as the disease progresses. In our cases there was a history of diminished sexual power in 13 cases on admission, and in four cases it was given as normal.

According to Paton, *the urine* is seldom normal, and in the majority of cases there are more or less marked anomalies. In 48 of our cases there were more or less complete urine examinations, and in only 18 was there albumin present.

Memory and attention are very early affected. The loss of memory begins as in senile dementia—the memory for recent events is first lost, and the more remote events are gradually obscured. Voluntary attention is lost in some cases very early, the patients complaining that they cannot work as they formerly could and that they cannot fix their attention. This is especially the complaint in the depressive cases.

Meyer says that changes in character, judgment, and memory, not of a sufficient intensity to reach the legal standards, were more conclusive in diagnosis than changes in reaction time.

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In Hunt's cases, 60 per cent showed loss of memory. In our cases there were notes on the memory and attention in 100, and in only one case were they given as good. In the remainder they were more or less impaired.

Vaso-Motor and Trophic Disturbances, of a greater or less degree, are present at some period in practically every case. In three of our cases, there was ædema of the face resulting from the vasomotor disturbances. Seborrhæa was noted in several patients. One case suffered from a severe furunculosis, and one from psoriasis. Hæmatoma auris, which has been shown by Robertson to be a peculiar degeneration of the cartilaginous substance of the ear, was present in two cases. Bed-sores occurred in six cases, all dements.

Sensory Disturbances.—Marandon de Montyel, after an extended study of the sensibility in a large number of paretics, came to the conclusion that touch was comparatively normal in the majority of cases, but that the pain sense is disturbed in at least onefourth of all the cases. In some cases, numbness and tingling in the arms, legs, and fingers occurs early in the disease. In two of our cases there was an irregular anæsthesia, hyperæsthesia was noted in five cases, hypoæsthesia in six cases, and marked diminution of pain sense in three cases.

Cerebro-Spinal Fluid.—For the last six years, a great mass of literature has appeared on the cerebro-spinal fluid, its cellular and fluid constituents. Cornell has examined 25 cases from this hospital, and the following is taken from his article.

Pressure.—Schaefer found the pressure in paresis to average 184 mm. H_2O . Nawratzki and Arndt, in 14 cases, obtained an average of 113 mm.; and Tauner, in 14 cases, got results varying from 70 to 320 mm. Nissl found the pressure to be quite variable even in the same case at different punctures, and Cornell's results agreed with Nissl.

Proteid.—Sicard and others maintain that the fluid contains normally no serum albumin. Nissl and Merzbacher have found traces of the latter. All agree, however, that it is definitely increased in paresis, forming I to 3 parts per mille.

Cornell, in 31 consecutive punctures, found the increase of albumin constant—a result in accordance with practically all observers. In seven instances it was "considerably" increased, and in three "much" increased. Cytology.—Practically all observers agree that there is a definite increase in the cells found in the paretic cerebro-spinal fluid. Fuchs and Rosenthal, in 208 cases, collected from the literature found 10 with no increase; and Dupré, I in 20; Joffroy, 3 in 48, and Meyer, I in 13.

In Cornell's series, 25 cases were punctured 37 times, all with clearly positive results, and he concludes that every case of paresis, without exception, shows a cellular increase. The total cytosis, without reference to the stage, varied from 12 to 216, with an average of 52 per c. mm. Opposed to these counts is the average of 2 in 21 negative punctures, which from a cytological standpoint, may be classed as normal. Differentially, Cornell found small lymphocytes ranging from 45 to 97 per cent, averaging 80 per cent. Large lymphocytes varied from 0 to 15 per cent, with an average of 4 per cent. Polymorphonuclears ranged from I to 56 per cent, with an average of 18 per cent. Plasma cells were found in 27 out of 32 consecutive punctures, ranging from 0.1 per cent to 15 per cent, and averaging 1.5 per cent. From his study, Cornell concludes that every case of paresis exhibits a spinal leucocytosis and increase of albumin, and that a differential count is important in differentiating the paretic fluid from others, especially where the cytosis is due to a small number of polynuclears.

Form of Disease.—Regis gives two clinical forms which the disease may assume: I, Simple or dementing form, and 2, delirious forms comprising: (a) the maniacal forms with megalomania; (b) the depressive forms; (c) the circular; (d) the confusional; (e) the systematized and hallucinatory or sensorial forms.

Paton describes the disease under five heads: 1, The acute or galloping form—forme foudroyante; 2, the depressed or melancholic type; 3, the expansive or classical type; 4, the simple dementing form; 5, the atypical cases. According to this author, the expansive form which was formerly supposed to include the majority of all cases, is now considered to be much smaller than the depressed type, and includes only from 10 to 20 per cent of all cases.

Clouston says that about one-third of all cases belong to the depressed type. Baird, from his studies, concludes that an undue sense of well being is present in a small majority of the male cases, but is less common than formerly in cases diagnosed as general paralysis; melancholia, delusions of persecution and suicidal tendencies being more common.

Clark and Atwood, from a study of 3000 cases, conclude that paresis is essentially a disease in which the grandiose type predominates, occurring in about 70 per cent of all cases, the dementing form being next in frequency with 20 per cent, while the depressive form is found in but about 10 per cent. The frequency of the various forms in our hospital is as follows:

	Cases.	Per cent.
Dementing	30	27.77
Delirious		4.61
Grandiose	51	46.30
Depressed	20	18.51
Tabo-paresis	2	1.85

Thus, in our cases, the grandiose form predominates, comprising nearly half of the cases, the dementing form comprising a little over one-fourth, and the depressed form less than one-fifth.

Convulsive Seisures.—These may initiate the disease or may occur rather late in its course, or may end it. In Phillips' cases at the Pennsylvania Hospital, convulsive seizures occurred in 60 per cent. In 10 of our cases, a convulsive attack was the first symptom which could be elicited by inquiry. Seizures, more or less severe, occurred at intervals during the course of the disease in 48 of our cases. In one case there was a seizure each month for over three years, the patient finally dying in an attack. In seven cases, there were more or less marked paralytic symptoms following the seizures.

Death.—This is the termination of all cases of this disease and may be due to a gradual exhaustion of the vital powers, to some intercurrent infection, or to a convulsive attack. Vigorous in 153 cases, found death to be due to the following causes:

0	
	Cases.
Marasmus	0-
Convulsion	47
Intercurrent affections	51
Escharres and meningo-myelitis	2
Sudden deaths	4
Peritonitis with perforation	I
Asphyxia by food	I
Suicide	I
Hæmorrhagic pachymeningitis, without convulsion	I

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In these cases convulsions were the cause of death in 30 per cent. In the statistics collected by Phillips at the Pennsylvania Hospital, the terminations were:

				cent.
By	exhaustion	•••••	•••	70

In our cases, 36 cases have been reported as dead and the causes given, are:

	Cases.	Per cent.
Exhaustion		55-55
Convulsion	16	44-44

SUMMARY.

I. General paralysis seems to be less frequent in the United States than in the continental countries.

2. Males are affected much more frequently than females.

3. The greatest number of cases occur after the age of 30 and before the age of 50 years.

4. Comparatively few cases last longer than four years, the majority dying in the first two years after admission to a hospital.

5. Married men are much more frequently affected than are single men.

6. In the United States, Jews are not more frequently affected than other races.

7. Brain workers are much more often affected than those who have little mental work.

8. Heredity is not an active factor in the causation of the disease, but when joined with other causes it occupies a not unimportant place.

9. Syphilis is the fundamental cause with alcohol and sexual excesses and mental stress as determining causes.

10. The disease is usually well advanced before a diagnosis is made, due to the indefiniteness of the prodromal symptoms.

11. The gait and writing are changed in a large percentage of the cases on admission to the hospital, due to the muscular tremor and weakness, and to the diminished activity of the psychic functions.

12. The pupillary disturbances are the most frequent of the ocular disturbances found, and inequality of the two pupils and diminution in the light reflexes are the most important of these.

least often exaggerated.

13. The tendon reflexes are frequently exaggerated, but vary in the different stages of the disease, and in the third stage are

14. The cremasteric reflex is very often irregular on the two sides, and there is no rule for its diminution or exaggeration.

15. In a majority of well-marked cases, the sexual power is diminished, being exaggerated only in the early stages.

16. The memory and attention are practically always affected in well-marked cases.

17. Sensory disturbances are not infrequent and neuritic symptoms are often found in the early stages.

18. The cerebro-spinal fluid in practically every case shows an increase in albumin and cellular constituents, the small lymphocytes predominating.

19. The grandiose type of the disease predominates, only onefifth of the cases belonging to the depressed form.

20. Convulsive seizures may occur very early in the disease and in about one-half of the cases occur at some period. They may occur regularly for a long time before death appears.

21. Death by exhaustion is most frequent. In this hospital, there were no deaths from an intercurrent affection.

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PROGNOSIS IN CASES OF MENTAL DISEASE SHOWING THE FEELING OF UNREALITY.¹ By FREDERIC H. PACKARD, M. D.,

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About a year ago I published, in the Journal of Abnormal Psychology, an article on the "Feeling of Unreality" (1), which offered for consideration some possible pathogenic factors. Meanwhile I have also been much interested in the practical significance of the symptom, especially as I have found the general ideas on the subject rather vague and somewhat at variance with my own observations. It seems, then, that a discussion concerning its value and importance in diagnosis and prognosis might well be worth while at this time.

To those who are not familiar with the above mentioned paper, I would say that under the head "feeling of unreality" may be included all those symptoms arising from the loss of the feeling of reality, whether it be in the field of consciousness relating to the outside world or to one's own physical or mental personality. In speaking of these different fields I shall use the words of Wernicke, who has conveniently spoken of them as the allopsychic, the somatopsychic, and the autopsychic fields (2).

In the allopsychic field such expressions as "The trees seem changed," "The flowers do not look real," "People are not real," etc., are common. In the somatopsychic field patients use expressions to the effect that their hands are changed, their stomach or other organs gone, their throats grown up, or even that they have no bodies at all. And in the autopsychic field we hear them say, "This is not Miss so and so," "I no longer am, I am another person," "This is not I," "I am dead," etc., or strangely enough at times they say "I cannot die," and sometimes add such things as "I haven't anything to die with."

As is known, this symptom occurs in varying degrees of intensity, from the very mildest form where "things do not look quite right" to the most marked form where there is a complete

¹Read at the sixty-third annual meeting of the American Medico-Psychological Association, Washington, D. C., May 7-10, 1907. 264

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"délire de negation." It may be limited to one or may extend to all three fields.

It is not a new symptom, nor is its recognition new. As far back as 1880 Cotard described it admirably in its various forms and he quotes among others Esquirol as describing it in 1838 and Baillarger in 1860 (3). Lately there has occurred an increased interest in this symptom and an excellent review of the recent work has been written by Hoch (4).

Cotard described this symptom almost wholly in connection with what he called "La Melancholie Anxieuse" (5). This included cases which were essentially what Kraepelin calls today "Involution Melancholia"; i. e., cases in which the first attack usually occurs at the involution period, an attack characterized by depression, apprehensiveness, and agitation, without any marked clouding of consciousness but with an ultimate narrowing of the mental horizon. We know that the prognosis in the great majority of these cases is bad; of the last 103 cases of this kind seen at the McLean Hospital only 15 are known to have recovered.

In addition to the above mentioned symptoms there is often developed as time goes on this feeling of unreality and Cotard was inclined to believe it the end step of this psychosis, so to speak, and the indication of mental disaggregation.

It is not strange, then, that a symptom which was, almost at its introduction, described in connection with essentially involution melancholias and which is undoubtedly most conspicuously seen in those cases, should have come to be considered more or less a pathognomonic symptom of that psychosis and should have come to share the generally bad prognosis of Involution Melancholia.

In psychiatry scarcely anything is truer than that the further observation of cases and of more cases is constantly driving us to reconstruct and readjust our ideas. So in this particular case further observation has shown that the feeling of unreality is not an essential symptom of involution melancholia. Of the 103 cases above mentioned, 56 did not show it, yet all but 4 of these 56 did not recover.

Further observation has shown that it also occurs in other psychoses; namely, manic-depressive insanity, general paralysis, and some psychoses which superficially may at times resemble

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dementia præcox. These latter are described by Kraepelin in his chapter on Original Disease States (6).

Furthermore, many of the cases showing this symptom recovered. With these points in mind, it would seem that we ought no longer to attach such diagnostic and prognostic significance to this symptom, as I fear some are still doing.

It would be presumptuous for me to say anything about a subject so difficult, expecting my opinion to be in any sense final. However, at the present time I am strongly inclined to think that the ideas which are included under this symptom, the "feeling of ureality," are conceptual in origin and not the result of any change in organic sensations. These ideas may arise whenever certain conditions are present; namely, an association disorder which interferes with complex apperceptive processes but allows simpler apperceptive processes to take place; that is, a certain confusion where complex mental activity is required, with the preservation of enough clearness to reason in a simple way.

If we accept this view, the symptom at once becomes accidental, secondary to the above conditions, and not fundamental.

I have already indicated that it is observed frequently in cases of the involution melancholia type. This might have been predicted almost a priori. It does occur more often in this psychosis for the characteristic narrowing of the mental horizon with comparative clearness, which is seen in these cases, furnishes favorable conditions for the development of this symptom. In the second place, it is more noticeable in them, because this same narrowed mental horizon and poverty of ideas allows the symptom to stand out more obtrusively, with its empty background, than is the case in manic-depressive insanity where the more productive patient not only utters these ideas but attempts to explain and gualify them to a certain extent and even talks about other things. In the third place, the fact that a superficial diagnosis of involution melancholia is sometimes made on this one symptom naturally causes to be included in the number of involution cases many which do not belong there. And finally, the long duration of these cases-for they seem to be often of long duration-tends to obscure the prognosis, thereby seeming to confirm the bad prognosis of the symptom and the diagnosis of involution melancholia.

As already noted, the symptom occurs in cases of the manicdepressive type, but only when the conditions above named are present. It is interesting to note that in cases where the confusion is deep and comes on rapidly and the patients clear rapidly we do not find this symptom developed.

So, too, it is seen in patients of psychopathic make-up when the necessary conditions are present. Some of these are the cases which in acute outbreaks of excitement with impulsive-like acts. suspiciousness and absurd ideas, superficially resemble very closely dementia præcox. In classical cases of dementia præcox I have not yet seen this symptom, and in seeking for it I have very carefully gone over the records of many possible dementia præcox cases. Whenever I found it present, the other symptoms were such that I did not feel justified in calling the cases dementia præcox. It may occur, but rarely, I think. Moreover, the reason is clear, the conditions are seldom, if ever, right. When the necessary apperceptive disorder is present in dementia præcox there is almost always accompanying it too great a mental apathy and too marked an emotional indifference to develop and bring out any special ideas.

The occurrence of this symptom in general paralysis has been recognized for a long time. Baillarger described it in 1860. Modern text-books mention it, and I have seen it a number of times, but have not as yet observed it carefully in those cases.

The following are brief abstracts of the characteristics of cases illustrating the points which I have brought out above:

Cases I-VI inclusive belong to the involution melancholia type. It is interesting to note that Cases V and VI recovered in spite of this fact, and the fact that they also had a marked feeling of unreality. For the sake of emphasizing this point, permit me right here, to give you the results of the analysis of the IO3 cases of involution melancholia before mentioned. Of these only 15 are known to have recovered. Of the IO3 cases, 47 showed the symptom of the feeling of unreality, 56 did not. Of the 15 recovered cases, 11 showed the symptom, 4 did not. To put it another way, about 23 per cent of the involution melancholias with the symptom recovered, while only about 7 per cent without it recovered.

Cases VII to XI inclusive belong to the manic-depressive type of insanity. Of these Cases VII, VIII, and IX made good recov-

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eries in spite of the presence of this symptom and Cases X and XI bid fair to do so in time.

Cases XII to XIV inclusive are essentially psychopathic individuals in its broader sense who had periods when they had more or less acute outbreaks of more pronounced abnormality with a "feeling of unreality."

Case XV is a typical general paralytic with a marked feeling of unreality.

CASE I.—Age at admission 54, widow, housewife. First attack: Depressed, apprehensive, agitated, oriented; loss of feeling of reality in somatopsychic field amounting to complete negation. Now after 6 years is quiet, with much narrowed mental horizon and persistence of ideas, but still oriented.

CASE II.—Age at admission 60, widow, housewife. First attack: Depressed, apprehensive, agitated, oriented; loss of feeling of reality in somatopsychic field amounting to negation. Now after 8 years is quiet, with much narrowed mental horizon and persistence of ideas.

CASE III.—Age at admission 53, single, teacher. First attack: Depressed, apprehensive, agitated, oriented; loss of feeling of reality in somatopsychic and autopsychic fields. Died of pneumonia 4 years after onset.

CASE IV.—Age at admission 48, married, housewife. First attack: Depressed, agitated, oriented; loss of feeling of reality in somatopsychic and autopsychic fields. After 5 years' duration died following convulsions.

CASE V.—Age at admission 52, married, housewife. First attack: Depressed, apprehensive, agitated, oriented; loss of feeling of reality in somatopsychic and autopsychic fields. Gradual recovery after about 7 years. Now attends to household duties, goes about much in society, but is said to be rather irritable and hard to get along with at home.

CASE VI.—Age at admission 49, married, clergyman. First attack: Depressed, apprehensive, agitated, oriented; loss of feeling of reality in somatopsychic, autopsychic and allopsychic fields amounting to complete negation. Apparently good recovery after 7 years' duration.

CASE VII.—Age at admission 37, single, no occupation. The patient had had two previous attacks of depression with perfect recovery. This third attack was characterized by depression, retardation, and confusion. As her mental condition slowly cleared and she became freer there developed a marked loss of the feeling of reality in the somatopsychic and autopsychic fields amounting to complete negation. Complete recovery took place three years from onset, the patient now teaching school successfully.

CASE VIII.—Age at admission 21, single, student. First attack characterized by depression, inadequacy, loss of feeling of reality in somatopsychic and allopsychic fields. After some months the patient became

retarded, and a little later there was deep confusion with stupor and catalepsy. As she emerged from this condition she was again typically retarded. Six months after admission she swung over into a state of mild exhilaration. Eleven months from onset she made a complete recovery.

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CASE IX.—Age at admission 20, married, housewife. First atttack followed childbirth. The patient was depressed, unoccupied, self-accusatory, misinterpreted many things. Later there developed a loss of the feeling of reality in the somatopsychic and allopsychic fields. Six months after onset the patient swung over into an exhilaration with flight of ideas and motor activity, which gradually subsided. She made a good recovery about 15 months after onset.

CASE X.—Age at admission 59, single, no occupation. First attack: Depressed, retarded, some thinking disorder; loss of feeling of reality in somatopsychic, autopsychic, and allopsychic fields amounting to complete negation. Later, the patient showed a typical mixed condition, exhilaration, retardation, and marked thinking disorder, with episodes of motor activity, at times singing and dancing. During clearer intervals there were frequent expressions denoting the loss of the feeling of reality. Now after nearly four years the patient is beginning to improve, occupies herself a little, and the feeling of unreality is not so much in the foreground.

CASE XI.—Age at admission 34, single, no occupation. Has had two quite typical manic-depressive attacks with perfect recovery. This, the third attack, was characterized by marked depression, marked inadequacy, and great thinking disorder, with loss of feeling of reality in somatopsychic and autopsychic fields. Now, 3 years from onset, the patient is beginning to show slight improvement.

CASE XII.—Age at admission 21, single, student. First attack. Always a little odd. At 19 failed at school, became somewhat apathetic, morally indifferent, had irritable spells, and occasionally committed impulsive acts. Later, there developed a loss of the feeling of reality in the somatopsychic field, and at times in the allopsychic field. Now after six years the patient is seclusive, somewhat apathetic, and at times has absurd delusions. There have been no acute episodes of late, and in many ways the patient makes a comparatively natural impression.

CASE XIII.—Age at admission 27, married, housewife. At 19 years of age the patient was rather depressed for a year, and again at 21. Since then she has never been well for any length of time. She is subject to irritable, excited spells, and is sometimes delirious at menstrual periods. Again there have been periods when she has been unoccupied, somewhat apathetic and neglectful of her duties, with loss of the feeling of reality in the somatopsychic, autopsychic, and at times in the allopsychic fields. During three months' stay at the hospital she was alternately better and worse. Since leaving she has had periods when she was quite well, and again there have been periods when she has been abnormal in the same way as mentioned above. At the present time she is fairly well able to attend to her household duties.

CASE XIV.—Age at admission 17, single, student. First attack. The patient was depressed, suspicious, had absurd ideas. Later became somewhat exhilarated, with much silly laughter but no flight of ideas. Then followed a period when there was marked loss of feeling of reality in the somatopsychic field. Later still he assumed awkward positions, sat about drooling, but had fair grasp on the surroundings. Patient left the hospital without recovery nearly 4 years ago. He is said to have recovered later, and to have had three other acute attacks of a similar nature. At the present time he is considered comparatively well, but is not strong physically. He is inclined to be somewhat seclusive, and apparently somewhat apathetic.

CASE XV.—Age at admission 39, married, broker. Syphilis at 19. First attack: Overactive, expansive, then depressed, hypochondriacal, emotional, some confusion at times. Physical signs: right pupil larger than left, no reaction to light, unequal knee-jerks, speech defect, tremor of the face, later memory defect, convulsions, and finally the loss of the feeling of reality in somatopsychic and autopsychic fields amounting to complete negation. Still in hospital.

In view of the points which I have tried to bring out I must conclude that the feeling of unreality is not a fundamental symptom, not a pathognomonic symptom, and not of bad prognostic significance.

The prognosis in involution melancholia is usually bad with or without this symptom, while in manic-depressive insanity it is usually good regardless of its presence. I would, therefore, emphasize the fact that this somewhat fantastic symptom should not be given too much importance and that the diagnosis and prognosis of cases be made on the more fundamental symptoms.

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"I LOOK INTO MY GLASS." ¹ By P. W. MacDONALD, M. D.,

Resident Physician and Superintendent, County Asylum, Dorchester.

The honorable position which through your kindness I am privileged to occupy to-day, associates the occupant of this chair with a long roll of distinguished predecessors, and unites him, as it were, to a confraternity of honor which oversteps time and unites generations. But whether the initial duty of having to deliver an inaugural address is a wise one, I will not venture to say; yet I do know that the consciousness of this time-honored custom tends to produce neither peaceful repose nor happy thoughts during the year of probation. My immediate predecessor, Dr. Robert Jones, having so diligently covered the field of evolution, from the time of King Saul to the latest conceptions of the London County Council, I have experienced no little difficulty in finding a resting place in any of the ordinary fields of inquiry. Assuming that the members of this Association would not expect anything new in what I might say, I have speculated whether, perhaps, in directions which are not new, I might say anything which would suggest useful thought to those interested in the aims and work of our Association. On the very threshold of my task I was, as if by chance, suddenly pulled up, and found written across my path these words: "I look into my glass." Such is the title of the short address with which I purpose troubling you this afternoon. Would that this glass were the simple artificial mirror from off the reverse side of which you and I could remove the silver coating and look into the fathomless abyss beyond, but no, the glass is the human mental mirror of which all are possessed, some more, others less. If I propose to you to look with me through this glass into the question of the social aspect of insanity in a purely rural district, "far from the madding crowd," and which has remained untouched from the influence of large communities, it is not as a mere theoretical exercise in race evolution

¹ Presidential address delivered before the Medico-Psychological Association of Great Britain and Ireland, July 25, 1907.

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but because it contains within, a further inquiry which even in this, the early part of the twentieth century, may be turned to profitable account in an Association like this.

Allow me to digress for one moment while I recall to your memories the blanks which have occurred in our ranks since last annual meeting. I grieve to say the list is a heavy one, and the profession and our Association are the poorer thereby. From among our ordinary members we have lost a former President, Oscar Woods, of Cork, whose geniality and sympathetic disposition were as true a part of his sterling qualities as were his largeheartedness and steadfast friendship. In England we have to deplore the loss of three medical superintendents, Frederick Hurst Craddock, of Gloucester, John Greig MacDowall, of Menston, and Robert Sloss Stewart, of Glamorgan; and in Scotland, Chas. Angus, of Kingseat, each one of whom has left indelible marks of devoted and honorable services in his respective sphere of work. Dr. Dixon, of Wye House, Buxton, was not only a successful director of a private house, but an influential public man. In other branches we have lost William Lloyd Andriezen and Robert A. L. Graham, the former one of our most distinguished workers, and the latter a worthy son of an able father. We have also lost three honorary members who were not only distinguished alienists and physicians in their own countries, but honored and revered members of our Association. I mean the late Dr. A. R. MacDonald, of New York, Dr. Chas. Féré, or Paris, and only a few weeks ago Sir W. T. Gairdner, of Glasgow, a past president of our Association and of whom any appreciation in words must fail which does not convey some impression of the high moral dignity which was in Sir W. T. Gairdner associated with an intellectual power that placed him at the head of his pro-The names of two former members of this Association fession. I may fittingly add to the already too long list, the late Dr. Huxley. of Kent Asylum, and the late Dr. Toller, of Gloucester. I think it was at the annual meeting of 1903 that a distinguished member of our Association proposed a motion of congratulation to a former Visiting Commissioner, on whom His Majesty had conferred a distinguished honor; and I am sure it will be with your concurrence that I should to-day express from this chair the deep and great regret of the whole Association on the death of the late Sir Charles Bagot, who was one of our truest and best friends.

Knowing, as I do, that votes of sympathy and condolence have already been sent to the sorrowing friends of our departed members, I will only now say that in this long list there were gifted brains, and great reputations, and on behalf of this Association I express the regret and grief with which we part with able, kind, and noble associates.

RATIO OF INSANE TO POPULATION.

For the purposes of this address I have taken a period of half a century in the history of the county of Dorset, during one-half of which I have been entrusted with the supervision and administration of the County Asylum, and therefore have had full opportunities of following and watching the changes or otherwise occurring in the county and incidental to the work of my life, and thus it is I have been led to address you on the subject of which I thought I knew most. In order the better to preserve continuity and to save you from the infliction of an array of tabulated statistics, mostly so fallacious. I have looked at the subject through an unbiassed mirror, and hope to show how the swing of the pendulum has often been affected, not in accordance with the teaching of Mother Science or the conclusions of those whose profound ignorance of the disease led to the theory of its supernatural origin, but by the hand of time and change and men and ways. Scientific findings afford no data by which many of the variations of this swing may be determined. At the commencement of the period of this inquiry, there was according to authorized statistics (I do not mean lunacy blue books, but the statutory registers), a ratio of I insane and defective person to every 307 of the population. Now if I were to argue from these figures alone, and draw conclusions from a comparison with the position of things at the present time, when on the same basis there is a ratio of I to every 207 of the population in the county, the outlook would indeed appear extremely black. Let us look into this for one moment. In the fifties there were in the county of Dorset scores and scores of feeble-minded persons of all ages, living free and simple existences in the villages-unknown to blue book statistics and unknown to the lunacy laws. It may be that a percentage of these, I do not mean the typical village "fool," for he exists now, were not at all times kindly cared for; still, they were not reckoned or taken into account in working out the ratio of the insane to the 274

population. How then can arguments be built or conclusions drawn from such a fallacious method of preparing statistics. It is both wrong and misleading.

Since the seventies and for reasons well known to all, the weak, the defective, and the wreckage of human ruin and decay have been gathered into the institutions of this country, until the public have become alarmed, nay more, staggered at the annual cost of up-keep of these hordes of human beings, and the perennial balloons of race degeneracy have been flying high and far. We have recently been warned against hasty conclusions based on general statistics, and a pious hope has been expressed that local attempts would be made to deal with one of the gravest problems for the future of this country. If we take the period since 1875 we are on surer ground, not that I wish you to believe, or to think that I have pinned my faith on this or any other source of information based on figures alone. In the last published volume of the lunacy blue book, the commissioners state with a frankness worthy of emulation that owing to the presence of foreign or out county patients in many asylums their statistics fall short of accuracy. Now in the case under consideration no such inaccuracy can arise. as every foreign element has been excluded and thus we are left to deal with the home-bred article. A guarter of a century ago first admissions were in the ratio of I to 307 of the population, to-day the ratio is I to 200. Without further explanation these figures appear as ominous as if we had dealt with the earlier part of the period, when as we have already seen the facts fell very far short of representing the true state of things. In all such inquiries as the present the first and most cardinal principle is to throw your net as wide as possible, and for this purpose we must look at the social conditions as represented by the birth-rate and the important question of migration. During the period since the census of 1851 the birth-rate of the county has fallen from 30 to 23 per cent per 1000, a decline of 7 per cent, but when corrected according to the methods now most adopted the decline amounts to 30 per cent. This is in keeping with what has been happening throughout the country as a whole, but in a sparsely populated part like Dorset the consequences, as we shall presently see, are even more disastrous than where the persons per acre are more A declining birth-rate and steady flow by migration numerous. have resulted in a net loss of 82,000 persons to the county during

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the period of 50 years, which means that the stationary proportion of enumerated natives is less than 65 per cent. Having arrived at this point we are now in a position to consider the relative value of the ratio of first admissions to the population and what, if any, changes have taken place. In an earlier part of this address I promised not to weary you with tabular statements, but you must forgive me for introducing here what occurred during the decade ending 1881. For this period the excess of births over deaths was 22,564; yet there was at the end of the period a fall of 4,028 in the population, which means that during these ten years the county suffered a net loss of 26,500 persons by migration, or at the rate of 2,500 per annum. From the start to the finish it was a case of all loss and no gain.

I think it was Ruskin who said, "In some far away and yet undreamt of hour I can even imagine that England may cast all thoughts of possessing wealth back to the nations among whom they first arose." May I venture to apply these sentiments to the county of Dorset of which I may with truth say: She has given much of her human peasant wealth to the ungrateful cities of England, there to be launched, not among the submerged tenth, but on the flood tide of the race for supremacy in the eternal struggle for existence, while she has throughout these 50 years struggled against the inevitable. When the brain of the engineer and the hand of the mechanician began to replace the village peasant, the results of which have been so graphically portrayed in the history of Wessex, then there followed the tide of village depopulation which has continued to flow ever since, until the very foundations, or the backbone, of this country are threatened. Provided the county had not suffered such serious losses by migration, the ratio of first admissions to the population would stand at I to 282 as compared with I to 307 in the seventies, or a fractional difference of 25 per cent. This fractional difference is easily accounted for when the nature of the stock producing article is considered, and would have been wiped out had the normal birthrate been maintained. If I have succeeded in engaging your boughts to the thread of my argument the simple truth amounts this: During the 50 years there has been a possible increase f 25 per cent in the ratio of first admissions to the population. which is not surprising and is what might be looked for when re remember the destruction worked by the process of migration.

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and, as will appear under the head of causation, the enfeebled and tainted nature of many of the residue. There is no need to argue this point further but it should be said that alarmists' statements based on hastily prepared facts conceived on a wrong issue, are productive of much confusion, and it may be, national harm. While according to the blue book of 1906, Dorset is credited with the third highest ratio; viz, 3.6 of insane to 1000 of the population, no mention is made of the conditions which have resulted in this high proportion, nor of the changes of a national character which may be reckoned as contributory factors.

At the other end of the pole and the one most in evidence is the accumulation of the chronic insane in our asylums which is out of all proportion to the population. One idea is that the fault lies at the door of the 4/-grant, another that it is due to the nondischarge of the "potential insane," and yet another the failure to requisition the services of the general hospital and poor law physician in preference to the trained asylum physician in the treatment of early or incipient insanity. "The ill-informed public are apt to look upon a man who has a reputation for skill in a particular class of disease as of necessity unacquainted with all other diseases. We on the other hand maintain that of him it should be said with truth, that he is one, not who knows less of diseases in general, but who knows more of the particular class of diseases to which he has devoted most time and special attention and study." I do not think it is necessary for me to enter into an argument with either school, much as I should like to do so, but I venture to say, that while a shadow of truth may attach to each, the real cause is the unbounded confidence of the ratepayer of this country in the administration of our public asylums; and while this is so, the trained and experienced asylum physician need not trouble to warn either the neurologist, visiting physician, or the poor law official off his preserves. To this confidence must be linked the changed condition of things, at any rate in the country, regarding the apparent reluctance on the part of the home circle to care for their insane relative. Is this unreasonable or unnatural? There are desirable homes supported by the rates where the patient can be nursed and cared for. At the same time the relatives themselves have a greater struggle for existence and, therefore through the mere force of circumstances are not in as good a position as formerly to play the role of the mental sick nurse.

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Can you or I deny the force or truth of this? No, and while the reputed increase of the insane is more associated with an increase in the number of the registered mentally unsound than any increase in the prevalence of insanity, let us not attempt to save or mould the future of our race at the expense of the delightful personality so frequently met with in institutions for the insane. Let me warn you against beginning at the wrong end.

TYPE OF INSANITY.

Having thus far dealt with the human fabric in a limited area we may now turn our attention to the actual mental condition and look into our glass from the clinician's point of view. Has the character of the cases remained the same or have the forms of mental disease under any of the many systems of classification changed during these 50 years? My initial difficulty is to reconcile or to bring into line the views and experience of 50 years ago, with the ripe experience of the present day. Still the difficulty is not so great after all, and he would be a bold man who would question the diagnosis of a Pinel, a Skae, a Tuke, or a Bucknill. Perhaps they were not accustomed to such borrowed terms as dementia præcox and manic depressive, but I venture to state that they were as competent to diagnose a true case of mania, melancholia, or any of the dementias as the greatest Goliath of the present age. Under this head much interesting information may be gleaned from the published experience of such men as Thurnam and Boyd, and I am inclined to think that the registers of our public asylums were as carefully and as accurately entered up 50 years ago as at the present time. The types of insanity exhibited by first admissions during the 50 years do not show any very startling change, yet under certain heads the change that has taken place is significant of what has been happening in the county and clearly adds soundly welded links to the chain I am humbly endeavoring to put together. With reference to the groups of cases falling under the head Mania, I find that the percentage has varied but little during the period. In the first decade the percentage was 49, in the last decade 48, of the total first admis-These percentages are curiously corroborative of the figsions. ures as given by the Lunacy Commission, though not quite so high, and while on the surface of no apparent moment, yet they have a significance. Mania is the only type which does not show a

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clear and ominous change. Now without venturing on too thin ice, is it not in accordance with experience whether gained in the laboratory or by the bedside, that this particular type is less often associated with the wholly hopeless and incurable than either of the other forms? It certainly is so in Dorset, and in further support of this view. I would here mention that in the seventies. when agriculture was booming and the ordinary or average population presumably engaged on their native soil, the percentage of mania among the admissions was as high as 65, so that while in a recently published tabular statement agricultural districts are credited with a high proportion of mania among the admissions, it has to be borne in mind, that notwithstanding the changed order of things, when individual centres are closely scrutinized, the proportion remains about stationary. Turning to melancholia, what do we find? An advance from 18 per cent in the fifties to 25 per cent in the nineties, a jump of 7 per cent, and here is one of the striking features in the changes that have occurred. The increase of this type has been much more pronounced during the decades ending 1896 and 1906 than formerly, and while the loss by migration is an important factor, I am inclined to the view that intoxicating physical causes have played a conspicuous role if only by rendering the individual hyper-susceptible to every extraneous influence. But the really important point is the close association between the type of melancholia as met with in Dorset, and the absorbing question of heredity. I do not intend to discuss this question at present, as it more fittingly falls under the head of causation, still I thought it desirable to refer to it, if only to bring into evidence the variation between the two main types of mental disease, mania and melancholia. The dementias are not so easily dealt with, for while there has been no great divergence of opinion respecting senile and secondary dementia, nor has the use of these terms varied in their application during the period, ideas have not only changed, but the whole aspect of things has altered in regard to the early dementias. It has been stated that owing to the lack of brain activity in rural communities

senile dementia is there more prevalent, but is this the only or real reason why there is such a high proportion of senile cases among the admissions from rural districts? I do not think so. The proportion of this type among the admissions has risen from 5.8 per cent in the fifties to 8.8 per cent at the present time, by no

means an alarming increase. But what about the residuum? The quiet, healthy life of a Dorset peasant is as conducive to sound-minded longevity, as is the bustle of our large cities, and as the result of a patiently conducted inquiry, I am inclined to attribute the increase to other causes than the lack of brain activity. I have already stated that owing to the havoc wrought by the tide of migration the humble home no longer harbors those who are able and willing to act the part of the mental nurse. The poor law authorities in country districts fail to make provision within their walls for the aged mentally sick, and by a process of devolution the Lord Chancellor through the Lunacy Acts ordains that his aged children shall be gathered into the fold, into homes which were recently described as "sepulchres of living humanity, or tombs of the intellectually dead," homes where through the instrumentality of the enlightened treatment of mental disease the ordinary span of life's short journey has been considerably lengthened. The aged are interesting on account of the lessons we may learn from them as well as by the reverence with which we in all humility should address them, but when we come to consider the position of the early dement, we are met with a totally different condition of things. The dementia præcox school ridicules the homely terms primary or early dementia, and there are those who adopt adolescent insanity in preference to either. I am anxious to make my position clear in this matter, for I have experienced some difficulty not only owing to the accepted views of decades ago, but also because the question of primary or early dementia bristles with the deepest interest in any attempt to study the phases of mental disease as exhibited by the admissions from the districts now under consideration. It is possible that in the fifties and sixties this particular type of patient was not so thoroughly sifted from the others as at the present time; still if time and thought are not at a premium a few months' careful study of our old case books will lay bare their presence in no inconsiderable number. From the seventies onwards we have been more familiar with this class of case, and I find that in Dorset they have advanced from I to 3 per cent among the first admissions during the period under review. This is, if we feel inclined to prophesy, an alarming increase of a most hopeless type of mental disease. Many and various are the opinions held and expressed in explanation, but while the evils of educational pres-

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sure, unhealthy environment, a passionate indulgence in various directions extending to abuses, and other causes, are important side issues, I have found, as I hope to show, that the increase in this class of patient in Dorset is really grafted on an instability associated with the scourge of heredity, or as Dr. John Macpherson has put it, "a predisposing cerebral weakness and a physical intoxication." This type has been of absorbing interest to me for many years, and I am in sympathy with the writer who reminds us of the danger of general statistics and warns us that of all classes of argument, statistical arguments are the most open to misuse. Could there be a better illustration of the truth of this than the published statement that the proportion (per cent) of primary dementia among the admissions in Dorset is somewhere about .5 per cent, whereas the true proportion is, as I have said, 3 per cent?

We have now to look through our glass at two types of a wholly degenerative nature; viz., general paralysis and epilepsy associated with insanity. In the case of general paralysis there has been an increase of 2 per cent, but as this is not one of the common types of diseases in rural districts, less interest attaches to it there than in other districts. One curious fact has come to light in respect to the proportion of female general paralytics, which falls but little short of the proportion in other centres, whereas in the case of males it is only about one-half. If Dr. Mott could be induced to devote a few months to the study of general paralysis as met with in districts like Dorset I am inclined to think his impregnable fortress of no syphilis no general paralysis would shake still more, and I am assured on good authority that the walls of his masterly built edifice begin to show fissures. The position of acquired epilepsy shows a slight advance, about I per cent, which is entirely among the men for there is actually a falling off in the proportion of female epileptics, but when we come to consider cases of epilepsy associated with congenital defect, there is need for us to pause and think. It would serve no useful purpose to make a separate group and I have, therefore, considered the whole class of congenitals under one head. The proportion per cent of this class among the admissions has risen from 4.7 to 8 per cent during the 50 years, truly an appalling state of things, and herein lies one of the problems which has to be solved in any attempt to grapple with the ques-

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tion of race degeneracy. I fancy I can hear whisperings as to basing opinions on false premises, such as statistics, accumulation, etc., but let me hasten to assure you, that I have been into the highways and byways, the actual homes and the village schools, for the facts on which I venture to express an opinion. There is no denying, no getting away from the fact of the alarming increase of congenitals among the annual admissions, and for an explanation we have not far to seek. It is ready at hand, the deplorable state of things easily recognized and probed to the bottom in the social life of depopulated villages and districts. Unwise marriages, no variation, an unhealthy, nay more, an unholy attachment to the native has landed us on the very brink of ruin and degeneracy. Having briefly looked into the question of any variation or change in the type of mental disease, we may summarize the matter thus: Melancholia, early dementia, and congenital defect, especially the last, have increased beyond comparison with any increase in the admissions ; and the gravamen of these changes lies deeply buried in the social life of the people. Help or relief must come from the root; it is hopeless to attempt repairing the roof with new tiles, while the shaky walls and the decaying foundations are so rotten.

OCCUPATIONS AND INSANITY.

I think it was the late Sir Geo. Johnson who once said, "There is reason for the belief that the more thorough and profound is the investigation of any disease or class of diseases the more numerous and intimate will be found to be the relationship with other morbid states." Of no disease is it more true than of mental disease, and with those words clearly reflected in our mirror let us look at the question of occupation in relation to the changes which have occurred in certain types of insanity. It has been thought that a consideration of "how far the cause of an attack of insanity is related to the occupation of the patient might be a subject worthy of careful research." It was perhaps with this object in view that I approached the subject and not without hope of some little reward, but I fear the results have hardly justified my earlier conceptions. Where the admissions are in numbers within the grasp of easy and accurate classification as in the case of Dorset, we are not likely to have hurled at our heads the stock phrases "inaccuracy," "borrowed information," etc., and I venture to sav. the

facts as here given are accurate and beyond dispute. Now what have we found? During the 50 years the class from which the bulk of the cases are drawn; viz., laborers of all kinds, but mainly agricultural, has decreased by some 5 per cent, calculated on the annual admissions. Will this occasion surprise? No, for we are already familiar with the fact, that the more intelligent laborer has gone elsewhere. Therefore at this point there is no apparent relationship between any increase among the males and the main division under the head of occupations. The divisions of processions, artizans, etc., never a high percentage, has also decreased; and while it would be sheer waste of time and energy to sum m scattered occupation fragments. I may at once come to the point and ask: If the main groups have decreased, in what group or division has the increase occurred? In that familiar group, "no occupation," which has advanced from 6 to 12 per cent. I think I ought to build a little wall of defense and beg of you not w imagine that I have included in this division cases where no information was forthcoming as to the occupation or how they gained a livelihood, for all such doubtful factors have been excluded, and the group contains only those who for a multitude of reasons never had and never could have any occupation. I desire to treat this curious and interesting fact as a matter of the greatest importance, and, therefore, let us for a few moments look at the position of occupation in relation to the female admissions. As might be guessed from previous observations, the wives of laborers and artizans have decreased, though there has been an increase of 7 per cent among the class of servants and other unmarried workers, but the main increase has been, as in the case of the males, under the head of "no occupation," the proportion rising from 11 to 34 per cent. It will be observed that the increase is much more than in the case of the opposite sex and reveals to us the high proportion of that most hopeless class, the "mental defectives." Now while a study of occupations in relation to insanity may have shown a striking increase in the group "no occupation," it has not established, as was foreshadowed, any clear connection between certain occupations and special types of insanity, yet I hope to show that the inquiry has not been altogether fruitless. Though I cannot, as has been suggested, trace any clear connection between lack of brain activity and senile dementia, which after all is but the result of natural physiological

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changes, and strictly speaking, should not be classed among the insanities, there is an interesting state of things in connection with occupation and melancholia. The lack of interest and want of any direct stimulus to activity or change of thought in large numbers of the peasant homes in Dorset, mainly through the forces following in the wake of migration, have resulted in a state of gloom and despondency likely to be followed by one of the many phases of melancholia, especially in the case of the predisposed and badly nourished. In so far as the occupation of manual labor is concerned the relationship results from enforced displacement and not because the laborer is not worthy of his hire. A further illustration is to be found in the case of the unmarried woman who formerly had ample employment in home laundry and dairy work. Most of this is now carried on by steam laundries and butter factories, and the simple peasant is driven to eke out an existence in a multitude of ways not always conducive to either mental or physical health. In centres where the multitudes collect I can easily understand a different state of things and that results of a more definite character may be arrived at, but where you have such disorganization of normal or ordinary life and occupation, as has happened in Dorset, the chances are against any pronounced relationship between occupation and insanity. Admitting that the Dorset laborer lacks in initiative and responsiveness, I do not think the increase of insanity, in so far as this may be proved or accepted, has any direct connection with the ordinary avocations and, therefore, I have a difficulty in making any definite pronouncement on a subject which has not the value I was inclined to attach to it. However the consciousness of greater difficulties ought to recall to our minds this fact, that if the field of inquiry be narrow it can be dug deeply, and in psychological medicine as in other departments, if only a very narrow shaft be carried deep enough we may reach the richest stores of weath and find use for all the appliances of scientific thought.

CAUSATION.

"Now in every search for truth we cannot only exercise curiosity and have the delight, the really elemental happiness of watching the unveiling of a mystery; but on the way to truth, if we look well around us, we shall see that we are passing among wonders

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more than the eye or mind can fully comprehend." In this frame of mind and remembering the words, "he shall be as a god to me who can rightly divide and define," I have to ask you to look with me for a few moments into the question, which of all others is of greatest and deepest interest to the student, who, however imperfectly, attempts to trace an association between insanity and any of the numerous influences and factors at work. Dr. John Macpherson says " insanity not being one disease but a heterogeneous group of many diseases, we cannot speak correctly of its cause, and further, as our knowledge of the fundamental facts of insanity is as yet only fragmentary, our opinions regarding its causation are still necessarily crude and imperfect." If we accept this position it is clearly necessary, if we have a desire to get anywhere near the truth, to take nothing for granted, unless we can satisfy ourselves that truth is on our side, and that our conclusions are not based on figures alone. If it has been necessary to devote so much time and thought to the preparation of corrected birth-rates, how much more necessary must it be in the case of the question now before us and into which I venture to think more errors are likely to creep than into any other branch in the whole domain of psychological medicine. I would here clear the ground by one observation. Do not imagine that I purpose taking you through any tabulated list of causes. We are asked to believe that one of the great factors in the production of insanity is associated with the distiller's and brewer's productions; and I think it was Dr. Hyslop who last year warned the public against the evils likely to accrue from the disturbed slumbers of London's rising generation by the nocturnal concerts of love-sick tom cats; and again, Sir James Crichton Browne has called attention to the dangers likely to follow in the wake of the motor car Now all these influences may and no doubt do play a part, but in the case of Dorset the real factors at work are of a different nature, and I feel sure no one would more readily admit than Sir James that good might come from the increasing prevalence of motor cars in a district where the stagnation of ideas may have become rife and life's dull journey not too exciting. The condition of things in a district where migration has played a conspicuous role, must be wholly different to what is met with in centres or districts where the opposite state of things exists. I cannot accept a grouping of causes from different districts void of common ties as anywhere near the truth. It may be our habit to speak of the causes in one district as the equivalent of those in another, but is this always right? Acting in unison they might be allied forces, carrying into effect a common condition, but acting apart from each other, they might be like foes upon common ground. In considering the factors which have been at work, I have not been content with ordinary methods of inquiry, but have looked for facts of corroboration, explanation or otherwise, such as are only to be observed in the cottage, village school, harvest field, etc.

Now if I take first and foremost intemperance, I do not wish you to infer that I am thinking of alcohol only, as I think it is generally recognized that intemperance in other ways may prove deleterious to the nervous system; and I would suggest that the total abstinence school should considerably enlarge their list, so as to include such baneful decoctions as black tea and the pocket phial. As regards the question of alcohol, I in all sincerity accept the position that, when abused or even in many cases used in moderation, the poisonous effects on the nervous system and the future of the race are fraught with the gravest consequences, but, if you ask me to accept the view that alcohol is the great cause or even one of the greatest causes of insanity, then we must part company, for facts and experience have taught me a different lesson. For many years I have asserted, and I do again, that drink or intemperance in alcohol cannot be proved to account for more than 3 to 5 per cent of all cases of insanity in the county of Dorset. I admit there are no large towns, yet there are seaport towns, where it is generally supposed the sin or curse of drink is prevalent; and I think those who know the Wessex country will admit that the Dorset peasant is as fond of his glass of cider or ale as is the Lancashire miner or the Shoreditch docker. I am not aware of any authenticated opinion or explanation of what must strike the reader as somewhat curious, viz., that while the position occupied by the county of Dorset as regards the ratio of insanity to the population is one of the highest, it is also the fact that it is one of the lowest in regard to alcohol as a factor in the production of insanity. Reasons may be assigned, such as the greater purity of cider and beer as compared with the raw, adulterated, and poisonous spirits so largely consumed in cities; or again, the lethargic and stolid character of the Dorset laborer as compared

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with the more highly strung urban workman; or again, errors or differences in methods and ways of collecting and arranging facts, and it is notorious how wholly unreliable is the information as supplied by the statement of particulars; but these and many other reasons which might be mentioned are quite inadequate to explain away the difference between a 5 per cent in Dorset and a 30 per cent in Northumberland. As Lamb observes, "it leads the reader to frame further questions on his own account to which no reply is forthcoming." I am tempted, but converging forces restrain me, to touch soil on which great and experienced minds have hesitated to tread; and yet the question is of absorbing interest. I am conscious of the readiness with which the lay press and others pick up and shape to their own liking every expression or statement on the subject from members of the profession, still I say frankly, that the prevalent notion that alcohol fills our asylums, that drink is the greatest cause of insanity, or that the medical profession has denounced alcohol as wholly unnecessary has not been proved, and, as regards Dorset, we must tap another source to account for the high ratio of insanity. Has the Chancellor of the Exchequer solemnly prayed for further assistance from his declining excise duties, while the ratepayer grows sleepless under the increasing burden of insanity? Was there ever such a commentary on the intemperate statements, it may be of well intentioned but misguided persons? All sound-thinking people are alive to the evils of intemperance, whether in drink or in other directions, and it is well

perance, whether in drink or in other directions, and it is well known that the mentally defective, the epileptic, and the highly neurotic are more easily affected than the mentally sound. Again the number of alcoholics is far greater among readmissions than first admissions, which fact alone shows with what care we should approach the subject, lest we fall into the error of tabulating as a cause what was clearly a symptom of loss of control. I would therefore ask for a stricter observance of the real facts and a truer regard for utility and charity when considering the personal equation, which enters so largely into every inquiry.

It might be thought I had run away from the question ot intemperance in other beverages, but this is not so, and while I had not originally intended bringing up the subject of food at this particular point, I think it will be better to do so and thus save repetition as well as maintain a gradual ascent to one great factor. At a time when so much attention is being given to the

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better housing of the poor, which means a gradual improvement in the environment, the question of how, if at all, the high ratio of insanity may be associated with the ordinary diet of the Dorset peasant cannot be left out of consideration. Now let us first look at the difficulties so frequently experienced by the cottage community as regards that most necessary article of diet, milk, which as Prof. Osler reminds us was the original food of man. There would seem to be an inherent notion that poor people in the country can always obtain milk. It is a fallacy. The ordinary cottage family in the country has great difficulty in obtaining even a partial supply of milk and when extra is required it is not to be This is not due to poverty but to the iniquitous system of had. tied dairies, small as well as large. Further, the supply is not only short but the quality of the poorest and "the mere citation of this fact proves the primary urgency of the milk supply and the binding obligation of protecting its purity." The evils do not stop here, for since milk is short, something else must take its place, and everyone knows what is meant by the black teapot which is always to be found on the hearth stone. The father, mother, son, daughter, and even the suckled infant, all share alike from the ordinary fare of black tea, bread and cheese, morning, noon, and night. This is no colored picture, it is the simple truth. If the beverage tea were properly prepared and not indulged in too freely no harm would be likely to accrue, but what will be said of the ordinary laborer who consumes daily 2 to 3 quarts of black tea thus prepared. A brew is made between 5 and 6 a. m. and this same pot continues in use by being added to from time to time during the working day, until at last it is little else than rank poison. The fact that this tea is without either sugar or milk, being what is familiarly known in Dorset as "stark naked," makes things worse and I am convinced is in many cases the cause of insanity among the laboring class. I am not decrying tea in its proper place, but the evils of tea drinking among the working classes have to be reckoned with in any attempt to probe deeply the causes of insanity. As a nation we consume six times as much tea per head as any other European country. This innutritious diet must lead to impaired nutrition of the nervous system and as has been pointed out by the Irish Board of Lunacy, "when acting over many generations may have developed those neuropathic and psycopathic tendencies which are the precursors of

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insanity." Facts of this nature may lend color to the demand for free breakfasts to certain classes of school children, and whoever has visited the typical village or town school could not have failed to observe the number of dull, stunted and neurotic children. In the course of my inquiries I found as many as 15 per cent of noneducable children in village schools and the percentage of dull and backward ran as high as 35 per cent. Well might the author of "Physical Efficiency" say "the towns will soon call in vain; for in place of being robust and healthy, the children of the rural districts will often be found to be stunted and in a worse plight than the city children." With these evidences of brain poverty and physical defects looming large before us we might be tempted to agree with the learned professor when he advises us to throw beer, spirits, tobacco, tea, and coffee into the Atlantic as unnecessarv, and that the race would be the better for it. Whether this advice will utimately prove to be a panacea time alone will show, but it would certainly solve many of the problems with which

HEREDITY.

philanthropists, physicians, and politicians have to deal.

In the sixtieth report of the English Lunacy Commission, issued last July, which is one of the most interesting and valuable reports ever issued from that office, the county of Dorset is credited with the highest percentage of heredity as a factor in the production of insanity. The information therein given does not reveal the whole truth, and as in the case of the birth-rate, so with the ratio of heredity, it has to be corrected. I do not intend to wade through the mazes of the latest theories on the subject, as propounded by Beard, Ford-Robertson, Archdall-Reid, and others, but in the words of Dr. Clouston will content myself by accepting the theory that ill-nourished and degenerative parents are likely to produce between them bad progeny, and even if not ill-nourished, a strong hereditary predisposition will far outweigh the influence of good environment. The author of clinical studies of psychiatry savs, "whatever the exciting causes of insanity may be, the chief predisposing factor is hereditary predisposition," and Dr. Mott, as the result of a vast experience, states " that the large majority of the insane are hereditarily predisposed." In discussing a question of this magnitude it is as necessary to avoid being too narrow as it is desirable to guard against collateral errors; and as "the

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inheritance of both mental and physical characters hardly admits to-day of dispute, it is only the manner or intensity of inheritance which calls for discussion," I have carefully looked into this question as regards the insane and mentally defective in the county of Dorset during the 50 years under review, and the position of heredity as being the main predisposing cause is proved beyond dispute. While the percentage of heredity among first admissions may have varied during the five decades, there has been a progressive advance in the numbers admitted among whom a definite history of inheritance could be traced, until at the present time it is somewhere between 50 and 60 per cent. As stated in an earlier part of this address. I have taken first admissions so as to avoid any risk of false deductions, which must inevitably arise, if you do not exclude the danger of reckoning the same person more than once. In the course of this inquiry I have been more than ordinarily careful to exclude all possible cross currents, and this is why I elected not to deal with the question of heredity on the total admissions. Considering the present position of heredity as an all-important factor in the production of insanity it is well perhaps in passing to consider the views of those able and distinguished members of our profession who, while admitting the importance of heredity in relation to mental disease, ask for statistical proof of a like inheritance among the sane members of the community. Now a demand of this nature must inevitably be characterized as of an inquisitorial character and as I think we all know how difficult it is to obtain even a modicum of the truth in regard to recognized cases of mental disease, how much more difficult then, if not well-nigh impossible, must it be, to obtain information about those who, though presumably sane, may be predisposed. Far be it from me even to appear to throw dust on the brilliant horizons of those who aim at such a goal, but it does not appear clear how any inquiry would affect the case of heredity in relation to insanity, for since heredity is equally established in other allied neuroses such as epilepsy, alcohol, chorea, phthisis, it would be necessary in order to arrive at the truth to trace each variation to its ultimate end, and while I commend the subject to race enthusiasts, I feel that it is quite outside the scope of this address. It has been pointed out that you cannot stop at a predisposition to one neurosis, for it is quite possible that the variation may be as true an inheritance as the original

neurosis, so that the subject is one of many parts and great difficulties. For our present purpose it is sufficient to deal with heredity as related to insanity and mental defect, and since a predisposition has been traced in over 50 per cent of first admissions, it may with some plea of justification be asked: Is there any possibility or even probability of accounting for or explaining this high percentage of heredity among the insane in Dorset? At this point I am haunted by the words of the late Sir Wm. Bowman who said, "Never till the present moment have I had so much cause to lament my many deficiencies, since now they must of necessity affect others more than myself." It is an easy task to build an edifice in the matter of theories but the cement has to be of the best, and, therefore, the more special is any department of medicine, the greater is the need to recur often to general principles, and to bear in mind that so close is the solidarity of the animal organism that there is a literal and physiological truth in the apostolic statement " If one member suffer all the members suffer with it." It would be idle to attempt to throw any doubt on the importance or position of heredity as a predisposing factor in every phase of mental defect and mental disease in the county of Dorset. The field simply bristles with evidence and proofs which even the most ardent advocate among the opposition will find it hard to explain away. Admitting that the scientific and reasoning mind can best sift the problem of heredity to the bottom, the general question of predisposition is so closely allied with the social and racial atmosphere that one has to start from humble ground in the hope of building up a passable conception of human stability, for as Burke once said, "I am aware that the age is not what we all wish, but I am sure that the only means to check its degeneracy is heartily to concur in whatever is best in our times." My one desire in this inquiry is to seek out the truth, and since experience has taught us that this can only be accomplished by a true regard for the correlation of facts, I will not attempt ideal-

To begin with, there has been throughout the 50 years a steady decline in the birth-rate, and while I shrink from entering the raging field of newspaper warfare, I must take exception to the statement that there has been a greater fall in the urban birth-rate than in the rural. In Dorset the corrected birth-rate shows the

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istic colorings, or ambiguous phraseology, but humbly endeavor

to delineate an unbroken sequence of events.

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alarming decline of 30 per cent during the period of 50 years. The seriousness of this fact grows in volume and importance as we link it with the question of migration, for while the one may be the accredited result of studied passionate temperance, the other is the dire consequence of the social upheaval in rural districts. The process of depopulation which has resulted in such a serious loss of persons to the county during the five decades, whose places have not been filled by a fresh population, simply means that the weak, the insane, and the diseased were left behind, not a happy or robust combination to continue the propagation of the species. The unexplained attachment of the sexes among certain groups of allied neuroses such as insanity, phthisis, epilepsy, etc., may be examples of natural selection, but not with a view to the survival of the fittest, and reminds us of Dr. Clouston's pregnant phrase, "to observe the way marriages are sometimes arranged is almost to lose hope for the future of our race." In the county of Dorset there are parishes, which for obvious reasons must remain unnamed, where the conservative principles of matrimonial unions were so notorious that the choice of a partner in wedlock was by local laws ordained, and whoever dared to transgress might prepare to pack his goods and chattels as one of the excommuni-This was not a custom of a day nor of a year, but excated. tended over generations, the result of which has been an almost unparalleled condition of things as regards the evil of unwise marriages. If we are to accept Mr. Heron's proposition that 25 per cent of the married population produces 50 per cent of the next generation, and that the thrifty, the cultured, and the well-to-do fail to produce their due proportion, how appalling must be the outlook when the weak and the feeble intermarry and when the introduction of fresh blood which is most likely to check the neurosis is as a red rag to a bull. "I should be loath to say that everyone whose mind has once been temporarily unhinged by grief, anxiety, or physical pain is, therefore, doomed to celibacy, that man or maid whose father's or mother's mental health once broke down should never marry. But at least the risks should be better known than they are at present, and some restrictions might be put on the marriage of those whose record of mental health is so bad as to promise a heritage of insanity to their children." To these facts in the face of which it is useless to attempt to speculate, there has to be added the far-reaching effects of an innutritious

diet, the consequences of which may ultimately prove to be of even greater importance for the future of the race than all the colored pictures of the evils of bad environment.

It is commonplace that "truth is stranger than fiction," and it is equally true that neither science nor the legislature will materially affect the question of insanity before the lay public have awoke to the fact that there is still reason to believe in the wisdom of the old adage " Prevention is better than cure." It is no part of my task to enter the field of controversy in relation to the present and future treatment of mental disease which has been flamed into prominence by the anonymous expositions of those who guilelessly pretend to have an apostolic benediction for the punity of their statements; but I may be excused for briefly referring to some of the views and ideas which have recently been put before the public. It would appear as if a good cause were in danger of suffering, not from want of kind intentions, but from a plethora of conflicting ideas. Now as in the case of the causation of mental disease, so in the case of the means to be provided for its treatment, districts differ, must differ, and will differ, solely and simply because the numbers which have to be dealt with vary to such an extent. In the case of Dorset I am afraid that Drs. Carswell and Toogood would not have much opportunity of carrying out their methods, where, as all know, there is but a scattered population and only the ordinary workhouses to deal with. In large centres, such as London, Liverpool, and Glasgow, where a high proportion of temporary cases is met with, the conditions are wholly different to those in country districts. It has to be stated, and with satisfaction, that in several of the large centres the poor law infirmaries have done excellent work. To take but one example, Dr. Toogood says there passed through his hands in 1905, 7322 cases of supposed insanity, and he tells us that of this number he discharged 2877 as cured and sent 3583 to the asylums. Now, what I would like to know, is this: How many of the 2877 discharged as cured were certifiable, and, what proportion of the total number sent to the infirmary should really have been classed as of unsound mind? Until we know this we are not in a position to make comparisons or draw conclusions and the stigma of being sent to the workhouse is as much to be resented as that of the certification bogey.

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P. W. MACDONALD

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For some considerable time there has been much talk as well as voluminous writing on what is familarly known as incident insanity, by which I presume is meant the early symptoms of mental preversion. Now somehow or other many of the expressions which have appeared in print would lead the unwary and ignorant to believe that at the present time there is some law or hindrance to the treatment of early symptoms. Is this so? I am not aware of any hindrance to the ordinary medical attendant treating these early symptoms, and I think it is generally known that many do so most successfully, and with even better results than are often met with in the privacy (its only advantage) of single care. In connection with this question the suggestion or proposal as at present put before us would only benefit those who are in a position to pay for the consultant and single care home. so that the vast majority of the incipent class would derive no benefit. Will anyone say that legislation of this kind can or could be considered satisfactory? The poor servant girl or the mechanic's wife should have equal opportunities of receiving benefit with the millionaire's daughter. I think it is much and greatly to be regretted that members of our profession should continue to harp upon the stigma of certification, which after all is sentimental, and I would venture to throw out a word of warning lest the proposed notification may not soon be surrounded by similar sentimental objections. The clause in the Scotch Act requires no notification : and because such a clause exists across the border where it is only taken advantage of by the few and seldom by the general practitioner do not let us persuade ourselves into believing that its adoption in this country would either reduce the ratio of insane to the population or raise the recovery rate. It is time to have done with all this cant about the stigma of certification and to ask for the removal of what produces the stigma. We are constantly being told that it is not the question of the disease that is the stigma, but the means whereby the disease is enabled to be treated, where it ought to be treated, in the homes and institutions provided for the purpose. This view of the position of things reveals a veiled truth which is ruthlessly exposed by Prof. Clifford Allbutt's solemn words, "the stigma, if such there be, I rather resent the phrase, lies in the misfortune itself, and not in the red tape of the proceedings."

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There is a further proposal which perhaps after all is the most interesting, as leading us rather nearer to the solution of the difficulty. With regret it has to be admitted that the inauguration of our patient departments in connection with the asylums of this country has proved a failure, and the question here raised is this: What can be done to enable the poor of this country to obtain advice and guidance from the medical profession in the early stages of mental disease? It has been suggested that public hospitals should open their doors and establish mental depart-This is no new proposal. The good work done at St. ments. Thomas' for many years past by Dr. Ravner, and at Charing Cross by Dr. Mercier, must be known to all, and this very year we have the splendid example of the Western Infirmary, Glasgow, where a new mental department has been inaugurated and placed under the guidance of Dr. Oswald. I venture to think that if this were done all over the country no member of this Association nor any member of the medical profession would raise a dissentient note, but since the public hospitals of this country are supported by voluntary contributions, is this proposal feasible, and are not the difficulties insuperable? Here again it is a simple question of numbers. What is practicable in large cities ends in dreamland in country districts. There is one suggestion I would make, viz., that if city, county, and cottage hospitals were to open their doors and if it were proved that thereby a number of cases were helped and treated to recovery, county and other central authorities should have the power to contribute a like amount to the hospitals for the cases treated there, as they do to the existing institutions.

The question of receiving houses for the care and reception of cases previous to certification is being taken up in various parts of the country. In large centres and populous districts the proposal should prove a valuable one, but I fear the same cannot be said of sparsely populated country districts. Again, would these receiving houses be any improvement on the poor law infirmaries and would they not be surrounded with the same atmosphere of suspicion; and although it is proposed that there shall be no certification, would there not be the same sentimental stigma as attaches to the house or institution for the treatment of mental disease? Surely it would be a simpler, more effective, and better way to meet all these difficulties by asking the legislature to free

the institutions of this country from oppressive laws and the stigma of lunacy, and to allow them to open their doors to all, incipient or certified, as in the case of ordinary hospitals; and then there would be an equality of treatment, then there would be a chance of the early symptoms of mental disease being treated by those who, from experience, are most competent to do so and who have the ways and means at their disposal. There are two phrases which from time immemorial have been looked upon with suspicion and disfavor. The phrases are "administrative duties" and "certification." I have already touched on the latter; and who among us will not admit that administrative duties are often our only recreation, a safety valve, an outlet from the maze of psychological cobwebs, a hobby, if you like it, commensurate with the golf ball and the fisherman's tackle. No, "Where there's a will there's a way," and it is nothing less than a species of idle criticism to talk about asylum medical officers having no time for scientific research because of their administrative duties. Those who have done the great and good work in the specialty have not been those who have leisure but the busy, the willing, and the determined. One does not care to be accused of hyper-sensitiveness, but I feel bound to say that the sweeping references to asylum medical. officers from the pen of an anonymous correspondent of "The Times " are as unworthy as unjust, and of this writer I might say what Shiel said of O'Connel, "He flung a brood of sturdy ideas on the world without a rag to cover them." By all means let the great metropolis of London institute and endow an experimental school of research for the study and treatment of mental diseases. All will welcome such a school: but its establishment will be no answer to the crying question of the day, since it could but cover a limited field; and all will agree with Professor Clifford Allbutt when he asks that any such school of research should be officered by trained men and not by the visiting physician, who, though we all admire him and recognize him in his own department as a distinguished specialist, does not pretend to have any special acquaintance with the causes, symptoms and treatment of mental disease. What did the late Sir James Paget once say?-" In truth the fault of specialism is not in narrowness, but in the shallowness and the belief in self-sufficiency with which it is apt to be associated." I think it will be admitted that there is no scarcity of up-to-date or modern institutions, both public and private, for

the treatment of mental disease; and is it to be supposed that the ratepayers of any county or city would quietly agree to the establishment of other institutions which would seem to be wholly unnecessary and presumably for no better reason than to witness the reincarnation of visiting physicians? It is possible that "by the teaching of a higher and better system of life," beneficial changes may be carried into effect, and that the time may come when different views will prevail, and when Parliament will consider it one of its first and most binding duties to encourage the diffusion of knowledge of the conditions upon which the health of the nation ultimately depends. I would here recall to your minds the words of a great Russian physician, who, on a memorable occasion said "if living individuals may not be praised, institutions may," and I think of the British institutions for the insane it may truly be said, that they are worthy of the great country which has given them birth and the great people by which they are governed and supported, and of the great profession which has brought them to their present admirable state of development. I would emphasize the fact that the improvement of the natural gifts of future generations of the human race is largely though indirectly under our control. We may not be able to originate but we can guide. The processes of evolution are in constant and spontaneous activity, some pushing towards the bad, some towards the good. Whatever may be the outcome of the future it is clear that some sort of state interference is a necessity, for the influence of custom, law and tradition surrounds and presses upon us like a social atmosphere. Let us guard against any association with those vampires whose only business with the medical art is to drain its life blood for their own particular use and advantage, and whose complacent ignorance of the bearings of medical science fails to recognize the processes of disease to be one and the same in kind, whether they issue in the spoiling of a function or an organ. If through circumstances in the nature of the work itself the care and treatment of the insane may have assumed the character of a specialism, let us fight strenuously against any tendency towards the divorce of medical science and medical art from every act and every thought throughout the hours of our life's daily work.

I fear I have transgressed too long, and I feel I have treated an interesting subject in a broken and feeble manner. I must

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trust to your scientific habits of thought to take up the few mere hints which I have thrown out, for I have hardly been able to do more than this within the time allotted to me, and to judge of their value after your own reflections as to what further may be said either against them or for them. May we work onwards and work upwards, so that it may not be said of us in the times that are to come that we failed to do our duty. If under the strain of official work and the full blaze of public criticism we can individually add even a coloring of science and art, especially our own science and art, to the many brilliant achievements annually accomplished within our ranks, much as the waters of some noble river gather their colorings from the soils through which they pass. I have no shadow of doubt our labors will be crowned with reward. To this great end we may all do something, but labor as we may, our task will never be finished, for not once in a hundred years, as runs the fable of the Arabian bird, but every day and all day long the process goes on, a death of error, a development of truth. "Truth," said Plato, "is the body of God, and light is His shadow."

Let our aim be to hold fast and care well for the old truths, in our love for the new science to care well for the old art. For in autumn the leaves fade and fall first from the youngest branches; they linger longest on the old wood. Let us graft our new truths on the old stock, so will they live longest and flourish most. Thus shall we help on in some measure the great objects for which, as a profession, we are ultimately striving, and do our part in contributing to the general well-being of the human race.

> "Our remedies oft in ourselves do lie, Which we ascribe to heaven, the fatal sky; Give us free scope, only doth backward pull Our slow designs, when we ourselves are dull."

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GLIOTIC CYST OF THE RIGHT SUPERIOR PARIETAL LOBULE.

BY A. N. COLLINS¹ AND E. E. SOUTHARD.

(From the Laboratories of the Boston City Hospital and the Danvers Insane Hospital.)

We wish to present a case of cerebral disorder in a young woman. The case ran a course of six years with general and focal symptoms and ended in death at the age of thirty-two. Two years after the onset of symptoms the skull was trephined over the right ascending parietal convolution at a point just anterior to the focal lesion found at autopsy four years later. This lesion was a cyst, 2.5 cm. in diameter, bounded internally by the ependyma of the lateral ventricle, externally by fibrous tissue continuous with the thickened and dimpled pia mater. On all other sides it was bounded by a zone of gliosis. The nature and origin of the cyst are in question. The condition may be classified perhaps as one of porencephaly. To avoid various connotations, we have called the condition gliotic cyst.

I. CLINICAL HISTORY.

An unmarried nurse of 28, after two years of severe parietal headaches accompanied by occasional vomiting and by impairment of vision, was admitted to the Boston City Hospital, January I, 1894. Just before entrance she had suffered marked loss of power in left hand, arm, and leg, and the headaches had become intensified. Thermal, tactile, and muscular sense remained normal. The reflexes were unaltered.

On January 7 the right arm was somewhat improved, and she could walk with a hesitating gait. The headaches continued, and there was marked photophobia.

On March 25, after about eleven weeks of variable short periods of improvement and relapse, she was recommended to the surgical side for trephining. An aural examination before operation was reported negative. The skull was trephined by Dr.

³Working in the fourth year elective in Neuropathology in the Harvard Medical School, 1905-1906. E. H. Bradford just over the upper part of the fissure of Rolando. Some thinning of the skull at the point of trephine was noted. The dura bulged markedly. Pulsation was visible. The meninges were adherent to the inner table at one small spot. Nothing further was discovered.

The headaches returned on the third day after operation. On June 4, 1894, she was discharged only slightly relieved to the Convalescent Home where she remained until May 13, 1898, about four years. In the interim she had become completely blind. On May 13 she was admitted to the surgical side with a provisional diagnosis of general peritonitis. Operation the same day showed the entire length of the small intestine to be lifeless and black. The patient died in the afternoon.

II. FINDINGS AT AUTOPSY.

Autopsy the following day, by Dr. F. B. Mallory, showed thrombosis of the portal vein and its branches, infarction of the small intestine and multiple infarctions of the spleen. The brain showed, just back of the right postcentral convolution, a depressed area, greyish and rather fibrous in appearance. A frontal section through this point revealed an irregular stringy mass of rather dense fibrous looking tissue. This mass formed part of a wall of a cyst 2.5 cm. in diameter. The cyst reached to the right lateral ventricle and was only separated from the latter by the ependymal lining. The fibrous looking tissue projected in bands in all directions throughout the cyst and seemed to form a more or less intimate part of it. In other words the fibrous looking tissue did not form the wall of the cyst, but rather was included and extended in all directions therein, being limited peripherally by brain tissue only and not by a definite capsule or wall. No other lesions were found in the brain.

III. MICROSCOPIC EXAMINATION.

The microscopic examination was made largely to determine the cellular structure and pathogenesis of the cystic lesion in the right superior parietal lobule. It seemed possible to align this condition of gliotic cyst in the cerebral gray and white matter with the familiar condition of syringomyelia in the spinal cord. Syringomyelia in advanced cases can be faithfully described as a condition of gliotic cyst of the posterior horn and adjacent

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white matter. The present case showed a gliotic cyst of unknown duration (cerebral symptoms six years) involving gray and white matter of the cerebrum in an area which modern work has shown to be sensory in function.

Sections for microscopic study were taken to show tissue immediately surrounding the cyst, and the nature of its interior surface.

Four processes of staining were employed, *i. e.*, (1) Mallory's phosphotungstic acid-hematoxylin stain; (2) Mallory's anilinblue stain for the intercellular connective-tissue fibrils; (3) alumhematoxylin and eosin stain, and (4) Weigert's stain for myelin sheaths.

Microscopic examinations of these sections revealed the following: An absence of vascular lesions, an absence of phagocytic cells in the walls of blood vessels and of the cyst; some cellular and fibrillar gliosis in the subependymal region; an occasional tremendous spider-cell lying in the subependymal neuroglia; considerable fibrillar gliosis between the bundles of myelinated fibres; an absence of demonstrable neuroglia changes in the adjacent cortex as well as absence of subpial gliosis.

IV. REMARKS.

We have to deal in the present case with a condition of cyst with gliosis in the right superior parietal lobule. The cyst was 2.5 cm. in diameter and did not communicate with the lateral ventricle. The origin of the cyst comes in question.

We are able to do no more perhaps than enumerate possibilities. Without reference to the subject's history, we might propose that this condition of gliotic cyst could be labelled anatomically as follows:

I. Agenesia, defining a condition in which the original tissue had never been deposited in embryonic life.

2. Aplasia, defining a condition in which the original elements laid down in this focus failed to develop for some reason.

3. Necrosis of focal character, defining a condition in which the necrotizing agent destroyed cells which had normally developed. Under this head might be considered:

- (a) Infarction of embolic or thrombotic origin.
- (b) Hemorrhage with absorption and incomplete repair.
- (c) Abscess, turbercle, gumma, or other infective lesion, fol-20

lowed by absorption of disease products without adequate replacement with scar-tissue or gliosis.

(d) Echinococcus disease.

4. Tumor formation with cystic degeneration (cystic glioma or gliosis with cyst formation).

The history of the subject fails to support several of the possibilities mentioned and indeed seems inconsistent with a number of them. Perhaps the earliest symptoms were due more to heightened intracranial pressure than to the focal lesion. The greater emphasis at times of right parietal headache might be ascribed to the focal lesion. In any event the results of the focal lesion and the results of the consequent increase of intracranial pressure can hardly be separated clinically at this time.

The woman had been perfectly normal up to the onset of her disease six years before death. She had been a capable trained nurse. Clinically there could be no suspicion of maldevelopment, or of any form of bacterial or parasitic infection.

Disregarding the clinical data for the time being, we are in a position to exclude the likelihood of most of the possible conditions mentioned above. The absence of vessel lesions and of phagocytic cells is striking. The normal character of tissues a few millimeters distant from the gliotic wall of the cyst is suggestive of an acquired, rather than of a congenital, lesion.

We have thought it worth while to present the case as a phenomenon to be explained. No explanation seems so satisfactory as that of glioma with cystic degeneration. This diagnosis fails, however, to explain much, since the significance, both of glioma and of cystic degeneration, remains unclear. The best suggestion we can offer is that the condition is analogous to syringomyelia. Gliotic cysts of the cerebrum will be understood when syringomyelia is understood. Both conditions depend for their explanation upon the theory of neuroglia changes. Let the nerve tissues of a part of the superior parietal lobule in this case undergo a slow death like that in the tissues of the posterior hom of the spinal cord in a case of syringomyelia. Vascular lesions fail to ensue. The neuroglia attempts to fulfil the function usually attributed to it-replacement-gliosis. The attempt is a failure, as in the banal condition of cerebral infarction, and a condition grossly resembling a cyst of softening follows. Alterations in the amount of enclosed liquid ensue, just as in syrin-

gomyelia, and effect alterations of symptoms, complicated, however, to an extent not possible in syringomyelia, by heightened intracranial pressure.

Just as in syringomyelia, it is perhaps not possible to allege that the destruction of nerve elements in the area which afterwards becomes cystic is a primary or direct destruction of nerve elements. Is it possible that the gliosis is primary and not wholly a replacement-gliosis?

Further cases may determine whether there is a cerebral disease which proceeds on the lines of syringomyelia.

DESCRIPTION OF FIGURES.

FIG. 1.—Photograph of gliotic cyst, abutting on ventricle.

FIG. 2.—To show situation of cyst. Dotted lines are to represent dilatation of ventricles.

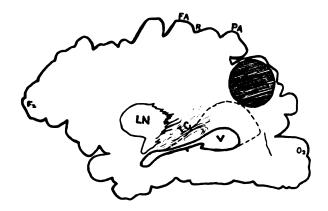
Sagittal section of right hemisphere taken 2.7 cm. from median line. Dejerine, Anatomie des Centres Nerveux, 1895, Vol. I.

 F_{s} , second frontal convolution. FA, ascending frontal convolution. R, fissure of Rolando. PA, ascending parietal convolution. O_s , second occipital convolution. LN, part of lenticular nucleus. IC, part of internal capsule. V, occipital horn of lateral ventricle.

PLATE IV.







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NOTE ON CELL-FINDINGS IN SOFT BRAINS.'

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AND

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Assistant Physician to the Massachusetts Hospital for Epileptics.

The present note calls attention to a point in pathological anatomy, viz., to the occasional occurrence at autopsy of brains and cords which are unduly soft to the feel, but have been subjected neither to edema nor to post mortem autolysis. Such reduction in consistence without increase of weight may be termed general encephalomalacia (myelomalacia). Some of the soft brains and cords show evidence of recent destruction of nerve fibers, demonstrable by familiar methods (Nissl's, Marchi's). The very diffuse malacia appears to be a phenomenon of terminal exhaustion and is perhaps related with such central neuritis (1) as may occur in Korsakoff's psychosis (2) and other conditions. The case of an epileptic dying at forty-two is given as paradigm of the condition.

Our attention was drawn to the condition in the course of work on accessible epilepsy tissues. Of course nowadays we very properly associate epilepsy rather with indurations of the brain than with encephalomalacia. As the appended case shows, however, the two conditions, focal sclerosis and general reduction in consistence without increase of weight, may be recognized together in the same subject It is even likely that focal glioses may stand out more prominently than usual in the soft brain and cord. Although recorded observations are not decisive on the point, it is not to be supposed that a large proportion of autopsied brains in epilepsy show malacia in this sense. We were surprised, however, to find that, out of a score of cases with soft

¹Read at the meeting of the American Association of Pathologists and Bacteriologists, Baltimore, 1906, and at the meeting of the New England Psychological Society at the Massachusetts Hospital for Epileptics, Palmer, 1906. brains (Danvers Insane Hospital series), a half-dozen proved (in the clinical records) epilepsy cases. But the histories failed to indicate that the encephalomalacia is directly related with epilepsy or with convulsions. Sometimes, as in the appended case, convulsions and other epileptic phenomena had ceased long before a terminal period of exhaustion, during which the lysis of nerve tissues had proceeded or begun. A review of the clinical histories in these cases pointed rather to a late, terminal, or agonal exhaustion than to any supposed convulsive constitution as the lytic agent. Some of the cases were febrile, others not, and some terminally febrile.

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The general interpretation of such a finding is dubious. We are familiar with the general histolysis and swelling which follow shutting off the blood supply from a part of the brain (focal encephalomalacia with edema) and with the general softening down in situ of the brain after death (post mortem autolysis). The histology of these conditions differs from that of the general encephalomalacia under discussion. The soft brain (in the sense of this note) shows axonal reactions in nerve cells and Marchi degenerations in nerve fibers, which are of wide distribution and unequivocal as far as they go. The brain has been subjected not so much to a general histolysis as to a cytolysis or axonolysis. Although the effect produced is a general softening down of tissues, yet the lytic agent actually works differentially. This differential action is exemplified in the appended case, since the preserved nerve cells and nerve fibers within the sclerotic focus mentioned below show the same axonal reactions and Marchi degenerations as are shown by the cells and fibers of the brain The neuroglial overgrowth is itself resistant to lysis at large. but fails to protect the included nerve structures from lysis. This lytic change appears to be far more diffuse than any change which might underlie those changes in the second cortical layer of the brains of epileptics as first described by Bevan Lewis (3) or as described by Clark and Prout (4). It is to be observed. however, that Clark and Prout also mention chromatolysis in all types of cortical cell, most marked in the large pyramidal cells of the third layer. Bevan Lewis also notes the changes described by him as found to some degree in alcoholic brain-disease. The discovery of such changes both in and out of epilepsy makes clear how complex is the problem of the histology of epilepsy.

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The practical recognition of this kind of brain and cord is important, because it would seem desirable for chemical pathology to begin upon work with cases showing such general disorder. Practically we are unable to draw many conclusions from the gross characters of brains examined very long post mortem. When the brain begins to stick to the knife on section, interpretation becomes difficult. Where post mortem changes can be excluded, there remain some sources of error. The chief source of error in the pathological diagnosis of soft brain would appear to be the occurrence of edema. The soft brain (in the sense of this note) is, however, not watery and fails to show the uneven cutting of gray and white matter, with tendency to bulging of the gray matter, which the edematous brain is apt to show. There seems also to be some evidence that a true terminal infectious encephalitis (of septicemic origin) is not infrequent; and we are not vet familiar with the possible effects of this upon nerve tissues. It is obvious that any or all of these softening agents may be combined. It is true also that a gliotic brain might not reveal to the fingers as much about injuries to the included fibers as would a brain of normal framework. It is possible that post mortem lysis proceeds with increased speed where a softening process has already begun ante mortem. The brain of encephalomalacia characteristically fails to show the increase of weight which is shown by edematous brains. Where brains are under weight at the outset, there is no good standard for determining the possible effect of the lytic changes on weight.

Following are the findings in a case chosen to illustrate the condition:

CLINICAL HISTORY."

A. H., negress, age 42, was committed to the Danvers Insane Hospital July 14, 1902, discharged November 10, 1904, recommitted January 17, 1906, and discharged dead March 19, 1906, being under observation thus about thirty months.

Family History.—Incomplete; father died at 84; mother, of consumption at 54.

Personal History.—Woman of ordinary mental capacity. Characteristic epileptic attacks (unconsciousness, foaming at the mouth, biting of tongue, twitching) began eight or ten years before admission. The convulsions came every day or two for a month. She was "cured" of these at a hospital. Convulsions recurred three years before admission to Danvers,

³ Abstract made from the clinical records of Drs. H. A. Cotton and E. E. Bessey, assistant physicians to the Danvers Insane Hospital.

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and came every month or two months. Before admission the patient had four fits and became thereafter dull and stupid, later disturbed and noisy. Both eyes were prominent, the left more than the right. Moderate external strabismus of left eye. Vision good. Was able to read. Ophthalmoscopic examination showed dilated and tortuous veins. Pupils equal, reacted to light. Knee-jerks equal, normal. Romberg's sign absent. The urine showed a trace of albumin.

At admission: Inattentive, confused, talkative, hesitant in answering questions, pronouncing test phrases poorly and calculating poorly. Improvement for two weeks. July 31, three convulsions, followed by resistivism, confusion, vertigo, more unsteady gait, and headache. Cleared up in a few weeks and became an efficient ward helper, having three or four convulsions in a month, ushered in by a cry, followed by stupor for two hours or more. In February and March, 1903, severe headache with shooting pains in left temporal region, later over frontal region. Darting pains in right temporal region. Right pupil larger than left, very slow direct light reflex and slow consensual light reflex in right pupil. Left knee-jerk livelier than right. Clonus absent. Tongue slightly protruded to left.

April 6, convulsions, lasting two minutes. Head and eyes turned to left with twitching. Left hand held rigid. Right hand convulsed.

Discharged in 1904, improved. Orientation usually fair, memory good, insight into condition good, exophthalmos not so marked, considerable headache.

Readmitted January 17, 1906, weighing about twenty-five pounds less than at first admission and too weak to walk without support. External strabismus of left eye. Protrusion of both eyes, notably of left. Right pupil larger than left. Left knee-jerk brisker than right. Hebetude. Impairment of memory. Recognized persons, but failed to recall names. No spontaneous talk. On being aroused, said, "I don't know," or answered by "yes" or "no." Untidy. A few convulsions observed by nurse, lasting a few minutes, with eyes rolled upwards, head turned to the left, arms rigid, and a slight frothing at mouth.

Steady decline till death. Occasional slight convulsions. Expressions of fear or terrified looks. Confused, noisy, rolling about in bed. Conjunctivitis, and hypopyon of left eye. Stupor from which she can be aroused. Abdomen distended. Constipation. Difficulty in swallowing. Coma for twenty-four hours before death.

ANATOMICAL FINDINGS.

Autopsy eleven hours after death by E. E. Southard. Following are the findings in the head, together with the anatomical diagnoses:

Head.—Scalp edematous anteriorly. Calvarium thick, with little diploe. Dura adherent to calvarium in bregmatic region. Sinuses normal. Pia mater edematous, without notable thickenings. Brain weight, 1055 gms. Substance remarkably and evenly reduced in consistence in both white and gray matter. Olives and dentate nuclei as soft as normal cortex cerebri. The appearances resemble those of many days post

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mortem. The central convolution of the right hemisphere is much firmer than the surrounding convolutions. The right ascending frontal convolution is firm throughout the arm area and for a portion of the face and leg areas. The right ascending parietal convolution is equally firm for a like distance. The scherosis is sharply marked off by sulci, by the postcentral sulci behind (so as to exclude the superior parietal and supramarginal regions) and by the anterior ramus of the inferior precentral sulcus and the superior frontal sulcus in front and above (so as to exclude the greater part of the middle frontal and the superior frontal gyri.) There is no demonstrable atrophy or chronic pial reaction in relation with the sclerosis. The white matter beneath presents no change except the universal reduction in consistence.

Cord.-Numerous calcified plaques in posterior lumbar pia.

Middle Ears.—Left middle ear contains semi-liquid pus. Retina removed from behind show left nerve-head reduced, about one-third in surface area. Vessels injected. Marrow of femur fatty.

ANATOMICAL DIAGNOSIS.

Encephalomalacia and myelomalacia.

Early bronchopneumonia, left lower lobe.

Sclerosis of middle two-thirds of right central convolutions and posterior part of right middle frontal convolution.

Atrophy of left optic nerve.

Conjunctivitis, keratitis, and hypopyon of left eye.

Left ophthalmoptosis.

General arteriosclerosis (aortic, coronary).

Slight mitral sclerosis.

Old infarct of kidney.

Chronic external adhesive pachymeningitis.

Chronic adhesive pleuritis.

Chronic focal adhesive pericarditis.

Mural and subperitoneal fibromyomata of uterus.

MICROSCOPIC FINDINGS.

Sections from seven regions in each hemisphere were examined by Nissl's method, together with several regions of the cerebellum and various levels of the spinal cord. Sections from adjacent regions were stained by Weigert's myelin sheath stain and impregnated by the method of Marchi for fat.

The details of the microscopic work are reserved for a later comparative study of this and similar cases. The finding common to all parts of the central nervous system examined was the axonal reaction of Nissl, with characteristic eccentricity of nucleus and solution of cytoplasmic bodies, in countless examples of those cell types in which this reaction can be made out. A closely similar change occurred in many of the Purkinje cells of the cerebellum; a large proportion of the horn cells of the spinal cord show the reaction in classical fashion. The Marchi reaction was appropriately diffuse. The number of fibers affected would suggest that far more cells of origin are affected than can be demonstrated as injured by the Nissl method. The anatomist is prone to neglect the general feel of the brain and cord at autopsy. He is familiar enough with focal alterations of consistence; thus, with foci of induration (scars, focal glioses) and with foci of subnormal consistence (focal encephalomalacia, focal encephalitis). A state of general induration is recognized as due to diffuse fibrillar gliosis. General reduction of consistence is least easy to interpret.

The plastic softness and swelling of edematous brains may be told from the diffluence of brains as autolyzed post mortem. We have here noted a condition of general encephalomalacia which we take to be of ante mortem origin, though doubtless it is speedily emphasized by post mortem changes.

The soft brains and soft cords of this group are not produced by vascular lesions and, unlike edematous organs, show no essential increase of volume or weight. This type of general encephalomalacia (myelomalacia) seems not unlike the state of the brain and cord after post mortem autolysis and is possibly due to a similar process.

Although the process has the appearance of a general histolysis, yet histological study shows that the lysis is essentially differential (diffuse axonal reactions in nerve cells and still more diffuse Marchi degenerations). Where, as in the illustrative case, a focal induration also occurs, the histolysis is readily seen to be differential because the nerve cells and fibers which still live in the sclerotic focus are subject to the same cytolyses (axonolyses) as are the cells and fibers of the brain at large. What the lytic agent is remains obscure.

General encephalomalacia (myelomalacia, neuromalacia?) is clinically related with a late, terminal, or agonal exhaustion and is sometimes seen following epilepsy as well as in other conditions.

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THE PROGNOSIS OF RECURRENT INSANITY OF THE MANIC DEPRESSIVE TYPE.

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In mental diseases prognosis is of first importance. As is known, certain types tend to recover, while others become chronic, often terminating in hopeless dementia. To predict from the beginning of a psychosis its future course must always be a problem worthy of most careful consideration.

Passing over such conditions as general paralysis, alcoholic insanity, senile dementia, and the various deliriums, we come to those great groups of cases which, under the Kraepelinian classification, are given those sometimes criticized names, dementia præcox and manic depressive insanity.

While it may be admitted that these names are not ideal, they yet have this advantage, that to those to whom their use is familiar they carry with them a certain connotation which the nomenclatures of the older classifications lack. For, to believers in Kraepelin, these two names call up a picture relating to the whole life history of an individual and the diagnosis implies to a limited extent a prediction of the future course of the disease; at least more than is implied by such terms as mania, melancholia, or adolescent insanity.

In the title of this paper it was found desirable to use the term manic depressive, because the cases studied were not only recurrent, but corresponded more or less closely to a symptomatology of which, in excitements, the type is characterized by exhilaration, motor activity and flight of ideas; in depressions, by sadness, psychomotor retardation and difficulty in thinking.

There are, however, included some recurrent psychoses not typical enough to be diagnosed unreservedly manic depressive insanity, but which yet had certain resemblances to that condition. There are also included certain recurrent psychoses in which one or more of the attacks were characterized by agitation or apprehensiveness without demonstrable retardation.

The importance of keeping distinct those cases which cor-

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respond closely to the manic depressive syndrome from those possessing only certain resemblances to it has been emphasized by Meyer in the report of the New York State Commission in Lunacy, 1904-1905, and the writer of this paper deprecates as much as anyone the attempt to force cases into any group, yet for the purpose of the present discussion which concerns itself more particularly with the course of cases than with a description of exact symptomatology, a sometimes loose use of the term manic depressive was found convenient.

There are, however, excluded from consideration certain dementia præcox conditions which show more or less complete remissions and which thus might also be termed recurrent, this, as is known, occurring most frequently in the catatonic group.

Of the methods of diagnosis between these two groups it is no purpose of this paper to treat. These are fully described by Kraepelin¹ and by others.

An attempt having thus been made to explain terms and to give some of the reasons why the names dementia præcox and manic depressive have been chosen, they will be used without further apology during the course of the paper.

The first step toward arriving at a prognosis in cases belonging, or related to these groups, is to determine, if possible, whether we have to do with a deteriorating or with a non-deteriorating psychosis; a problem which may be easy, difficult or impossible.

If the diagnosis of manic depressive insanity can be made, the outlook as to recovery from the individual attack is in general good, but with strong probability of recurrence. But here the problem should not end. We have yet to determine the question of how soon this recurrence may be expected, whether there is a fair chance that the patient will enjoy a long interval of mental health, or whether, as is often the case, the interval will probably be but brief and later attacks recur in so rapid succession as to render the life practically ruined. If such is the case the outlook may be even worse than in dementia præcox; because the latter condition may result in a dementia of so moderate a grade as to render hospital residence unnecessary, while in some manic depressive cases painful excitements may recur at so short intervals that most of the patient's life must be passed in confinement.

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¹ Kraepelin, Psychiatrie, 7th edition, Leipzig, 1904.

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The object of this paper is to consider whether, from a judgment at the time of the first attack, we may be enabled to predict with approximate accuracy the lengths of the succeeding intervals.

With this end in view an analysis has been made of 105 recurrent cases now, or at some time, patients in the Danvers Insane Hospital, those cases having been selected, in which the data at hand were sufficient to make their study instructive.

A difficulty of such a study, which will be appreciated by those who have had to do with earlier insane hospital notes, is that information concerning earlier attacks is often deficient and that thus errors in conclusion may arise.

Furthermore, in a work of this kind when conclusions must be reached by methods often not mathematically accurate, there is present an unconscious tendency to so regard the data that deductions drawn are too much in harmony with preconceived suppositions. Recognizing this danger, the writer has striven against it, but it may yet be possible that inferences have been in this manner sometimes vitiated.

In arriving at the various conclusions certain cases concerning which information as to a given point was deficient, were omitted, which fact would account for apparent discrepancies if certain totals were to be compared.

I have to thank my former colleagues at the Danvers Insane Hospital for the use of their valuable records and also for special information about certain cases.

Of 105 cases studied, 74 were women and 31 men.

The points which have seemed to be of use in estimating the future course of the disease from the consideration of the first attack are as follows:

(1) Whether the attack is an excitement or a depression.

(2) The age at which the first attack occurs.

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(3) The natural make-up of the individual, particularly in regard to neurotic or other abnormal tendencies.

(4) Habits, in particular alcohol.

(5) Menstruation.

(6) Relation of attack to a previous head injury.

(7) Whether the attack might be considered to be due to a direct exciting emotional cause.

(8) Character of the individual attack, whether typical or modified by various irregularities, particularly symptoms of a catatonic nature.

DEPRESSIONS AND EXCITEMENTS.

Under excitements, the maniacal, circular, and mixed cases are considered together, as these tend in general to run about the same course. The differences will be spoken of under appropriate headings.

The prognosis for depressions would in general seem to be better than for the excited, circular, or mixed cases; the attacks, particularly the first attacks, being usually followed by a considerably longer interval.

Taking 49 cases, both men and women, in which the first attack was a depression, the average length of the following interval was 10 years and 4 months against an average interval of 6 years and 6 months in 50 cases in which the first attack was maniacal, circular, or mixed. The average first interval was greater after depressions in men than in women, in men 12 years against $9\frac{1}{2}$ years in women.

In comparing the number of the short and of the long interval cases of the depressions with those of the maniacal, circular, or mixed type, the following figures were obtained:

First Attack: Depressive, 49 Cases.

First Attack: Maniacal, Circular, or Mixed, 50 Cases.

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Table of Percentages.

Depressions.	mixed, or circular.
Cases with first interval under 5 years	58%
Cases with first interval 5 years or over 61 1%	42%
Cases with first interval over 10 years 44 %	26%

AGE.

The next factor of assistance in estimating the length of the succeeding interval is the age at which the first attack occurs.

Under this heading the depressions and the maniacal, circular, and mixed cases will again be considered separately.

In the maniacal, circular, and mixed cases in women it was found that the first attacks which were generally followed by the longest intervals were those which appeared approximately between the ages of 30 and 40. In men the intervals in this group were generally shorter.

In both men and women, after first attacks appearing after 40, we are struck by the fact that the intervals become very short, leading one to regard these cases as of particularly bad prognosis.

In women the first attacks of excitement appearing under 30, especially in very young women, were also most frequently short interval cases, although there were one or two striking exceptions to this rule.

In men, however, excitements appearing first before 30 were generally followed by intervals of much greater average length, this group corresponding somewhat in this respect to the 30 to 40 group in women.

To give more exactly these findings, taking all cases of maniacal, circular, or mixed first attacks appearing before 30, the figures are as follows: In 17 female cases the first interval averaged 5 3/17 years. This figure is, however, too high to give a really correct idea of the usual shortness of the interval, as one of the patients counted was very unstable during a long interval and another had an interval of 28 years, which is a marked exception to the general rule. Were these two cases to be omitted in the calculation, then the average first interval would fall to 2 13/17 years.

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In seven male cases in which the first attack appeared before 30 the average first interval was 9 3/7 years, in rather marked contrast to the average first interval in the corresponding female cases.

The average length of the first interval in both men and women was 6 5/12 years.

Passing now to those cases in which the first excitement appeared from 30 to 40, we find in women generally a longer interval, for men a shorter interval, than in the preceding group.

In 10 female cases the average length of the first interval was 12 years. In four male cases the average length of the first interval was five years. Of these four cases, in one the interval was 14 years, in the other three, two years.

For both men and women (14 cases) the average first interval was 10 years.

After 40, as has before been stated, the prognosis becomes decidedly worse, particularly in women. This is especially true for the circular cases, in these the rule being practically no remission at all.

In six female cases of this group the average first interval was 134 years.

In six male cases the average first interval was 3¹/₃ years.

For both men and women the average first interval was $2\frac{1}{2}$ years.

Exceptions were one woman with interval of seven years, and two men each with an interval of six years.

A comparison between the average length of interval in the several age groups can be readily made from the following table.

Maniacal, Circular, and Mixed Cases.

AVERAGE LENGTH OF FIRST INTERVAL.

Cases with	Women.	Men.	and women.
1st attack before 80	. 5 ₁ 4 yrs. [2 <u>1</u> 4 yrs.]	94 yrs.	6 ₁ 5 yrs.
1st attack from 80-40	. 12 yrs.	5 yrs.	10 yrs.
1st attack after 40	. 14 yrs.	8] yrs.	9 <u>1</u> yrs.

The following tables show comparisons between the numbers of short and long interval cases in the several age groups. After the number is placed its percentage of the total number of cases in that group.

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WOMEN-MANIACAL, CIRCULAR, AND MIXED CASES.

	o. cases with t interval der 2 years.	. cases with t interval der 5 years.), cases with t interval 10 years.	o. cases with t interval er 10 years.
Cases with		N ie u	2-1 to	N ISI
lst attack appearing before 30.	9 [58%]	12 [70] %]	3 [17] %]	2 [12%]
1st attack appearing 30-40	1 [10%]	4 [40%]	0	6 [60%]
1st attack appearing after 40	4 [663%]	5 [88] ≸]	1 [163%]	0

MEN-MANIACAL, CIRCULAB, AND MIXED CASES.

	ises with cerval 2 years.	aes with terval 5 years.	.ses with cerval cars.	uses with terval 10 years.
Cases with	No. ca 1st int under	No. ca 1st int under	No. ca 1st int 5-10 y	No. ca 1st int over 1
lst attack appearing before 30.	1 [143%]	8 [42\$%]	2 [28\$\$%]	2 [28\$%]
lst attack appearing 30-40	1 [25%]	8 [75%]	0	1 [25%]
1st attack appearing after 40	1 [16]%]	4 [66 <u>3</u> %]	2 [88] %]	0

These tables can be still more simplified by leaving out of consideration the column of cases with first interval under two years.

AGE, AS TO ITS RELATION TO INTERVAL FOLLOWING DEPRESSIONS.

For the depressions the age of 50 appears to correspond to the age of 40 for the excitements, as marking the turning-point at which the intervals become shorter.

The cases with first depressions appearing after 50 numbered only four, all women. These were, however, all short interval cases, the following interval averaging $3\frac{1}{2}$ years against $10\frac{1}{5}$ years as average length of first interval in all first depressions appearing under 50.

The writer has also known of several cases in men in which depressions appearing after 50 without history of previous attack became chronic, and seemed to end in a certain degree of dementia.

In this group of first late depressions is not included the rarer melancholia of involution as described by Kraepelin, a depression appearing in later life, but differing from the manic depressive in that there is absent psychomotor retardation and disturbances of thought processes. The great majority of late depressions,

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whether with or without a history of a previous attack, can hardly be differentiated symptomatically from some attacks of depression occurring in earlier life.

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In the depressions before 50 there was no such marked difference in the intervals of the various age groups as was the case in the maniacal, circular, or mixed cases, and it was not thought worth while to weary the reader with the various figures and percentages.

NATURAL DISPOSITION, NATIVE CAPACITY, ECCENTRICITY, AND NEUROTIC TENDENCIES AS FACTORS IN DETER-MINING PROGNOSIS.

normal natural dispositions w

Neurotic or abnormal natural dispositions were noted most frequently in the short interval cases, although exceptions were common.

In 13 excitements with first intervals of five years or over was found only one case in which the patient's natural disposition was described as peculiar, and only two as having neurotic tendencies, but both of the latter had been apparently considered fairly capable. In the remaining 10 cases the dispositions are given as normal.

In 20 excitements with first intervals of under five years' duration, we find seven with undoubted natural peculiarities—three described as neurotic, one eccentric, one immoral, and two as mentally below par; or about one-third as against one-twelfth in the preceding group.

In 24 depressions with following interval of over five years, in 17 the natural disposition appears to have been normal, in five others fairly normal. In only two had existed marked neurotic tendencies.

In 15 other depressions, however, with first interval of less than five years, there were three of undoubted neurotic tendencies and two described as of below average capability. In other words, onethird of the short interval cases were considered abnormal before the appearance of actual insanity; or $33\frac{1}{3}$ per cent of total cases as against 8 per cent for the long interval depressions.

The rule, as will be seen, is far from absolute, but the difference is perhaps great enough to be of some significance.

HABITS, PREVIOUS ALCOHOLIC EXCESSES.

The question as to the effect of previous alcoholic excess on the subsequent course of the psychosis is somewhat doubtful, but would appear in some cases to darken the prognosis.

Four out of five cases with history of alcoholic excess were short interval cases. One was in a man with first depression at 40, followed in five years by a second more severe and somewhat atypical depression in which death occurred from exhaustion. The shortness of the interval is an exception to the general run of depressions first appearing at this age. Another noteworthy case was that of a woman, a heavy drinker, with a series of extremely severe excitements followed by depressions with scarcely any normal period. Yet these cases may be paralleled by other late circular attacks without alcoholic history.

Another case might be cited of an alcoholic with first attack of excitement appearing at about 40 which has continued for a number of years up to the present time. Yet an exception occurred in a hard cider drinker in whom the intervals were not particularly short. In the cases with history of only moderate drinking the prognosis was not apparently modified.

The writer is of the opinion that an alcoholic history may be of significance in some cases.

MENSTRUATION.

In many cases prognosis seemed to stand in some relation to menstrual disorders. Twenty-five cases in which menstrual disorders were mentioned were short interval cases with only two or three exceptions. In some of these, however, these disorders were perhaps only expressions of a neurotic disposition which, as has been shown, is also often associated with a bad prognosis.

In a group of five cases with exceptionally rapidly recurring attacks the patients were very young women, four under the age of 20, in whom the onset of the first and often of subsequent attacks appeared to stand in rather direct relation to the menses. In some of these cases menstruation was given as the cause of the psychosis, and usually at its appearance there was a suppression of the regular flow. The relation of later attacks to the menses was frequently shown by the fact that, during an attack, the excitement became more severe at this period.

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These cases were usually characterized by excitements following one another at short intervals, frequently of less than a year's duration, but in two cases the trouble began with a depression followed in the same, or in later attacks, by excitement. Some of these patients appeared to have had some native neurotic tendencies, although usually not particularly marked.

The prognosis of this group is certainly very unfavorable.

HEAD INJURY.

Of the whole series there were only four cases in which was given a history of trauma standing in some sort of relation to the first attack. In three the trauma was described as head injury, in one merely a fall from a bicycle was mentioned. All were short interval cases, in two of which were present no other factors which would indicate a particularly bad prognosis. One case was that of a man with a first attack of depression at 36, followed at short intervals by alternating depression and hypomania. The patient had been considered capable and of good habits up to the time of this first attack, having worked as a bank clerk. Ordinarily after a depression appearing first at that age, in a person without marked neurotic tendency and of good habits, a reasonably long interval might be expected. Another case was that of a rather mild depression appearing in a woman of 27, capable and of good habits, after which, other attacks followed at the ages of 32 and 36. The other two cases were also depressions with unusually short intervals, in one of which, however, was a history of considerable alcohol, and in another marked neurotic tendencies.

The subject of prognosis of recurrent insanity after head injury would repay further investigation.

PROGNOSIS AFTER ATTACKS WHICH WERE ASCRIBED TO SOME EMOTIONAL CAUSE, AS WORRY, FRIGHT, OR GRIEF.

In 27 cases in which some emotional disturbance is given as the direct exciting cause, 14 were of long interval, two of medium, and 11 of short interval; but in seven or eight of these last there were present other factors which would indicate a bad prognosis.

It would thus perhaps appear that an attack of insanity seemingly dependent upon some such emotional cause would rather indicate a good outlook provided no contrary factors were present in the case. The one marked exception to the rule that excitements in women first appearing under 30 are followed by short remissions was in a woman with her first excitement at 21, which was said to be due to the shock of finding her father after he had hanged himself. This attack lasted six months and was followed by an interval of 28 years, an exceptionally long one to follow an excitement at any age.

PROGNOSIS IN CASES WITH IRREGULAR OR ATYPICAL ATTACKS OR WITH THOSE IN WHICH CATATONIC FEATURES WERE PRESENT.

Of 18 cases in which irregular or atypical attacks occurred, or in which catatonic features were present, 14 were followed by short intervals, while in four the interval did not appear to be particularly shortened.

The symptoms referred to were such as rigidity, impulsive actions, marked pecularities of conduct or variability and sudden changes in condition. Here would belong those cases in which a differentiation from dementia præcox is at first difficult.

In regard to these cases conclusions are particularly hard to draw, inasmuch as an exact description, especially of the earlier attacks, is often wanting, but the tendency certainly seemed to be for attacks answering more or less to this description to be followed by an interval shorter than would be expected after a general balancing of all the other factors previously discussed. As an example, may be cited an atypical excitement appearing in a man of 34 without previous neurotic tendencies, which was followed in less than a year by a recurrence of several years' duration in which again appeared irregular features. This second attack was followed by a third after a lapse of less than a year.

Other noteworthy cases were atypical depressions followed by uncommonly short intervals.

CIRCULAR ATTACKS.

In general the intervals following attacks consisting in an excitement followed by a depression or vice versa were not much shorter than many of the intervals after purely maniacal attacks; and while it is true that many of the circular cases ran a particularly severe course, yet with the exception of the circular attacks after 40, they were not more severe than many of the short interval cases which were purely maniacal. Usually when

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the courses of circular cases were particularly severe, there were present other influences, such as age, habits, etc., as modifying factors. Furthermore, in several cases in which the first attack is described as consisting of both depression and excitement, the following intervals were of very good length.

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The mixed cases studied numbered only two, both with very short intervals. In one of these the condition seems now to be becoming chronic, the remissions having grown shorter and shorter, often not lasting over a week.

PROGNOSIS WHEN ATTACK FOLLOWS PREGNANCY OR LACTATION.

In regard to a possible influence of pregnancy on prognosis, no definite conclusions were reached. In the series were 11 recurrent cases in which pregnancy or lactation were given as the cause for one or more of the attacks. Six were short interval cases. In three, later attacks occurred after later pregnancies. In two, while the first attack followed a pregnancy, second attacks occurred later without a pregnancy. In a sixth case no reliable data were given.

In two cases patients were of naturally unstable make-up, while in some of the others there appeared to be no reason why the succeeding interval should be short.

Of the five long interval cases, with one exception, insanity first occurred after a fourth or fifth pregnancy. In the other cases the first attack followed a second pregnancy, while a second attack occurred only after an interval of 14 years and stood in no direct relation to any pregnancy, three children having been born without the appearance of a psychosis; so that in these five long interval cases the relation of pregnancy to the psychosis would appear accidental rather than causal, and not to affect the prognosis.

INSANE HEREDITY.

Of 105 cases there were 63 with history of insane heredity, 33 cases without such history, and 9 with no statement. Of these 33 cases without insane heredity there were five in which a parent had been alcoholic and four in which tuberculosis is mentioned. Prognosis did not appear to be influenced, heredity being mentioned with about the same frequency in the short as in the long interval cases. It would be suggested by this that heredity merely furnishes a tendency for insanity to occur, but that having occurred, its prognosis is determined by the power of resistance to this tendency of the individual himself, this, in turn, being determined by age and mental constitution, both native and acquired.

We next come to a consideration of the length of intervals following second attacks as compared with intervals following first attacks.

Under this heading the long and short interval cases will be separately considered and contrasted. In the great majority of those cases with first intervals of five years or over, the second interval was much shorter than the first, while in cases with first intervals of under five years the average lengths of the various intervals were about the same.

DEPRESSIONS.

Taking 12 cases in which three or more attacks of depression with recovery occurred, the average interval between the first and second attacks was 934 years, whereas the average interval between the second and third attacks was 5 11/12 years, a ratio of about 10 to 6.

In eight cases in which the interval following the first attack was longer than five years, the average first interval was 13 years, the second interval eight years. In two cases the difference was small. In one the ratio was about 4 to 1, in another 6 to 1.

In four cases in which the first interval was under five years the average first interval was $3\frac{1}{4}$ years, the second $2\frac{1}{2}$ years. In three of these cases the interval was about the same. In a fourth three years and one year.

Of these 12 cases there were only three with a fourth attack. In two cases the third interval was of about the same length as the second. In one it was a little shorter.

In this group recurrent depressions first appearing after 50 have been omitted, as these were invariably cases with short and approximately equal intervals averaging about three years.

SECOND INTERVALS IN MANIACAL, CIRCULAR, OR MIXED CASES.

The same tendency in regard to comparative lengths of intervals is seen in the maniacal, circular, or mixed cases as in the depressions.

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In 16 women with two or more such attacks the average length of the first interval was 5 13/16 years, of the second 2 9/16 vears. The third intervals averaged about the same as the second intervals.

In nine men the average length of the first interval was seven years, of the second five years, while the third was about equal to the second. For both men and women the average first interval was $6\frac{1}{4}$ years against $3\frac{1}{2}$ years for the second.

If we consider separately the long and short interval cases of this group as was done in the depressions, we obtain similar results.

In 10 cases, both men and women, with first intervals extending over five years:

Average length of first interval was 12 9/10 years. Average length of second interval was 6 2/10 years In 15 cases with first intervals under five years:

Average length of first interval was 2 2/15 years.

Average length of second interval was 2 1/15 years.

Cases with more than three attacks:

In five long interval cases with a fourth attack the average ior the second interval was 435 years, for the third 335 years.

In 11 short interval cases with fourth attacks the average second interval was I 4/II years, the third I 8/II years.

Sometimes in excitements of early life the intervals after the third, fourth, or fifth attack lengthen, but shorten again as the patient approaches middle age. As example, may be cited two cases of short interval excitement first appearing before 20. In both cases five attacks occurred at intervals of one to two years, but after the fifth attack they suddenly lengthened to five or six years. Later the intervals again shortened.

As would be expected, also in cases with first attacks occuring in early life and followed by a moderately long remission there is a marked shortening of the interval as middle age is approached.

Finally to be considered are the lengths of the second attacks as compared with the lengths of the first.

In depressions the second attacks were usually of much longer duration than the first. In long interval depressions we often find a history of a rather mild first attack in early life followed in later life by a second attack much more severe and of very

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long duration, sometimes lasting several years, sometimes even becoming chronic.

In several cases with attacks occurring in middle age was given a history of an earlier attack described as nervous prostration with complete recovery, the presumption being that these were really mild depressions.

Taking 31 cases, both men and women, the average length for the first attack was seven months, but for the second 14 months.

In many of the short interval cases the various attacks were of about equal length, but so many exceptions to this occurred that no rule as to this can be safely given.

In cases with maniacal, circular, or mixed attacks was also noted a greater average length for the second attacks than for the first, but the difference was less than in the depressions, the average lengths being 11½ months and seven months. And the rule is not so uniform, exceptions being more common.

CONCLUSIONS.

Other things being equal, the prognosis for depressions is in general better than for excitements. Intervals after depression are, as a rule, long; after excitements they are more commonly short.

The longest interval after excitements occurred in those cases with first attack under 30 in men, and between 30 and 40 in women.

Excitements after 40 and depressions after 50, whether with or without a history of a previous attack, usually recur at short intervals.

In long interval cases, whether of excitement or depression, the second interval is usually shorter than the first; while in short interval cases the lengths of the intervals tend to be about equal.

In both excitements and depressions the length of the second attack is usually greater than that of the first. This tendency is more marked in the depressions.

Factors which would appear to darken the prognosis are advanced age, inborn neuropathic taint, close relation of attacks to menstrual disorders, atypical or irregular features appearing in the attack, and very possibly previous alcoholic excesses and head injury. Factors suggesting a good prognosis are a previous normal disposition and perhaps the fact of the appearance of the attack after some exciting emotional cause.

While exceptions to these rules occur and the prognosis in a given case will always be attended with some degree of uncertainty, yet it would appear that, after a careful balancing of the various factors above-mentioned, an approximate prediction might usually be made.

TWO CASES OF THE POLYNEURITIC PSYCHOSIS WITH NECROPSIES AND MICROSCOPICAL FINDINGS.*

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AND

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Our main purpose in the present contribution is to give the records, clinical and pathological, of two cases presenting mental symptoms associated with multiple neuritis, with brief reference to a few similar cases in recent medical literature. The outbreak of the multiple neuritis in the two cases here recorded was probably due to a special infection, as in one instance the disease began very late in pregnancy and in the other two or three days after a premature delivery. Both patients were, however, alcoholics.

Soukhanoff and Boutenko¹ and others have indicated that the Korsakoff syndrome might occur in connection with or after various diseases, and, therefore, that the affection is not essentially, or at least not always, an alcoholic one. Korsakoff himself recorded fourteen cases without previous history of alcoholism. Soukhanoff published a case occurring after typhoid fever. He also mentions other cases, some in alcoholic and some in nonalcoholic patients, after perimetritis, jaundice, etc.

In the cases which follow the examination of the cells of the cortex showed that a condition of cells was present due doubtless to neuronal toxemia and strictly comparable pathologically to the affection found in the cells of the spinal cord. If the peripheral affection is held to be a neuritis, there is no reason for not regarding the spinal and cerebral disease as forms of inflammation.

^{*} Read at the sixty-third annual meeting of the American Medico-Psychological Association, Washington, D. C., May 7-10, 1907.

¹Soukhanoff, Dr. Serge and Boutenko, Dr. Andre, The Journal of Mental Pathology, Vol. IV, Nos. 1, 2, 3, 1903.

The observations of Strümpel, those of Cole' and Sims,' and others, and our investigations in the two cases here recorded are interesting in connection with the fact that one of us (Dr. Mills) in 1886, some months prior to the publication of Korsakoff's frs paper, called attention to the concurrence of spinal and cerebral symptoms in cases of multiple neuritis, holding that these were instances of the concurrence of encephalitis and myelitis with neuritis. The occurrence of psychic symptoms in multiple neuritis was also referred to by him in 1892." In both of these contributions interesting clinical cases were recorded.

CASE I .- This case is one of three cases of the polyneuritic psychosis recorded clinically by Dr. S. A. Carpenter, interne at the Philadelphi General Hospital, in the sixth volume of the Philadelphia Hospital Reports, published in 1905. She was in the hospital about two and one-bali months preceding her death.

M. T., aged thirty-two years, white, was admitted to the Philadelphia General Hospital September 14, 1904. She denied specific disease and had had no miscarriages. She had drunk coffee in large quantities all her life, and for the past six years had been a heavy beer drinker. About six weeks before admission she gave birth to a full term child which died after five weeks of enteritis.

The present illness dated back to about three months previous to be admission, when she first had a numbness and tingling in her love extremities from her knees down; shortly after this she noticed that de was gradually becoming weak and that she tired easily. After the first week of her puerperium, on attempting to leave her bed she discorred that she was unable to stand and had pain in her lower limbs. Up 10 the time of her admission there had been no involvement of the upperlimbs. She had been troubled with constipation for two weeks before coming to the hospital, and for the first time was catheterized on the evening of her admission. She said that her sight had been failing in six months before she was admitted.

Examination shortly after admission showed double foot drop; both. knee jerks absent and the Babinski not obtainable on either side: attempt to obtain ankle clonus produced acute pain; both feet were cold and the soles were somewhat moist; sensation to touch and pain we apparently normal.

Her memory for recent events was extremely poor; even though she had been in the hospital only twenty-four hours she was unable to st

^a Cole, Sydney John, Brain, Part III, 1902.

^{*}Sims, F. Robertson, Journal of Nervous and Mental Disease, Vol XXXII, No. 3, March, 1905.

⁴ Mills, Chas. K., The Medical News, December 18, 1886. ⁹ Mills, Chas. K., The International Medical Magazine, February. 1892.

how long it was since she was admitted, and she was never able to remember whether or not she had had her meals, even though she had eaten a few hours before. Two days after her admission, on being asked whether her bowels were opened that day, she replied in the negative, while her nurse had recorded two movements on her chart; again she was unable to name properly the articles of diet which she was taking, always giving the names of different foods which she had never had.

About September 27 she began to have periods of excitement, during which she would shout terrible oaths and use very vile language. On October 6 she said she had been up and around all day, and had been down town in the morning; at the same time she was scarcely able to move in the bed. She complained of much pain in her hands, but otherwise said she was feeling pretty well.

On November 7 while the interne was in the ward taking some notes, the patient said she was not able to go down town to have her pictures taken, but would go tomorrow. She talked in a numbling or muttering manner, which could seldom be understood, and for this reason many of her delusions could not be recorded.

About September 25 she developed incontinence of urine and feces. Tenderness over the extremities had become almost unbearable. There was complete double wrist drop, and she had become somewhat wasted both in the extremities and about the face. On November II the above symptoms were all present and exaggerated. On lateral excursions of the eyes nystagmus was produced.

On October 10 Dr. Shumway reported extraocular movements good in every direction; the pupillary reactions prompt and that ophthalmoscopic examination showed a perfectly normal eye ground on each side.

The examination of the organs of the chest and abdomen gave no points that would be of any value in recording the nervous and mental phenomena of the case.

The muscles of the hand, especially the dorsal interossei, were slightly wasted; otherwise the upper limbs appeared well developed. Motion was present in all directions; resistance to passive movements was much decreased in both upper extremities; wrist drop was present on the left side, not on the right. The grasp of both hands was diminished, slightly more so on the left side. The biceps, triceps, and wrist reflexes were absent on each side. Pressure over the course of the nerve trunks of both upper limbs caused pain, and sensation to touch and pain appeared to be about normal in both.

Neither lower extremity showed any atrophy, and motion was greatly lessened in both, the patient being able only to bend the knee to a small angle, and unable to raise the feet from the bed.

The above notes by Dr. Carpenter were finished about five or six weeks before the death of the patient, and after that time nothing of much importance for the purposes of study was added to the clinical history of the case. The patient became weaker and

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weaker, both physically and mentally, with, however, occasional short periods of slight improvement. She developed a bed sore on the left hip, the incontinence of urine and feces became more marked, the pain on pressure and manipulation of nerves and muscles persisted, and even when she became apathetic to the point of stupor, was sufficient to arouse her with evidences of distress.

Bedside notes continued to be taken at intervals. A tendency to excitement was noted on one or two occasions. Several reords were made of extreme tenderness of the muscles and also of tenderness and pain in the limbs. Small swellings appeared on the arms, the forearms, feet, and other places, these apparently being connected in some way with the inflammation of the nerves. Her temperature rose and fell several times. The day before her death the temperature, pulse, and respiration were all increased. The lungs were full of coarse rales. She died December 3^I.

A general necropsy was made a few hours after death, practically all the organs of the body being examined. The pathological diagnosis included chronic pulmonary tuberculosis, chronic pleurisy, fatty degeneration of the heart, fatty, cirrhotic, and congested liver, chronic catarrhal cholecystitis with cholesteric gall stones, fibroid pancreas, and chronic diffuse nephritis.

The scalp was found unusually adherent to the calvarium. The skull was hard and of normal thickness; the diploic surface was diminished; the dura was free from the calvarium; the brain weighed 1240 gm. (39.85 ounces); the brain showed normal external configuration with fairly marked edema of the pia and venous congestion. The lateral ventricle showed nothing abnormal. The brain was placed in formalin solution for further study, as was also the cord, retained within its membranes. The left sciatic with its two main subdivisions (internal and external popliteal), the right posterior tibial, the right external plantar along the outer margin of the foot, the right internal plantar to the great and second toes, and a section of the pneumogastric nerve were also preserved.

In this case microscopic sections were made from the lumbar and cervical portions of the spinal cord; and from the oblongata and the pons. In the cerebrum sections were made from the paracentral lobules, the angular gyre, and the mid-precentral, occipital, calcarine, and temporal regions. Sections were also

made from pieces of muscle, and from the external plantar, the sciatic, the internal plantar to the great toe and the pneumogastric nerve. In addition, sections were made of the anterior half of the entire cerebral hemisphere.

These various sections were stained by the Nissl, the Weigert hematoxylin, the alum-hematoxylin, acid-fuchsin, and in some cases the Marchi methods.

Sections from the lumbar region showed considerable chromatolysis of the nerve cells of the anterior horns, with peripheral displacement of the nuclei. This chromatolysis seemed to invade the whole of the cell body. Some of the cells were greatly vacuolated. In three serial sections from the mid-lumbar region, an accumulation of round cells was seen lying immediately in front of and mesal to one of the anterior horns. These cells were both polymorphonuclear and mononuclear in type. In the midst of this accumulation was seen a dense body, staining with Nissl method dark blue-black. Under the oil immersion objective, this was found to consist of an accumulation of cocci. Near the periphery of this dense mass was seen what suggested diplococci. A blood vessel could be seen running from the periphery of the cord toward this cellular infiltration.

The cervical region showed about the same alterations as regards the anterior cornual cells, with the exception that the change was not so pronounced. The white matter of the lumbar and cervical regions showed no degenerations by the alumhematoxylin and acid-fuchsin method. Neither was there any system degeneration as shown by Weigert's method, the columns of Goll, Gowers' columns, the direct cerebellar tracts, the crossed and direct pyramidal tracts, etc., being particularly examined.

In the paracentral lobules were small accumulations of cells, both polymorphonuclear and mononuclear in type, which were apparently not in relation with blood vessels, although it is possible that blood vessels might be found leading to this accumulation in sections either immediately above or immediately below the area examined. Some very small, deeply staining cocci, like those noted in the lumbar cord, were also found in these infiltrations. Some of the cells of Betz were much degenerated and showed central chromatolysis and peripheral displacement of the nucleus.

In the right temporal region there were also found collections of polymorphonuclear and mononuclear cells as noted above. In

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this region there were associated close aggregations of red blood corpuscles together with the same cocci-like bodies.

In the right calcarine region, some of the blood vessels of the pia, cut transversely, showed in addition to the thickly packed erythrocytes, a goodly number of polymorphonuclear cells and cocci-like bodies within the lumen.

The right angular gyre, the right mid-precentral, and the right occipital region appeared normal

In the muscle the connective tissue was greatly increased, both between the muscle bundles and between the individual muscle fibers. The muscle fibers were much atrophied. The small nerve fibers within the muscle were much degenerated. The external plantar nerve was greatly degenerated, and the connective tissue about it was thickened. The sciatic nerve was intensely degenerated, as were also the pneumogastric and the internal plantar to the great toe.

The Weigert hematoxylin preparation of the anterior half of the cerebral hemisphere showed no degeneration of the frontothalamic band in the anterior limb of the internal capsule, or of the pyramidal tracts in the posterior limb.

As infection was present in this, as in the next case, it was important to know if foci of suppuration were found at the general necropsy. We have already given a digest of the anatomical findings. In addition to this account, the records show that the omentum was large, covering the intestines, and adherent to the sigmoid flexure and brim of the pelvis. In the latter adhesion was a small mass of fat about the size of a large nut, dark red, showing on incision, a small point of suppuration in the interior.

CASE II.—A. C., thirty-two years old, white, was admitted to the wards of Dr. Mills, at the Philadelphia General Hospital, October 16, 1904, and died November 20, 1904. Her father died two years before her admission of carcinoma of the stomach; two sisters died of puerperal sepsis. Her husband denied all venereal disease.

For more than ten years the patient had been a hard drinker of both beer and whiskey, getting drunk about twice a month. Four years before her admission to the hospital she was delivered of a still-born child. In the next two years she had two living children, each dying under one year of age. Seven weeks before admission she was delivered of a seven months' child, which was also still-born. Prior to the onset of labor she was troubled with vomiting and was drinking her usual amount of alcoholics, which was said to be about eight glasses of beer and a halfpint of whiskey daily. She was in bed for about two days and was then around for two days, when she was compelled to go back to bed because of swelling and pain in both feet and legs. Loss of power in her hands and arms and swelling of her face soon followed. Her legs were painful below the knees, especially on their inner aspects. Her bowels were regular and her appetite remained fair.

About three weeks after the swelling of the feet was first noticed she began to ask foolish questions and make irrational remarks, such as inquiring whether her father, who had been dead for two years, was still in the house and whether he had gone to work; she also asked that her sister, who was also dead, should be sent upstairs to see her.

Examination showed the patient to be a well-developed woman, with slightly flushed face, apathetic expression, and semi-closed eyelids. She turned her head occasionally from side to side, but was otherwise perfectly quiet, lying with her feet turned out, legs straight, fingers slightly flexed upon the palms and hands upon the forearms. She muttered occasionally about members of her family and made irrelevant remarks. She answered questions with fair intelligence, however, and did as she was told; she lapsed at times into sleep. Her gaze was generally fixed; her pupils were small and equal, but reacted sluggishly, if at all, to light, and but slightly to accommodation. Ocular movements were good in all directions.

The tongue was protruded evenly without difficulty and was not tremulous, but presented a considerable white coating and a stringy mucous.

Her right forearm could be feebly flexed against resistance and her left was even weaker. The grip of the right hand was poor; that of the left was still less. Neither hand could be extended on the forearm. Sensation to pain and touch in the upper extremities appeared to be preserved. Pressure over the bellies of the muscles of the arms caused pain, as did also rapid passive movements. The reflexes were abolished.

The legs could be slightly flexed, and the feet slightly rotated. Otherwise the woman was powerless to move herself in bed. Manipulation of the feet, as in efforts to elicit ankle clonus, caused pain, as did also grasping the calf or thigh muscles. The knee jerks were both absent as were also ankle clonus and the Babinski response.

Expansion was good on both sides of the chest. The apex beat was not visible. The pulse was small, of poor force, and slightly accelerated. The cardiac impulse was feebly felt in the fifth interspace in the midclavicular line. An area of dulness extended from the third rib to the left edge of the sternum and to one-half inch outside of the mid-clavicular line. The percussion note was good over both lungs and the breath sounds were clear. The liver dulness began above the fifth rib, but the organ could be felt below the costal border; the spleen could not be felt below this border.

This woman's physical and mental condition did not change much during the time she was in the hospital, except that it got worse during the last few days of her life. She continued to be helpless in her limbs and to have pain, both subjective and on handling them so as to compress the nerves and muscles.

She was put on the usual treatment for multiple neuritis consisting of the internal use of small doses of mercury and of the salicylates, iodides, and bromides, her other treatment being symptomatic and chiefly remedies to relieve pain and produce sleep.

She died November 20, two days before her death developing great weakness, which passed into stupor.

In this case, as in the preceding case, sections were made from the lumbar and cervical portions of the spinal cord and from the oblongata and pons; also in the cerebrum from the paracentral lobules, the angular gyre, the midprecentral, occipital, calcarine and temporal regions. In addition sections were made from muscle tissue and from the trigeminal, abducens, and facial nerves; also, as in Case I, from the anterior half of the entire cerebral hemisphere. The sections from this case were stained in the same manner as those from Case I.

The sections made from the lumbar region showed great degeneration of many of the anterior cornual cells, this being evidenced by a disappearance of dendritic processes, by peripheral displacement of the nucleus, and by central chromatolysis. The changes in the cervical cord were the same as in the lumbar region, although possibly less intense. In the gray matter of the anterior horn were seen several small hemorrhages. In this case, as in the previous one, the examination of the Weigert preparation of the anterior half of the cerebral hemisphere proved negative; the fronto-thalamic band and pyramidal tracts were normal.

By the Marchi method the oblongata and the lumbar cord showed no typical degeneration. Sections of the oblongata stained by the Nissl method showed a number of hemorrhages in the posterior part. In this locality was also found a very pronounced perivascular round cell infiltration. There was no round cell infiltration of the pia; it was remarkable that this perivascular round cell infiltration within the oblongata should be so sharply confined to one or two vessels and should be so intense. At a higher level, was seen a slight round cell infiltration in the pia

In the anterior part of the pons was a collection of round cells in close juxtaposition to a blood vessel. This collection was similar to those found in the previous case.

The paracentral lobules in this case seemed normal, as regards

the nerve cells, but the pia was considerably thickened, and along its outer edge were found occasionally proliferation of endothelial cells forming distinct masses like those described by Spiller[•] in a case of lead encephalopathy. The pia was in many places firmly adherent to the cortex and presented an increase in the number of nuclei. The calcarine, precentral, angular gyre, the occipital and frontal regions presented no abnormalities.

Sections of the trigeminal nerve stained by the Marchi, the acidfuchsin, and the Weigert method appeared normal.

As the only post-mortem investigation made in this case was of the nervous system and some of the muscles, we have no facts regarding the existence of purulent foci in any part of the body.

Case I was clearly one of advanced polyneuritis. The nerves of both the lower and upper extremities were extensively involved in the inflammatory and degenerative process, as shown by the symptoms during life and also by the microscopical investigation. Some of the muscle masses were also tender to pressure and the pathological examination showed degeneration of the muscle fibers as well as of the nerves entering the muscles. While it was not possible, owing to the condition of mental excitement and degradation present, to develop many of the typical symptoms of the polyneuritic psychosis, sufficient was obtainable to make justifiable the diagnosis of Korsakoff's disease. For a time the patient was in an excited, almost maniacal, state. A few pseudoreminiscences or memorial fabrications were noted, and her mental condition was evidently one of extreme delusion and confusion, obscured somewhat by her low state of vitality.

The disease had developed during pregnancy and came to its height shortly after delivery, illustrating the fact to which attention has already been called that the disease not infrequently occurs as the result of some special infection or poison in alcoholic patients, the chronic alcoholism having produced the condition of non-resistance.

The toxic effects of alcohol are, however, sufficient in themselves to establish the disease. In a long experience with cases of multiple neuritis, not a few of which have shown mental symptoms of the Korsakoff type, we have seen a considerable number

* Spiller, Wm. G., Journal of Medical Research, 1904.

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of cases in which alcohol was the only ascertainable etiological factor.

In Case II the multiple neuritis developed in connection with the puerperal state, the patient having been delivered of a stillborn child seven weeks before admission. The swelling and pain in her feet which inaugurated the disease came on a few days after the premature delivery. The physical symptoms preent were clearly those of multiple neuritis, such as pain, tenderness to pressure over nerves and on handling muscle masses, paralysis and lost deep and superficial reflexes. Owing to the rapidity with which the case passed into an apathetic and then stuporous state, the mental symptoms noted were not numerous. She showed, however, impaired memory for recent and remote events, a confused and delusional state, and disorientation. She talked about her father and her mother, who had been dead for some time, as if they were present in the house.

The findings in this case, so far as the nerves, muscles, and spinal cord were concerned, were similar to those in Case I. The cells of the cerebral cortex which were studied in various regions as indicated in the report did not present the same post-inflammatory and degenerative conditions which were noticeable in similar areas in Case I. The pia, however, showed more involvement and was more adherent.

In both cases here considered the muscle fibers were degenerated as in the case described by Cole, who holds that it is probable that the changes in muscle fiber are due to the direct action of toxin on true muscular tissue; that the interstitial fibrosis often present is an end product and not a primary affection. He also believes that one reason why the nerves in the limbs are more affected in the disease is because of their passage through muscle masses in which they are more bathed in poisonous lymph. Our experience, not only with the cases under observation, but with many others observed at the Philadelphia General Hospital and elsewhere has been that grasping muscle masses or otherwise manipulating them usually causes extreme pain; as much indeed as that caused by more direct pressure upon more exposed nerves. as for instance, upon the nerve trunks in the popliteal space or in the foot.

A study of our cases would seem to show that the neuron as a whole was attacked by poison causing the disease; not its distal α

medial portion or the nerve cells alone. The conditions present in the peripheral distribution of the nerves and in the cell bodies in the ventral horns seem to clearly point to this conclusion. In a paper on Landry's paralysis, written in collaboration with Dr. Spiller by one of us (Dr. Mills),' this same conclusion was reached, namely, that in some cases at least, the neuron as a whole was attacked by the toxin of the disease, and not simply its periphery or its central portion.

The Argyll-Robertson pupils were not present in our cases a fact of not as much diagnostic importance as in cases of the so-called neuritic pseudo-tabes—cases able to go around, but showing decided paresis and ataxia. The absence of the symptom, however, in cases of such severity indicates its diagnostic value in other more doubtful cases. Cole properly makes a strong point of the absence of the Argyll-Robertson pupil in pseudotabes, believing that more than any other symptom it separates this disease from true tabes.

We shall content ourselves with the presentation of clinical histories and pathological findings in these cases and a brief reference to a few of the more recent contributions on the subject of the pathology of the polyneuritic psychosis. The results obtained in the study of our cases can be compared with advantage to those detailed in these contributions. The microscopical findings in our cases would seem to bear out some of the most important conclusions of Cole. This writer made a careful study of three cases of chronic alcoholism with neuritic disorders and changes in the central nervous system.

These observations, according to him, suggested the following: (1) That the peripheral and central lesions express a nervous degeneration of toxic origin, in the production of which no essential part is played by changes in interstitial tissues supporting the nervous structures, or by changes in the blood vessels concerned with their nutrition. (2) The changes in the nerve-cells are not the mere results of antecedent damage of nerve fibers, but the changes in the fibers and cells together express a highly selective affection of whole neurons. (3) The peripheral neuritis is simply a local expression of this affection, and is not of purely local and peripheral causation. (4) The lesion of peripheral

'Mills, C. K. and Spiller, Wm. G., Journ. of Nerv. and Ment. Dis., June, 1898.

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neurons is only one of many manifestations of the disease, and is accompanied by lesions identical in nature, affecting many groups of neurons situated entirely within the central nervous system. (5) The central changes are not attributable to the peripheral neuritis, and though in some cases the peripheral neurons are mainly affected, in others the morbid process chiefly implicates central neurons; but these two groups of cases do not appear to be sharply divided.

With regard to the mental disorder in Korsakoff's disease, Cole says that this is probably related in some way to the cortical changes, an opinion with which we accord.

In Cole's study of his three cases is given an interesting table in which is shown at a glance the changes in the peripheral nervous system, the central nervous system, and the vessels.

Sins has recorded the anatomical findings in two cases of Korsakoff's disease. In the first of these two cases the most important findings were:

Slight arteriosclerosis, hypostatic pneumonia, fatty infiltration of the liver, acute degenerations of many of the peripheral nerves, axonal reaction in cells of the anterior horns, Clark's columns, and many cranial nerve nuclei, degeneration in the posterior columns, direct cerebellar tracts, and the root bundles, and moderate accute alteration of the cortical cells.

In the second case they were:

General arteriosclerosis involving the aorta and coronaries, fatty degeneration of the heart, liver, and kidneys, acute bronchitis, acute degenerations in the peripheral nerves of the lower extremities, and also in the vagi, axonal reaction in cells of the anterior cornua, in Clark's columns, some cranial nuclei, and the Betz cells of the cortex; also, acute degeneration of the cortical radiations. and of both motor and sensory systems of the cord, as well as degeneration of the cord not easily reconcilable with the systemic changes. Vascular changes in the cord and cortex, with numerous miscropical hemorrhages throughout the cerebrum were also found.

In the Archiv für Psychiatrie und Nervenkrankheiten, Dr. Wehrung has reported thirty-four cases of the Korsakoff symptomcomplex. The following is a digest of his findings:

In the spinal cord the following changes were noted: Ganglion cells rarer, shriveled and processes lost, slight anterior poliomye-

litis, congenital changes in the central canal, proliferation of connective tissue in the column of Goll, proliferation of connective tissue in right lateral column, ectasia and hyperemia of vessels of the cord, vacuoles in ganglion cells of anterior horns, increase in nuclei of lining of central canal, partial degeneration of column of Goll, calcification in membrane of spinal cord, hemorrhages in white substance of cord, anterior cornual cells stain more intensely than normal, disseminated degeneration of nerve fibers, central chromatolysis and excentric nucleus, hydromyelia, degeneration of root zone of posterior column, pigmentation of cells of anterior horns, proliferation of neuroglia around anterior horns, and slight perivascular proliferation of nuclei.

In the oblongata, pons and brain generally, the following changes were observed:

Granular atrophy of pyramidal cells of the cortex, pia oedematous, chronic arachnitis, decrease of tangential fiber net work especially of frontal convolutions, area of softening in gray matter of cortex in motor zones, area of softening in left island of Reil, extensive hemorrhagic encephalitis in the gray matter in the third ventricle, atrophy of corpora mammilaria, hemorrhagic changes in distal nucleus of vagus, calcification of vessels in brain, hemorrhagic encephalitis in thalamus, softening in corona radiata, granular condition of ventricular ependyma, hemorrhages in lateral ventricle, hemorrhages in centrum ovale, hemorrhages in nucleus caudatus, myxosarcoma of right temporal convolution, sarcoma of third ventricle with metastasis to fourth, all stages of central chromatolysis in paracentral lobe, tumor of the base, syphilitic encephalitis, and severe gliosis.

In order not to mislead, we would especially call attention to the fact that no one case in Dr. Wehrung's [•] paper embodied more than a few of the lesions noted in these tables.

Reviewing the findings of Dr. Wehrung, it is evident that while many of them fairly represent the pathological anatomy of polyneuritis and the polyneuritic psychosis, many others are to be regarded as simply coincident or accidental lesions, having no relation whatever with the disease under discussion.

⁴Wehrung, Gaston, Beitrag zur Lehre von der Korsakoff'schen Psychose mit besonderer Berücksichtigung der pathologischen Anatomie. Ein Weiterer Fall. Archiv für Psychiatrie und Nervenkrankheiten, Vol. XXXIX, 1904-5, p. 679. •

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Obituary.

PETER M. WISE, M. D.

Peter M. Wise was born at Clarence, Erie County, N. Y., of Joseph and Elizabeth (Croop) Wise, March 7, 1851.

He lived upon the farm, and attended the district school until the age of II, when he entered the Parker Classical Institute, intending to prepare for college, which design was frustrated by the death of his father. Three years were subsequently occupied as a clerk in a store, two of which were spent in Buffalo, where he was prostrated by an attack of typhoid fever. The following winter he taught a district school, and in the spring of 1869 commenced the study of medicine in the office of Dr. O. L. Parker, in Clarence, N. Y., attended the preliminary course of lectures at the Albany Medical College in 1870, and in the same autumn matriculated at the medical department of the Buffalo University, whence he graduated in February, 1872.

After graduation he served nine months in the City Hospital in St. Louis, and was then appointed resident physician of the small-pox hospital, and also served as city physician during the small-pox epidemic of 1872-3. In 1873 he located for the practice of medicine at Cheektowaga, a suburb of Buffalo, with a dayoffice in the city. After remaining in practice a few months, in October, 1873, he was appointed assistant physician at the Willard Asylum. In 1883, upon the resignation of Dr. Carson, he was appointed first assistant, and in the succeeding year was advanced to the office of superintendent, made vacant by the departure of Dr. Chapin.

In 1886 he was appointed by Governor Hill a member of the commission to locate and design an asylum for the insane in Northern New York, and with Commissioner Letchworth submitted a minority report which determined the location of the asylum. He was selected by the Commission to prepare plans, which had great influence in the construction of the asylum. In 1890 he accepted the appointment of Medical Superintendent,

after having several times declined it, upon representations from the managers and the State Architect that his services were necessary to the proper construction and organization of the asylum. In 1896 he was appointed, by Governor Morton, President of the State Commission in Lunacy, and in 1900 he was removed from this office by Governor Roosevelt.

In 1875 he became a member of the Medical Society of the County of Seneca, and in 1878 was its President; he was also a member of the Medical Society of the State of New York and of the American Medico-Psychological Association, of which he was President in 1900; of the medical societies of the counties of St. Lawrence and New York. He was for several years professor of psychiatry in the University of Vermont.

In the spring of 1882, for the purpose of informing himself concerning English methods, he visited eighteen asylums in Great Britain and France, and upon his return published, in October, 1882, the result of his observations in the *Alienist and Neurologist*, in a paper entitled "Notes on the Asylums of Great Britain."

In February, 1887, he delivered at Buffalo, the annual address before the Alumni Association of the Medical Department of the University of Buffalo on "The Influence of Mind upon Disease." He was appointed, in 1887, a member of the council in the Section on Psychiatry, at the International Medical Congress held at Washington, and presented an essay on "Hospital and Asylum Construction for the Insane."

On October 6, 1875, he married Miss Anna E. Heston, of South Alabama, N. Y., who, with three children, one son and two daughters, survives.

Dr. Wise wrote easily and rapidly, and his contributions to the literature of insanity are numerous. He published, through Putnam's, a two-volume "Text-Book for Training Schools for Nurses," which has been very favorably received. He wrote the sixteenth to twenty-first annual reports of the Willard State Hospital and the first ten reports of the St. Lawrence Hospital.

A partial list of his monographs is as follows:

"Sexual Perversion," Alienist and Neurologist, 1883; "Examination of the Insane," Buffalo Surgical Journal, 1883; "Recovery of the Chronic Insane," American Journal of Insanity, April, 1886; "The Relation of the Counties to State Provision for the

Insane," read before the New York Association of the Superintendents of the Poor, at Chautauqua, and published in their Proceedings for 1886; "The Best Methods of Care of the Chronic Insane," American Journal of Insanity, October, 1887; "The Care of the Chronic Insane," American Journal of Insanity, 1887; "The Barker Case: The Legal Responsibility of Epileptics," American Journal of Insanity, 1888; "Vaginal Hernia and Uterine Fibroids, with Delusions of Pregnancy," American Journal of Insanity, 1889; "Hopeful Recoveries from Insanity," American Journal of Insanity, 1803; "State Hospital Service in New York under Civil Service Rules," American Journal of Insanity, 1805; "Training Schools for Nurses in Hospitals for the Insane," American Journal of Insanity, 1897; "Medical Work in Wards of Hospitals for the Insane." American Journal of Insanity, 1805: "State Care of the Insane," American Journal of Insanity, 1898; "The State of New York and the Pathology of Insanity," American Journal of Insanity, 1900; "Results of Five Years' Experience with Co-operation between State Hospitals for the Insane," American Journal of Insanity, 1901; "Presidential Address. American Medico-Psychological Association," American Journal of Insanity, 1901.

Dr. Wise also edited a general index of the first forty-five volumes of the American Journal of Insanity, prepared with the collaboration of the medical staff at Willard, and published at the Utica State Hospital under the supervision of Dr. Blumer.

This outline of the career of Dr. Wise is, at first glance, a record of great activity. The list of his contributions to the literature of medicine reveals the enthusiasm with which he entered into the study of the practical features of his specialty. He began his work at the Willard Asylum when that institution was beginning to demonstrate to an unwilling profession that suitable provision might be made for large numbers of patients under one administration. He entered into its benevolent spirit, and, still a young man, was promoted to the superintendency when it had grown to be the largest asylum for the insane in the country. Educated in this liberal school he was well prepared for the task allotted to him at the new hospital at Ogdensburg. The resources of the State had been freely drawn upon and every suggestion for the humane and scientific treatment of its inmates was met by its

managers. Dr. Wise was free to carry out every plan. He met this responsibility, first, by the separation of the infirm from the able-bodied chronic cases, and following the Willard idea, planned for the latter the environment of the farm. He wished to construct a central hospital plant for the treatment of acute cases, but was embarrassed in this, first, by the construction of buildings too large, and, secondly, by an overestimate of the number of acute cases in an early curable stage who seek treatment in a State hospital. But he organized hospital wards and a most complete training-school for nurses, he provided laboratory facilities, and he encouraged and required of his medical officers attention to strictly medical work. The fruits of this ambition were displayed in the Eighth Annual Report of the St. Lawrence State Hospital, for the year ending September 30, 1804, which was the most noteworthy year-book issued up to that time by any American institution for the insane. Every member of the staff contributed one or more medical papers upon work done in the hospital, and these were liberally illustrated. The result was a demonstration of the results of medical investigation highly creditable to Dr. Wise's conception of hospital administration.

As Commissioner in Lunacy his duties were largely routine. He opposed the extravagant methods of the State Pathological Institute, and aroused the antagonism of some medical theorists, but he was right in principle, and the reorganization of that department has been on more modest lines, and in conformity with the proposition enunciated by Dr. Wise and corroborated by the superintendents of the State, that pathological and clinical work should not be divorced.

In 1901 he delivered the address as President of the American Medico-Psychological Association. This proved to be his valedictory. Written under discouragement and the stress following a severe blow, it reveals an alert appreciation of burning questions and an undiminished enthusiasm which intensify the regret that he could not have continued his work. The undercurrent of thought in this address is the "affinity of certain physical deviations and morbid mental phenomena," which leads him to urge upon the "medical heads of institutions to break away from the growing tendency to be absorbed by the business and fiscal work," and to question the wisdom of the centralization which is followed

by the "declension of a medical spirit very necessary to true progress." In the same address he refers loyally to the aid given by medical men to the sociological aspect of insanity, and doubts whether, without them, the humane results would have been possible.

The characteristics of Dr. Wise which thus spoke for success were unbounded enthusiasm and versatility. From the beginning of his career as an assistant physician he engaged in all of the enterprises for which a large institution affords opportunity, and in the development of the new St. Lawrence State Hospital he looked for the realization of a personal ambition. But the zenith of his power faced the nadir of opportunity. The State delegated the management of its hospitals to a centralized authority, and the ambition of medical officers was diverted from laudable rivalry to the subserviency bred of fear of removal. This change in administrative methods has been termed, not inaptly, revolutionary. Dr. Wise fought vigorously against it, and fought in the open. He was soon made acquainted with the subtle influence of intrigue, and he did not yield his convictions. He cultivated none of the oblique methods of politicians and political doctors, and was frank to the point of guilelessness. He had criticised an official act of the Governor of the State, and in his summary removal, this indiscretion was thought to have had its bearing. The disaster was sudden and irretrievable, and aroused the sympathy and compassion of hosts of friends. The details of this transaction were published in the JOURNAL of April, 1901, and need not be repeated here. Great regret was expressed at this unhappy termination of a career which had always reflected credit upon the lunacy system of the State of New York. After his retirement he engaged in private enterprises in New York City. On September 22, 1907, he died at the J. Hood Wright Hospital, from the effects of a dose of medicine which he had prepared for himself for the relief of pain.

As one looks back upon this tempestuous period, there comes a possible explanation of the avocations which terminated so unfortunately for Dr. Wise. With the uncertainty of an official position constantly before him, he sought to provide against the possible contingency. That there was any ulterior or dishonest motive in his mining project no one of his friends suspects. He

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was impulsive and at times possibly visionary, but these were minor defects in character, which harmed him alone. If the ultimate test of virtue be sincerity, then does Dr. Wise's memory remain in substantial contrast to time-serving methods which are nowadays so conspicuous in public as well as in private life. He was unable to rally from a vital blow, but he has left a memorial in his writings and in State hospital methods which intensifies the regret that the State ruthlessly and heartlessly should have deprived itself of his services. He was embittered and broken, but left no enemies among those whose esteem was worth the having. He succeeded as long as his associations were confined to honorable and truth-loving men. When he was thrown among another class his ingenuousness proved his undoing. Psychologists recognized in his character the attributes of genius, and they know that genius is not always an unmixed good. But human progress is due to genius, and the lunacy service of New York and of the country owes much to Dr. Wise. When the tragedy of his life came it carried distress to all who knew that his merits far exceeded his faults.

J. M. MOSHER.

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Hotes and Comment.

THE AMSTERDAM CONGRESS OF PSYCHIATRY.—The Congress which was held at Amsterdam in September last was in every respect a success. The title given the assemblage, "International Congress of Psychiatry, Neurology, Psychology, and the Nursing of the Insane" defines its scope. The Congress was divided into three sections: I. Psychiatry and Neurology; II. Psychology and Psycho-Physics; III. Nursing the Insane.

This last title is a somewhat misleading one however, for the section considered many subjects not strictly related to nursing, among them being papers treating upon medico-legal questions, upon the after-care of the insane, and upon the care of defective or backward children.

The Congress was opened at two o'clock P. M. September second, in the Municipal Concert Hall, in the presence of the Queen of the Netherlands, and the Prince-Consort by addresses by the Minister of Justice, Dr. E. E. van Raalte, and the President of the Congress, Professor Jelgersma. At the conclusion of the opening address the Queen, Prince-Consort, and their suite retired to a reception room adjacent to the main hall, and there received the delegates from the various governments represented at the Congress. The Queen received the different official delegates as they were presented in a most graceful and gracious manner, addressing each one in French, German, or English, as his nationality suggested, and expressing her appreciation of the compliment paid her country by the large assemblage of scientific men from all over the world.

The sessions of the various sections were well attended, and the papers as a rule brought out interesting and sometimes spirited discussions.

The Exhibition in the City Museum was a most interesting addition to the Congress, Dr. C. E. Daniels, who was chiefly responsible for the Museum, succeeding in collecting a large amount of material in the way of photographs, drawings, models, plans, etc., illustrative not only of modern methods in the care of the insane, but of the methods and ideas of the last century. The old restraint apparatus, chairs and beds, which formed a portion of the material he had collected, are many of them illustrated in the catalogue of the Exhibition.

The citizens of Amsterdam, as well as the public officials did much to make the social side of the Congress a success, but to the President, Professor Jelgersma, Dr. van Wayenburg, and Van Deventer, as well as to the chairmen and secretaries of the various sections, those who attended the Congress are particularly indebted, and to their untiring energy and that of Dr. Daniels and those associated with him in organizing the Exhibition the success of the Congress is due.

AN APPRECIATION OF THE ALIENIST.—So much has been written by our colleagues in the general practice of medicine on the avocations of the asylum physician and his diversion from purely medical work, that any complimentary reference to the value of his training should be well received. The hospital physician on his part, believes that the practitioner is engaged in the dispensing of drugs and in attention to unimportant measures, so that it is not unfair to say that there are two sides to the question and that each has its merits. Let the carping critic read the following testimony from no less an authority than Florence Nightingale, which is quoted in the Life of Miss Nightingale, recently written by Sarah A. Tooley:

"The very alphabet of a nurse," says Miss Nightingale, "is to observe so well that she is able to interpret every change which comes over a patient's countenance, without causing him the exertion of saying what he feels. A patient is not merely a piece of furniture, to be kept clean and arranged against the wall, and saved from injury or breakage, though to judge from what many a nurse does and does not do, you would say he was." Then comes a caution that sick people dislike being watched, and the nurse must observe without appearing to do so. Miss Nightingale relates that the best observer she ever knew was a distinguished doctor of lunacy. "He leans back in his chair with half-shut eyes." she relates, " and, meanwhile, he sees everything, observes everything, and you feel he knows you better than many who have lived with you 20 years. I believe it is this singular capacity of observation and of understanding what observed appearances imply which gives him his singular influence over lunatics."

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MOEBIUS MEMORIAL.—A number of friends of the late Professor Moebius, headed by Professor Edinger and Dr. Bresler, have formed a committee to collect money for a memorial to the late distinguished psychiatrist, and have issued an appeal for subscriptions.

It is proposed to endow a prize which shall be awarded annually, but which shall be awarded to the best work on psychiatry or neurology which shall be submitted in competition every two years, and in alternate years to the best work on the same subjects which shall have been published during the preceding two years. In July the subscriptions received had amounted to over 1400 marks. Contributions should be sent to the treasurer, Dr. Curt Reinhardt, Lessingstrasse, Leipsic, Germany.

MEMORIAL TO PROFESSOR BROUARDEL.—Still another appeal is made by a formidable committee, headed by the President of the French Republic, who are desirous of perpetuating the memory of this distinguished man by the erection of a monument at Paris. The execution of the work has been placed in charge of M. Puech. Contributions should be sent to Mim. J. B. Baillière & Fils, 19 Rue Hautefeuille, Paris.

It is hardly to be wondered that this tribute is to be paid to Paul C. H. Brouardel, for he was undoubtedly one of the most prominent men who have been interested in forensic medicine and in public hygiene, and during the last 25 years has been largely responsible for advances made in these branches of medicine. It will be remembered that he died in Paris, July 24, 1906, aged 69 years. For 28 years he had been one of the editors of Annales d'Hygiène Publique et de Médicine Légale and was also professor of legal medicine in the University of Paris.

THIRD INTERNATIONAL CONGRESS FOR THE ASSISTANCE OF THE INSANE.—The Third International Congress for the Assistance of the Insane will be held at Vienna, October 7-11, 1908, under the presidency of Professor Obersteiner.

All those intending to join the congress or to present papers should communicate with the secretary-general, Dr. Alexander Pilcz, Lazarettgass, 14, Wien, IX, before July 1, 1908. He will give information desired, but details of the program will be published later.

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balt-Pearly Summary.

CALIFORNIA.-Agnews State Hospital, Agnew.-The situation at this hospital for the last year and a half has been an unusual one. Completely destroyed in the disaster of April 18, nearly one thousand patients, in less than half a minute, were without shelter or any of the usual facilities for care or maintenance. First on the open lawn, then in tents for several weeks, then in temporary buildings where they have been housed since. It became necessary last summer to organize, as it were, a complete new institution in every department; although most of it is temporary. Ward buildings, kitchen, heat and light and water supply, laundry, in fact every department pertaining to a hospital of this character had to be reestablished. This was done and all made comfortable before winter. This summer has been occupied in removing the old buildings which are now completely cleared away. \$800,000 was appropriated by the legislature last winter for permanent rebuilding. Unfortunately for the early use of this appropriation and the speedy rebuilding of the hospital, there was also passed by the last legislature a new law creating a State Board of Engineering and Architecture. It has taken so long for this to become effective, the departments having to be organized, and the amount of work in the State coming under its supervision being so great, that little has been done to forward the work of rebuilding. It had been hoped that permanent buildings would be ready for occupancy this fall, but it will be necessary to spend another winter with temporary accommodations. The hospital has been unable to receive new patients, but has made its old patients comfortable and cared for them without a special incident or a single accident since the disaster over a year and a half ago. There has been in the conditions here a good object lesson of the simple manner in which it is possible to care for this class of patients with an almost absolute freedom of restraint of any kind, except the care of a faithful corps of employes. There have not been more than the usual number of elopements, notwithstanding the greater freedom from locks and screened windows. Far more than the usual number of men patients have been employed removing wreckage, etc. The patients have lived much out of doors during the day and at night in tents and buildings with open windows, and the health of the institution has been remarkably good. Under the conditions the general physical improvement of the patients has been marked and the mental condition of many greatly improved. The hospital will be rebuilt on the cottage or pavilion plan, and it is hoped to introduce the best and most modern means for both the care and treatment of the insane. There are still in the institution about 800 patients.

-Southern California State Hospital, Patton.-During the past six months but little building has been done nor has any improvement been made along other lines. Architects are at work upon plans for receiving cottages, a hydrotherapeutic institute, a model dairy, and to replace the present tin roofs, which are acted upon by the variation of temperature, and substitute slate which is more satisfactory.

COLORADO.—Woodcroft Hospital, Pueblo.—At this hospital two solaria have been constructed, each having a floor space of 600 square feet, with a 10-foot ceiling, and enclosed upon three sides with glass. The exposure is east, south, and north, and steam heating and electric lighting, with an incline entrance instead of stairs, make them very convenient. These are the sixth and seventh sun rooms which have been constructed at this hospital in the past three years, and they are highly valued by the patients. They seem to give a sense of freedom, as no guards or bars are used, the sash being made heavy and the glass cut small.

CONNECTICUT.—Connecticut Hospital for the Insane, Middletown.—An appropriation of \$73,000 was granted by the general assembly at its recent session for the purpose of rebuilding the chapel and assembly room destroyed by fire at this institution on June 20, 1906. The contracts for the work have already been awarded and the building is under process of erection.

An appropriation of \$43,000 was also granted for the purpose of building a new wharf, a double shuttle railway, hoist and coal pocket, for the purpose of discharging coal and other supplies, and an electric industrial railway for the purpose of conveying the same to the institution. This work is already under way and is to be completed by December 1, 1907.

A new carpenter and paint shop of fire-proof construction, 120×40 feet, has been planned and authorized, and the work is already well advanced.

An additional electrical generating unit of 100 k. w., consisting of a Westinghouse generator and Ames engine, has been installed to furnish power for the new coal hoisting works and electric railway, as well as to provide for additional lighting.

In order to furnish additional protection against fire, the trustees have caused to be installed a Worthington duplex fire pump of two million gallons capacity, rated to raise against a head of 250 feet.

The isolation hospital for the care and treatment of contagious diseases was finished in the early spring, and has been used during the past few weeks in caring for cases of diphtheria, several mild cases of which developed in the institution during the months of June and July. The prompt and satisfactory manner in which all contagious disease can be isolated has demonstrated to the satisfaction of every one the supreme utility of this department of the institution.

DISTRICT OF COLUMBIA.—Government Hospital for the Insane, Washington.—The training school for nurses held its annual exercises on the evening of May 31 last, when 16 nurses, all trained in the hospital service, received diplomas. Classes for the new term will be resumed in October.

Dr. Alfred Glascock, junior assistant physician, who, in pursuance of

the plan of co-operation between the Public Health and Marine Hospital Service and the Government Hospital for the Insane in the examination of immigrants arriving at Ellis Island, N. Y., has been serving on special detail at that station since January 5, 1907, resumed duty at this hospital on June I, 1907. Dr. Nicholas J. Dynan, medical interne, was temporarily transferred to the post at Ellis Island with rank of acting assistant surgeon on July 27 last for similar duty.

The United States Civil Service Commission held an examination on June 13 and 14 last from which to obtain a list of eligibles from whom to make appointment to the position of medical interne as vacancies occur in the hospital service. Five appointments have been made to the position of interne on certification of the commission, as the result of this examination.

ILLINOIS.—Asylum for the Insane, Bartonville.—The character of this hospital has been changed and at the present time, instead of its patients being limited to the chronic class from the entire State, they are drawn only from a part of the State, or district, and include all classes of insanity.

INDIANA.—Southern Indiana Hospital for the Insane, Woodmere, Evansville.—The following improvements have been completed or are under construction at this institution.

The laundry was entirely destroyed by fire on February I. A new laundry has been built and was occupied on September I.

The new bakery is completed and in use.

An entire new steam power equipment is now being installed consisting of three 300-horsepower Parker boilers with Green chain grate stokers and Custodis chimney.

A new sewage disposal plant is under construction consisting of septic tanks with filtration.

Congregate dining rooms will be built at once.

Northern Indiana Hospital for Insane, Logansport.—This hospital reports a practical completion of two new buildings. One contains two wards, each having a capacity for 35 female patients. The other building is on the vertical house plan, having dormitories above, and dayrooms below. It is intended for 70 male working patients, together with the employes who will have them in charge. It has its own dining-room, kitchen, and other offices, will have its own hours independent of the rest of the hospital in most particulars, and is designed and will be used somewhat after the manner of a large farmhouse. Both of these buildings are independently heated by hot water, direct-indirect radiation being used. Most of the walls are of enameled brick and tile is extensively employed for floors. The plumbing is of the highest order and the total cost of equipment will be about \$90,000.

-State Epileptic Village, Newcastle.—The first two cottages have been completed and furnished. Attendants have been engaged and patients will soon be admitted.

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LOUISIANA.—Louisiana Insane Asylum, Jackson.—This hospital was badly damaged by a cyclone so that much of the building required repairing. In May contracts for the work costing \$47,000 were signed and repairs begun.

MARYLAND.—Springfield State Hospital, Sykesville.—There has been constructed a large brick building, located in the men's group, which is to be used as a dining hall and kitchen. The extreme dimensions, north and south, or width of building, are 135 feet by a length over all from east to west of 183 feet 6 inches, not including rear porch. The dining hall is 100 feet long and 69 feet wide, with a large bay at each end, each 44 feet by 16 feet, and will furnish accommodations for over 600 persons at one time.

The ceiling is 25 feet high, of hard plaster, panelled. The three central panels, each about 8 feet square, are of ornamental glass at ceiling level and have large skylights in the roof above them. The serving room adjoins the dining hall on the east side, and is entered through two 6-foot doorways. This room is 28 feet by 58 feet, with windows at each end to furnish abundant light and air. The kitchen is on the east side of the serving room, is 34 feet wide and 58 feet long. Both of these rooms will be fully equipped with dumb waiters, porcelain sinks, drain boards of marble, ranges, dish washers, steamers, etc., etc. The floors of the serving room are tiled, and walls all around 6 feet high are faced with white enameled brick.

On this first floor beyond the kitchen are pastry room, store rooms, steward's office, cooks' pantry, cold storage rooms, stairway to basement and toilets.

The basement contains the attendant's dining room, a large wash room, serving room, dining room for outside help and another for colored help, the preparation room, the toilets, closets and stairways. The boiler room is 29 feet by 59 feet, and contains boilers for heating water and supplying the steam required for cooking purposes.

The cellar or sub-basement rooms are for storage of supplies.

Ample provision has been made for the ventilation of the dining hall, kitchen, and other rooms, through ceiling panels, ducts, etc., which lead into the roof space and thence out through 36-inch galvanized iron ventilators.

The main entrance to the building is through a semi-circular vestibule or portico, 26 feet by 48 feet with heavy cast iron columns and brick piers, carrying brick and terra-cotta arches. Both the inner and outer arches of this entrance are ornamental features.

The building is but one story high at its front or western end, but is full three stories high in the rear, owing to the rapid fall of the ground. The brick facing of outside walls will be "red" brick of similar character to the other buildings of this group. All windows of the main story will have terra cotta arches, and belt courses and sills will be of the same materials. Outside steps will be of granite at the front, also the window sills and lintels of basement. Inside stairways will be of iron or steel and slate. The roof will be covered with Peach Bottom slate.

The flooring of dining hall will be of straight grain Southern pine, as tile would not be suitable for the "hops" and other entertainments held by the inmates.

The contract price of building, unequipped, is \$59,000.

The architects of the building are Owens & Sisco, of Baltimore, and the work of erection was done by John H. Fowble, of Sykesville.

—The Sheppard and Enoch Pratt Hospital, Towson (Station A, Baltimore).—Some important changes and improvements are in progress at this hospital. Early in the spring, work was commenced on a new dining room and kitchen block, which is now nearing completion. A full description of this building will probably be published, with plans, and a brief description will therefore suffice for the present.

The main building, 132 feet in length and 52 feet in width, is situated 45 feet to the rear of the hospital buildings which are, as will be recalled two distinct structures one for each sex—separated by a space of 100 feet from each other. This structure, two stories high, is connected to each hospital building by a corridor 12 feet wide and one story high. It contains on the first floor four distinct dining rooms for each sex, 16 by 20 feet, intended to accommodate about 16 patients each, with pantries linen rooms, etc. The connecting corridors are continuous with a hallway running the entire length of the building, on each side of which are the dining rooms. This portion of the building is two stories high, the upper floor being devoted to rooms for nurses, a nurses' parlor at one end and study and library at the other—a dining room and pantry for the medical staff and two bath rooms.

In the rear of the dining room section are the kitchen and annexes. The kitchen is 40 feet long and 30 feet wide and forms the stem of a letter T of which the dining room block is the head. It is but one story high and is well lighted, having five windows on each side. The base of the letter T is two stories high and contains in the rear of the kitchen on the main floor the scullery, vegetable preparing room, diet kitchen, two store rooms, and a cold storage room for cut meats, milk, etc., required for immediate use, and the house keeper's office. On the floor above are eight rooms for kitchen and other servants and two bath rooms.

A basement nine feet high extends under the whole structure. Immet diately under the kitchen there is a cold storage department, 42 by 20 feet in area, divided into different compartments, and a meat cutting room. The remaining portion of the basement will be used for storage and other purposes.

The electric light plant is being wholly reconstructed. Three new engines with direct connected dynamos are being installed. Two engines are for H. P. each, the third 75 H. P. The generators will have a capacity of 100 K. W. for two pairs and 50 K. W. for the third pair. The Edison three-wire, 110-volt system now in use is being continued.

A new sewage disposal plant has also been constructed. This consists

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of a large sedimentation tank of sufficient capacity to receive and retain the sewage until bacterial activity has commenced. From this tank the sewage flows to a dosing chamber from which it is discharged by siphon through sprinklers on the primary filter of broken stone. From this filter it flows to a settling tank from which it overflows on to a sand filter three feet deep with an underlying gravel bed six inches thick.

Arrangements are made for emptying the deposit at the bottom of the different tanks upon a sludge bed and filter whenever the accumulation of any deposit makes this necessary.

MASSACHUSETTS.—Danvers Insane Hospital, Hathorne.—Dr. E. E. Southard, the pathologist, has for some time been in Europe, on a four months' leave of absence. He will study laboratory methods and attend scientific meetings in England, Germany, and Holland. During his absence Dr. Frederick P. Gay has charge of the laboratory, where are being conducted interesting studies on the cytology of lumbar puncture fluids in the insane and serum anaphylaxis, on which latter problem publications have already been made by Drs. Gay and Southard.

-Foxboro State Hospital, Foxboro.-This hospital has recently been undergoing an investigation with the result that a report approving the management was rendered, but it was recommended that an age limit should be established and that a separate institution should be founded for the care of hopeless inebriates without criminal records.

-State Colony for the Insane, Gardner.-A colony group for 50 men and 50 women has been completed and is now occupied. A farm building, an annex to a farm previously occupied, has been remodelled and is now occupied by 20 male patients. A large feed barn is now under construction.

-Feeble-minded Institution.-About 500 acres have been purchased by the State in the town of Wrenham for an institution for the feeble-minded.

MICHIGAN.-Michigan Asylum, Kalamazoo.-This asylum received from the last legislature, appropriations amounting to \$103,785.05. The needs of the institution for which this sum is available are, two additional boilers and one lighting dynamo for the home plant; additional accommodations for patients in the department for men, to be obtained by raising the roofs and adding a third story over two wards and by enlarging and otherwise improving the general dining room and kitchen, thereby permitting the transformation of certain ward dining rooms into dormitories; accommodations in the center building of the women's department for the clerical force and housekeeper's assistants, to be obtained by remodeling the attic and creating a fourth story; a new building at the Colony Farm to be devoted to the purposes of a central heating plant, general dining room and kitchen, laundry, industrial room, and sleeping rooms for nurses and other employes. These changes, some of which are well under way, will increase the capacity of the institution for 175 patients, and provide sleeping quarters for 45 employes.

HALF-YEARLY SUMMARY

Van Deusen Hospital, named for the first superintendent of the asylum, and for which \$50,500 was appropriated by the legislature of 1905, is well on toward completion and will probably be ready for occupancy this fall. Placed at the southern extremity of the grounds, it corresponds in location and use to Edwards Hospital, the receiving ward for men. It is a threestory, L-shaped, brick structure with high basement and flat roof. It was designed for "not less than 104 women patients and their nurses, and other employes." It contains 33 single rooms for patients besides dormitory space for upwards of 70 more.

Massage and hydriatic treatments are prescribed to a much greater extent than formerly in the male wards and provision has been made to give the men and women nurses practically the same training along these lines. The number of bed patients in this department is double that in the department for women, so that the opportunities for utilizing women nurses in the care of men patients are especially good, 20 young women being thus employed at the present time.

-Eastern Michigan Asylum, Pontiac.-The legislature of 1907 made provision for the following improvements at this asylum:

The erection of a water tower to replace the present system of attic storage tanks.

The construction of tunnels from the central heating plant to detached buildings, thus centralizing the entire heating system of the institution.

Conversion of the present assembly hall and chapel into a large congregate dining room by the addition of wings. It is expected that accommodation, at meal time, will thus be secured for about 600 patients.

The erection of a new building for an amusement hall and chapel.

In addition to the above, provision was made for a small electrical unit to carry the lighting load during the hours of light service.

-State Psychopathic Hospital, Ann Arbor.-The State Psychopathic Hospital at the University of Michigan has now passed into the second year of its existence. In this time it has demonstrated in a very practical way the possibilities of the organization of a state hospital for the insane in connection with the university center of medical instruction. Started : as it was, the first institution of its kind in this country, it was but natural ; that in the first legal provisions for its administration there should be These have been remedied by a new enactment more or less defects. passed by the Michigan legislature during its last session. It had been found that on account of the higher cost for the maintenance of patients ! in such a special kind of institution that public patients were not sent there in any considerable number. By the new provisions the expenses for the care of all public patients are paid by the State and the State can collect from the county of which the patient was a resident the same amount which the county would have had to pay for the support of the patient in one of the State asylums. Another provision makes it possible for the judges of probate to continue the hearing, when information of insanity has been filed, in those cases in which there is doubt as to sanity or

insanity, or if for any reason a permanent decree of insanity is inadvisable (e. g., on account of an expected early recovery) for a period of 35 days and direct that the person be sent to the State Psychopathic Hospital as a person mentally afflicted. Before the expiration of this period the results of the observation and treatment, together with an opinion as to sanity or insanity of the person, are to be returned to the judge. If observation showed that the person was insane, then the hearing may be completed and the person legally adjudged insane and sent to the State Psychopathic Hospital or to any one of the State asylums for the insane. If the opinion is that the person is sane, then such a person is discharged from the hospital. Further provision makes it possible for any person, who may be mentally or nervously afflicted but not insane, to enter the hospital as a private voluntary case without any further process than the consent of the director of the hospital.

The allowance for the payment of the salaries of the officers and the expenses of the clinical pathological laboratory was increased to \$10,000.

The status of the hospital is somewhat changed, from being a part of the General Hospital of the University it now becomes a separate institution, known as the State Psychopathic Hospital at the University of Michigan. It is controlled by a board of trustees whose members are equally divided between representatives of the boards of trustees of the State asylums and the regents of the University. The psychopathic hospital thus becomes a receiving hospital for cases of insanity and borderland mental disturbances which may be sent there on account of any special features in their condition from any part of the State, or specially interesting cases may be transferred from the asylums. Whenever it is advisable, any patient at the psychopathic hospital may be transferred to the asylums. Since this new law has gone into effect the hospital has been well filled with patients.

The director of the psychopathic hospital, Dr. Barrett, is professor of psychiatry in the Medical Department of the University. During the second semesters of the last two school years there has been given a course of instruction in psychiatry systematically covering the different clinical types of mental diseases, illustrated by an abundance of cases. In addition the students have practical experience in the examination of patients and the preparation of case records.

Apart from its connection with the University Hospital, the hospital is a central institution with a laboratory of research for the State asylums, and the director is pathologist of the State asylums, and harmonious cooperation has been established between the asylums and the psychopathic hospital. All of the asylums of the State now have uniform systems of medical work with uniform blanks for history recording. The asylums send their nervous material from their autopsies to the laboratory of the hospital where it is worked up and the results returned to the asylums. Apart from this there are already under way several pieces of research work on material from gross lesions of the brain. From its connection with the University it has been possible to enlist post-graduate students in research work, and during the past year a very interesting research was conducted by one of such students.

Last year a course of a month's instruction in clinical psychiatry and laboratory demonstration was given which was attended by one physician from each of the asylums. A similar course will be given this fall. Occasional visits are made by the director to the various asylums where conferences are held on clinical problems and plans formulated for the betterment of the scientific work.

It can be readily seen that such an institution as this must be of the greatest usefulness as a teaching and research center and as a unifying influence in the scientific work in the State asylums.

MISSISSIPPI.—East Mississippi Insane Hospital, Meridian.—At this hospital there is being erected a new cottage for women on the dormitory plan, to accommodate 100 patients. The building will be of brick, two stories high, with large day rooms and one dining room. The sleeping accommodations will consist of both single rooms, and large associated dormitories. One feature will be large verandas on two sides of the building.

A hospital for the acute sick is also under construction, and will accommodate 30 patients. It is proposed to equip this building with everything appertaining to a first-class hospital, and the management hopes then to have a hospital in fact as well as in name. Neither building will be ready for occupancy before next year.

A cold storage for meats and milk has already been added, and other small necessary improvements are being made.

MISSOURI.—State Hospital No. 3, Nevada.—Among the most important improvements are the completion of a hospital building, and the erection of a large silo for the milch cows. A large hennery is still in process of construction.

The hospital has been entirely free from contagious and infectious diseases and general health conditions have been excellent.

On March 1, 1907, there were in the hospital 612 male patients and 460 female patients, a total of 1072. During the six months following there were received 67 men and 59 women, or 126 patients, a total under supervision of 1198. There have been discharged by death, 27 men, 17 women, total 44; as recovered, 6 men, 3 women, total 9; as improved, 25 men, 19 women, total 44; leaving a total under present care of 1105 patients, an increase of 33 in the past six months.

NEBRASKA.—Nebraska State Hospital, Ingleside.—This was formerly known as the Asylum for Chronic Insane with address at Hastings. By recent act of legislature the name has been changed as above, and the character has been changed so that all classes of mental diseases are treated, acute as well as chronic.

An additional ward is being opened giving capacity of 1100 beds.

The medical staff is as follows: Dr. W. B. Kern, superintendent; Dr.

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Wm. H. Chapman, first assistant physician; Dr. F. P. Simms, second assistant; Dr. R. H. Foster, third assistant; Dr. F. H. Kuegle, fourth assistant.

-Hospital for the Insane, Norfolk.-Plans have recently been completed for a building to be used as a hospital for women patients, the estimated cost of which is \$60,000, and for a cottage for men, the estimated cost of which is \$20,000. Both of these buildings are to be of fireproof construction.

NEW HAMPSHIRE.—New Hampshire State Hospital, Concord.—In compliance with the provision for State care of all the dependent insane the legislature of 1907 appropriated \$150,000 for additions to the wings for disturbed men and women patients, and also for the enlargement of the laundry. These additions will provide single rooms for about 125 patients.

The hospital building was opened during the last spring and accommodates 156 patients, of which number 120 are cared for in a large, general ward constructed on the same lines as the wards for a general hospital, and 36 are cared for in private rooms. This new building has proved admirably adapted for the work intended. All new patients are entered and examined at this building. Two medical officers and a staff of 20 nurses reside in the administrative portion of the house. A subway 300 feet long connects the hospital with the main building. Through this subway pass all the steam and water mains as well as the food supplies from the central kitchen. The building is equipped with a large diet kitchen, although all house diet is brought from the main kitchen. Provisions for keeping food warm have been especially considered and little difficulty has been experienced in this respect.

The hospital building is two stories in height. All new cases are admitted on the wards on the first floor while the feeble and sick cases of the chronic class are cared for on the second floor. The male wards are under the direction of women nurses who are either graduated from, or are in, the training school for nurses.

This hospital still maintains connection with the Concord District Nursing Association. The association has become almost indispensable among the public charities of the city and the services of two pupil nurses are required in addition to the head nurse and her assistant. All four of these nurses are either graduates from, or are connected with, the State hospital. The experience which these nurses receive in district work is most valuable, and is a good supplement for the practice in sick room nursing which they get in the hospital building.

The district nursing service has been of great benefit to the hospital as it furnishes the kind of work that most nurses wish to secure during their training, and which is not ordinarily furnished in the wards of a hospital for the insane.

New JERSEY.—New Jersey State Hospital, Morris Plains.—There has been a steady increase in the census during the past six months. The daily average number of patients under treatment was 1803, of whom 907 were men and 896 women; 114 men and 103 women have been admitted; 36 men and 20 women have been discharged recovered; 16 men and 21 women have been discharged improved; 4 men were discharged unimproved, and 47 men and 36 women died.

A number of improvements have been made; notably the establishment of a hydrotherapeutic plant, an electrotherapeutic room, a room for the examination of the eye, ear, nose and throat, and many important additions to the laboratory equipment.

The hydrotherapeutic room is situated on the south side of the building in the women's department, and consists of a douche room, a massage room, a wet pack room, and three dressing rooms. The douche room is finished in Italian marble and contains a control table of the most recent type. This room also contains the rain douche, circular douche, perineal douche, jet douche, full bath, sitz bath, electric light bath, shampoo table and spray, and two hot-air cabinets.

The electrotherapeutic room is equipped with a 20 revolving plate Holtz static machine, resonator and X-ray equipment, an adaptor for faradic, galvanic and cautery currents, a 500-candlepower Leucodescent lamp, a Victor vibrator and a Hansfield tissue oscillator.

Many important changes have been made in the laboratory recently, including the addition of a large electric centrifuge, a Beckman's freezing apparatus for cryoscopy of urine, blood, stomach contents and other fluids; a Zeiss No. 22 Abbe refractometer with correction thermometer, etc., for the investigation of milkfat and testing solutions and for blood examinations; a large porcelain water bath with automatic water level, Nessler jars and tubes, hydrotimeter, dessicators, dialysers, culture flasks, bacteriological counting apparatus, Chaddock's analytical burners, plainum dishes and a set of Babcock tubes and bottles to be used for the analysis of milk and water; an electric compressed air and vacuum outfit controlled by automatic device for blast and filtration purposes; a Kipp's hydrogen sulphide gas generator; a Zeiss apochromatic dry objective focus 3 mm. N.a. 0.95; a large chemical table with alberene top, gutters and shelving. which is supplied with hot and cold water, electric lights, gas, vacuum and air pressure pipes, water filter pumps and electricity for heating purposes; an assortment of Merck's and Kahlbaum's chemicals and Grübler stains, and a variety of glassware for general use in the laboratory.

A new bakery, large enough to meet the demands of the hospital for a number of years to come, has been built and is in full operation.

The new laundry building, which is detached from the main building, has been thoroughly equipped with new machinery and is now in use.

An act of the legislature, approved July 5, 1906, makes several changes in the law regulating the commitment of insane patients in the State. It provides that the physicians' certificates shall bear date not more than $\frac{1}{300}$ days prior to the confinement of the insane patient. It also holds the father, grandfather, mother and grandmother, and the children and grandchildren severally and respectively responsible for the maintenance of the patient, to such an amount as the justice or judge making the order shall direct.

-State Hospital, Trenton.—For a number of months this hospital has been the object of much investigation by various committees who have been unsparing of their criticism as to the manner that the hospital was being conducted. Dr. Ward, who had been at the head for over 30 years was forced to retire July 28, and as a sop to the public disapproval of their summary action, the managers, on August 8, gave the warden, William P. Hayes, the option of resigning or of being dismissed. The latter, therefore, resigned to take effect September I. A typhoid epidemic was the origin of the investigation. It is alleged that the whole affair is largely political and was started by Democratic leaders with the idea of discrediting the Republican administration, but that in this case the investigation has proved a boomerang as the asylum has been under Democratic control for a considerable period.

-Bloomingdale, White Plains.-There has been added to this hospital in the immediate rear of the center building, and becoming an integral part of it, a building containing, in the basement, a most modern therapeutic bathroom for men (one for the use of both men and women, now devoted to women, has existed for the past 13 years), a sitting-room for the use of domestic help, to refine and humanize them as much as possible, and an autopsy room, and a decorous laying-out room.

On the main floor there is a large parlor for the convenience of patients' informal entertainments, such as card parties, small dances, chamber concerts, etc., and there are two large rooms for the psychopathic laboratory, in which are kept the minute records, apparatus for various tests, microscopic appliances, chemical reagents, etc. This is in the immediate charge of Dr. George S. Amsden, who devotes himself to pathology and psychology, and is under the supervision of Dr. August Hoch, widely known for his scientific researches.

The second story of this building affords four excellent dwelling rooms, which add to the comfort and convenience of the establishment.

NEW YORK.—At the last session of the legislature a committee was appointed to find a site for a new hospital in the southeastern part of the State to take the place of the present hospital now on Ward's Island, the lease of which expires in five years. The lands are not to contain over 1000 acres, and the committee is to make its recommendation of the site selected in 1908.

-Manhattan State Hospital, Ward's Island, New York City.-No special changes have taken place in regard to the character of the medical work which has been carried on as heretofore. The staff meetings are held each week-day morning at 8.30 o'clock.

The following mentioned improvements have been made during the past six months:

The work of installing steel ceilings in wards 36, 37, 41, 42, and 43 has been completed.

The contractors are still at work re-wiring the main and east buildings and the employees' home.

The above two items were referred to in the last report.

A five-ton steam road roller has been purchased for use in repairing and rebuilding roads.

A small extension has been built to the assorting room of the laundry for the sterilizer, the wall between this and the old room being closed, so that one end of the sterilizer is in the laundry proper and the other in the small extension. All clothing, etc., to be disinfected passes through the sterilizer before going into the laundry.

The passenger and freight docks at the west side of the island are being covered with cement.

The interior of wards 44 and 45 has been painted and steel ceilings installed in both wards.

Material has been allowed and purchased, and partitions constructed in the basement of wards 47 and 48, occupied by employes. Heretofore these basement rooms have been occupied as dormitories, but by the new arrangement the space is divided into single and double rooms.

Dredging has been done around the coal dock, three thousand cubic feet of material having been removed.

The two wooden pavilions known as camps A and B, mentioned in the last summary, have been occupied since completion and prove to be a very valuable adjunct to our camp service.

As is usual during the summer season, excursions on the steamer "Wanderer" have been given to patients three times each week. So far as possible, preference is shown recoverable cases and working patients in being placed on the list.

"It is with sincere regret I have to record the deaths of Dr. Charles A Foster and Dr. Frank H. Magness. Dr. Foster, who had been connected with the hospital since September 17, 1906, and who was doing special work, while on temporary leave of absence in the city, died suddenly May 19, 1907, of a complication of kidney and heart trouble.

"Dr. Frank H. Magness had been connected with the hospital or with some of its branches since October, 1895. He had been a very faithful officer and was much interested in his patients. He was found lying dead on his bed on the morning of June 15, 1907, having died from chronic bronchitis and myocarditis. Dr. Magness usually had charge of the men patients of the industrial class by whom he was well regarded."

The hospital is greatly overcrowded and has had this summer the greatest number in its history—over 4500 patients. It is proposed to transfer at least 500 to one of the other State hospitals in the near future.

The training school for the current year has been opened and so far much interest is taken on the part of the pupil nurses. The standard of instruction has been raised, as has also the requirements for admission. The training school at this hospital is registered with the board of regents of the University of the State of New York.



The problems connected with the large number of alien insane have affected this hospital in a marked degree. These people occupy the accommodations greatly needed by the citizens of the State. Though deportations are frequent, there are almost constanty at least from 12 to 18 insane aliens in the hospital, the number appearing to have increased considerably during the past two or three years.

While not successful in all respects in regard to requests for improvements, the legislature did allow \$2000 for the engineer's department and carpenter shop equipment; \$2000 for improvements to docks and dredging; congregate spray bath, department for men, \$1000; laundry equipment, including improvements in drying room, \$10,000; bakery building and equipment, \$10,000; three pavilions for 90 additional patients, \$9000.

The scientific work of the hospital has been advanced by the appointment of a clinical laboratory assistant in the person of Dr. Frank G. Schaible.

-Willard State Hospital, Willard.-The medical work has not changed in any important particular. Among the improvements, the completion of Buttonwood, a farm cottage to accommodate 22 men patients, is the most notable. Work on enlarging the dining rooms at Edgemere and Pines is now progressing. These rooms have always been too small for the number of patients and when the additions now under way are completed, the overcrowding will be overcome and the appearance of the dining rooms greatly improved. Several of the employes' cottages have been renovated and repainted. The roofs on a number of buildings have been repaired and painted during the summer. A number of wards have been repainted and some new steel ceilings have been put up. The employes' quarters in the rear of Chapin House have also been repainted. Work on the employees' quarters in the fire department building is now under way. Crushed stone has been placed on some of the roads and considerable grading has been done, particularly on the grounds about the new cold storage building.

Plans for a pavilion to accommodate 36 tubercular women have been approved, and it is hoped that work on this building will begin in the near future. This pavilion is to be located immediately south of Grandview and will be heated from the boiler house at that building. The cooking will also be done in the kitchen at Grandview.

During the six months ending September 1, 94 men and 80 women were admitted. Eighty men and 60 women were discharged as follows:

	Men.	Women.
Recovered	21	IO
Improved	11	9
Unimproved	7	5
Died	41	36
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HALF-YEARLY SUMMARY

-Buffalo State Hospital, Buffalo.-The legislature passed an appropriation at the last session for a pavilion for women patients suffering from tuberculosis. It proposed to build a small building for a few patients only, with ample verandas, etc., containing rooms for incipient and suspected patients as well as for the care of those in whom the disease is advanced

-Middletown State Homeopathic Hospital, Middletown.-The chronic building, which is to accommodate about 500 patients, is nearing completion, and is expected to be occupied about the first of next year.

Plans and specifications for the contagious pavilion are ready for the action of the board of managers.

The following items have been approved by the legislature and governor:

For nurses' home and furniture	\$81,000.00
Furniture and equipment, chronic building	26,750.00
Connecting female nurses' home and cottages with steam	
supply from acute building	3,000.00
Balance required to erect acute building for 100 patients	
and to cost \$100,000.00	60,000.00

On June 14-15, 1907, a meeting of physicians in the down-State hospital district was held at this institution. Besides Dr. Meyer, the director of the Pathological Institute, and his assistants, there were present Dr. Nav and Dr. Dewing, superintendents of the Kings Park and Long Island State hospitals, respectively, and assistant physicians from Poughkeepsie, Manhattan, Kings Park, and Central Islip State hospitals. The meeting was presided over by the superintendent. Dr. Campbell, of the Pathological Institute, presented a paper on Arteriosclerosis and Mental Disorders. Dr. Dunlap gave a resumé of the Pathological Anatomy of General Parabsis, with reports of cases sent to the Institute from this institution. Dr. Lambert, also of the Institute, presented a paper on the Pathological Amtomy of Cerebral Arteriosclerosis. The last two papers were illustrated with the stereopticon. Besides these papers various members of the medcal staff presented cases in which arteriosclerosis played an important part, cases of unclassified depression, Three Cases of Pachymeningitis Interna Hæmorrhagica with extensive Hæmorrhage, and a short paper by Dr. Woodman, first assistant physician, of the Orange County Insant Hospital.

Mr. Newbold Morris, of New York City, has lately been appointed a member of the board of managers, to succeed Mr. Otis H. Cutler, resigned

-Dannemora State Hospital, Dannemora.-The following is extracted from the Baltimore Sun, of Friday, August 23, 1907:

"Plattsburg, N. Y., Aug. 22.—For two hours last night a mob of patients at the State Hospital for the Criminal Insane, in Dannemora, stood off 50 guards while others made a desperate attempt to force an exit from the building. Not until one of the madmen had been shot and killed and the guards reinforced by less violent inmates and villagers was the outbreak suppressed and the patients again locked in their rooms.

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"Two large dormitories were wrecked, windows smashed, iron gratings bent and walls damaged when an effort to wrench the iron bars from their fastenings had been made.

"The dead man was Isaac Dubois, who had been at the hospital only a short time. Convicted of larceny in the second degree, he was subsequently ordered to the State hospital.

"The outbreak was planned with great cunning and carried out with reckless boldness. All had been quiet among the 320 men in the institution, when, at exactly 9 o'clock and without any noticeable signal having been given, almost all of the inmates, who had been lined up for retiring, rushed into two of the big dormitories and slammed the doors in the faces of the surprised guards who rushed after them. The madmen barricaded the doors with beds and other furniture and began a fierce assault on the heavily barred windows, evidently hoping to force all at once and thus obtain easy avenues of escape.

"A number of less violently insane offered their assistance to the keepers and were enlisted. It was impossible to force the doors, and guards were stationed at all the outside windows and ordered to shoot at arms or hands appearing through the windows, but not to kill, save in case of absolute necessity.

"All of the fire hose was then connected and heavy streams of water directed at the windows where the patients could be seen. But the insane rioters put mattresses in the windows and continued to hammer at the stonework in which the bars are fixed, all the while shouting and shrieking.

"Above the tumult, however, could be heard the furious pounding of the iron bedposts wielded by the inmates, who also had a heavy chisel and sledgehammer. Several shots were fired by the guards, but it was impossible to tell whether they were effective until the riot was quelled, when it was discovered that Isaac Dubois had been shot and killed, probably instantly.

"Townspeople and guards from the prison were attracted by the terrific noise and assisted materially, when, at 11 o'clock, the wardens made a series of assaults and finally forced the doors and overpowered the rioters.

"This is the first and only outbreak of any sort since the opening of the hospital in 1900."

NORTH DAKOTA.-State Hospital for Insane, Jamestown.-An act passed by the tenth legislative assembly provides for the payment of \$10.00 per month by the county from which a patient may be committed, to cover the cost of board, care, and treatment. This amount to be raised by levy the same as other county funds. Payments to be made direct to the State treasurer upon certification to the county auditor, by the superintendent, of the number of patients present from each county, the amount to be credited to the maintenance fund.

Improvements contemplated consist of cold storage building having a capacity of 250 tons of ice and a 41/2-inch artesian well which are now under way and a fire-proof ward-building for men on which construction will begin next year.

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The following shows the movement of population for the six months beginning January 1 and ending June 30, 1907:

	Male.	Female.	Total.
Number of patients present Dec. 31, 1906	314	168	482
Number admitted Jan. 1 to June 30, '07, inclusive	71	50	121
Total number treated	385	218	603
Discharged	19	8	27
Paroled	17	18	35
Died	9	6	15
Number present June 30, 1907	340	186	526

OH10.—Columbus State Hospital, Columbus.—During the past year the hospital has been overcrowded, especially with the chronic incurable class, there being at the present time about 1775 patients in the hospital.

A nurses' home is approaching completion and is a very handsome structure, colonial in style, containing about 53 rooms.

A new barn has been completed and is about ready for occupancy. The old barn is being torn down, and as far as possible a part of the material is being used for the erection of a new cottage for the accommodation of chronic incurable cases.

The cottage for the care and treatment of acute curable cases has proved quite a success, and during the latter part of last year and up to the first of September upwards of 2000 treatments of various kinds had been given in the hydrotherapeutic department.

The treatment of acute mania by continuous baths has been inaugurated, but has been in use too short a time to have given positive results, but it is believed that the eliminative and tonic effects of baths and massage prove an important part in the treatment of mental cases.

-Cleveland State Hospital, Cleveland.-A new position has been created at this hospital, that of night medical officer, Dr. W. A. Welch, of Canton. O., being appointed to the position.

The general health of the patients has been uniformly good, and the hospital has been free from contagious diseases. The average daily population has been 704 men and 582 women.

A pathological department has been opened and the laboratory is well equipped to make practical analyses of the secretions, excretions, and fluids that might be of diagnostic value in individual cases. The principal object of the laboratory is the promotion of greater accuracy in the clinical work, and microscopic examinations of the sputa is made of patients showing general debility, loss of weight, etc., etc., and the positive cases of tuberculosis are confined to a department in the hospital set apart for this disease.

Women nurses have been employed for service in the men's wards and the following departments have one or more women nurses doing duty therein; infirmary for bedridden patients, acute psychopathic ward, cottage for convalescents, and cottage for chronic, untidy patients.

The medical work of the hospital has been a special feature for the past

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six months and the staff have been busily engaged in perfecting the records of the hospital. All patients admitted to the hospital are given a careful physical and mental examination, and the same is dictated to a stenographer and the entire history is typewritten and filed. The Yawman and Erbe filing system with the card index has been installed.

The hydriatic apparatus has received an overhauling and with additional changes in the douche room is capable of treating daily a large number of patients.

The following scale of wages for men and women attendants went into effect the first of May, 1907:

Men Attendants.

\$30.00 for first three months' service. 32.00 for second three months' service.

34.00 for last six months of first year.

35.00 for first six months of second year.

36.00 for last six months of second year.

After graduation \$1.00 increase, making the salary of a graduate male nurse, \$37.00.

Charge of front ward, \$38.00, and charge of back ward, \$40.00.

Women Attendants.

\$20.00 for the first three months' service.

22.00 for second three months' service.

24.00 for last six months of first year.

25.00 for first six months of second year.

26.00 for last six months of second year.

After graduation \$1.00 increase, making the salary of a graduate female nurse \$27.00.

Charge of front ward, \$28.00, and charge of back ward, \$30.00.

Women nursing in the men's wards receive the same compensation as the men.

An industrial building has been erected at a cost of \$10,000. The machine shop will occupy the basement of this building and the carpenter shop the first floor. The second floor is to be divided into 16 rooms for quarters for outside employes.

A two-story porch has been erected on the south side of the receiving wards for the men's department. This porch will add greatly to the day room capacity of these two wards. It is enclosed in glass and can be utilized as well in winter as in summer.

Eight boilers in the power house have been reset. All the old piping was torn out and replaced with new. The exterior walls and interior fire walls were torn down and replaced with new material.

Two new water pumps have been installed. The larger one in the power house supplies the institution with water and the smaller one in the machine shop supplies the laundry. -Massillon State Hospital, Massillon.-At the present time there are 1469 patients in the institution, as compared with 1433 one year ago.

No new buildings have been erected during the year. To guard against a water famine a class H, Ingersoll-Rand air compressor was installed for the purpose of lifting water from the artesian wells. Two additional artesian wells, and a reservoir with a capacity of 650,000 gallons are now in the course of construction. These will adequately provide the water supply.

The pathological department has been somewhat enlarged by the addition of a new autopsy room, fitted with more modern equipment, also a room suitable for museum purposes, intended for the display of interesting specimens derived at autopsies. Investigation of the bacteriological side of paresis still occupies attention. The success attained with the use of vaccine in the treatment of a few cases of this disease, has been very encouraging, accounts of which have already been published. A number of sheep and goats are now in course of immunization, and it is hoped to obtain anti-serum for use in the further treatment of this, as yet, incurable malady.

A continuous bath, although in experimental stage in this institution. has proved such an addition to therapeutic armamentarium, that it is boped to provide the institution with an adequate number in the near future.

The institution is now provided with a complete ophthalmic equipment, to give proper attention to the eyes of the patients, a factor in the treatment the importance of which cannot be overestimated.

Owing to the growth and demands of the institution it was found necessary to reorganize the fire department.

PENNSYLVANIA.—Pennsylvania Hospital for the Insane, Philadelphia.— On the afternoon of August 9, fire was discovered in the laundry of the department for men, situated about 75 feet from the wing of the main building. The fire gained rapidly and it was soon found that efforts to save the laundry were unavailing so that it was allowed to burn while attention was given to saving the main building. For half an hour the institution was in danger of destruction, but the work of the fire department, assisted by the hospital corps, was finally successful in extinguishing all of the small fires which caught. The loss consisted of about 20,000 pieces of clothing and the laundry machinery besides the building, and was estimated at \$50,000 fully covered by insurance. The dynamos and boilers were protected by brick vaults and so escaped damage. There was considerable excitement among the patients, but they were eventually controlled.

-Philadelphia Hospital, Insane Department, Philadelphia.-During the month of April of this year, the city purchased a tract of 875 acres of farm land in the northern section of the city, as a site for a new hospital for the insane and indigent. During the summer months, one of the farmhouses purchased with this tract has been occupied by about 45 patients, in addition to attendants and physicians. All of this land is under cultivation, and can be made very productive.

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During April renovations were completed in the old male indigent wards, to care for about 350 male insane patients. Renovations included a complete hydrotherapeutic department, special examining rooms, and wards for acute patients.

-State Hospital for the Insane, Norristown.-On the night of April 8 fire broke out in a building occupied principally by dormitories for men, at a time when 230 patients were in bed. The fire lasted several hours and practically destroyed the building. The patients became somewhat scattered over surrounding territory, but all but two, criminal insane, were captured by the next day. It was thought that any loss of life was prevented by the three fire escapes which were enclosed in fireproof towers. The cause was not ascertained. The Philadelphia Hospital received 100 patients, and the remainder were transferred to other institutions.

-Pennsylvania Epileptic Hospital and Colony Farms, Oakbourne.-There have been no changes at this institution excepting that there is under construction a cottage for children to accommodate 24 patients. The building is colonial in design and patients are to occupy the first floor, while the second provides ample accommodation for teachers and nurses, infirmary and isolation ward.

VIRGINIA.—Southwestern State Hospital, Marion.—Six-foot granolithic walks have replaced the brick walks on the front grounds.

Two additional general dining rooms have been arranged in the basement to accommodate two wards of each department.

The pharmacy has been removed to a newly arranged room in basement, and the room formerly so used has been changed into a waiting room and private consultation room in connection with offices of assistant physicians.

A new cottage has been built for an assistant physician, and two cottages for employes.

A barber's shop has been constructed and equipped, and a barber regularly employed.

A supervisors' office has been arranged and furnished.

The pay of male attendants has been materially increased to combat the inducements for experienced men to enter other work.

Two additional night attendants have been employed, as well as a woman superintendent of the general dining rooms and kitchen, also a laundry clerk to look after clothing.

The present acreage of farm, garden and grounds being wholly inadequate for growth and needs of population, the special board has been fortunate in purchasing the Preston farm just across the macadam road from the hospital lands, consisting of 300 acres of blue-grass and farming land for \$15,000; possession being given January I, 1907. This will afford ample grazing for cattle, and sufficient land to employ all patients suitable for out-door work, and to produce all the grain, forage, and vegetables necessary for the use of institution. The legislature at the session next January will doubtless appropriate enough money to provide necessary farm buildings and fencing and cottages in which the harmless and demented patients can be cared for so as to relieve the hospital of the crowded condition, now at least one-third greater than is consistent with health and safety.

At the close of the fiscal year, September 30, some 15 days from now, it is safe to estimate from present status the following statistics of population:

Year Ending September 30th, 1907.	Men.	Women.	Total.
Number enrolled at beginning of year	240	267	507
Admitted during year	125	85	210
Total number treated during year	365	352	717
Daily average during year		272.30	527.70
Died during year	16	114	30
Discharged during year	82	58	140
Total remaining September 30, 1907	267	280	547
Number in hospital September 30, 1907	248	260	508
Number at home on furlough Sept. 30, 1907	16	20	36
Number out on elopement Sept. 30, 1907	3	0	3
Number of beds	255	255	510
Vacant beds	I	I	2
Applications on file October 1, 1906	4	3	7
Applications during year	127	87	214
Total applications	131	90	221
Applications cancelled by death, removal			
from State, and bond	6	5	11
Applications on file October 1, 1907	0	0	0

ONTARIO.—The most important event that has taken place in connection with psychiatric affairs in Ontario in many years has been the sending abroad of a commission to examine into institution management in Great Britain and Germany. The enquiry is to be devoted particularly to the organization and equipment of psychiatric clinics, in view of the probable establishment of such a government hospital in connection with Toronto University and the new Provincial Hospital.

The enterprise of the provincial government is commendable, and there is a promise of marked advance being made. The commission consisted of Dr. C. K. Clarke, Toronto; Dr. Edward Ryan Kingston; Hon. Dr. Willoughby, Toronto. The commissioners have not yet returned.

-Toronto Hospital for Insane, Toronto.-With the appearance of the Bulletin of the Toronto Hospital for the Insane in March, 1907, a new era in Canadian psychiatry began. The general practitioner being enlisted in the cause of mental science, renewed interest is shown throughout Ontario, and an earnest endeavor is being made by the editors of the new periodical to bring psychiatry into closer touch with the general medicine, from which, unfortunately, it had for a time become somewhat dissociated.

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NOVA SCOTIA.—Nova Scotia Hospital, Halifax.—A plot of land adjoining the original hospital property and comprising nearly 200 acres has recently been added to the hospital estate. A considerable portion of this is wooded. On the newly acquired property is a fine old homestead, which when remodelled will afford accommodation for about 20 male patients.

Because of the recent development of a number of cases of typhoid fever, a filter on the English slow sand-bed plan is now being constructed, which, it is confidently expected, will put an end to the infection.

A fine new residence for the medical superintendent has just been completed. It is so situated as to command an exceptionally fine view of the beautiful harbor of Halifax.

Book Reviews

Diseases of the Nervous System Resulting from Accident and Injury. By PEARCE BAILEY. (New York and London: D. Appleton & Co., 1906.)

Since the publication of "Accident and Injury in their Relations to the Nervous System" eight years ago, Dr. Bailey decided to enlarge the scope of the work by a consideration of the "organic injuries and the means of differentiating them from their functional familiars," so that the present volume can hardly be regarded as a new edition, but rather as a new work, embodying all that was good of the older one with much additional matter. "Since injuries to the nervous system belong to both surgery and neurology, much pruning is necessary to keep the book which describes them in reasonable compass. The present volume is written from the neurologist's standpoint. Those subjects most fully described in text-books on surgery are dismissed with briefest mention. The late effects of brain injuries, for example, receive more notice than the acute symptoms, and the principles of treatment of purely surgical affections, while indicated, are not construed as to operative details." The above quotation from the preface admirably expresses the scope and plan of the book, and it merely remains to express our opinion as to how well Dr. Bailey has carried out his task.

It is a great pleasure to a reviewer to go over a book which is so admirably put together as this, and it seems to us that viewed from every standpoint that Dr. Bailey could not have done better. The logical arrangement of subjects to be treated, the careful manner in which this is done, the wise conservatism of statement of deductions to be drawn, and the amount of space devoted to each part all appeal to us as being admirable.

The book is divided into three parts, of which the first 59 pages are devoted to a consideration of the case, its examination, etc. Part I, in nine chapters, considers "Organic Effects of Injury to the Nervous System," that is, the brain, spinal cord, and peripheral nerves, and the ninth chapter is a discussion of "Trauma as a Factor in the Causation of Certain Chronic Degenerative Diseases." In this are considered paresis, locomotor ataxia, progressive muscular atrophy, paralysis agitans, multiple sclerosis, tumors of the nervous system, syphilis of the nervous system, and diabetes mellitus, and after a discussion of all the evidence a rather conservative opinion is expressed, which is in accord with what the most careful authorities have stated upon the subject.

Part II deals with "Functional Effects of Injury—The Nervous Disorders Which Most Frequently Follow Railway and Allied Accidents—The Traumatic Neuroses." In this there is considerable emphasis laid upon psychic shock, or fright, as an etiological factor, a much more important one than trauma. The historical summary which forms the first chapter is most interesting.

Part III deals with "Medico-legal Considerations," and the first chapter should be read by every physician who may be summoned as a witness. The chapter on "Malingering" is entertaining, as well as an admirable exposé of the methods of this class of impostors and an epitome of differential diagnosis of its detection.

There is but little to criticise. On page 68 the statement is made that "Voluntary movements are presided over by the motor cells which are situated in the gray matter *around* the fissure of Rolando," and on page 66 the same is illustrated by a diagram after Tillmans. We believe that at present it is acknowledged that the motor cells are limited to the gray matter *anterior* to the fissure of Rolando. On page 86 the addition of 60 and 9 gives a total of 68, which is obviously a proof error. That so little is found to criticise is a strong argument in favor of the excellence of the book. In mechanical details there is nothing to be desired.

W. R. D.

Biographic Clinics (Vols. IV and V); Essays concerning the Influence of Visual Function, Pathologic and Physiologic, upon the Health of Patients, by GEORGE M. GOULD, M. D., editor of American Medicine, author of "An Illustrated Dictionary of Medicine," etc., etc. (Philadelphia: Blakiston's Son & Co., 1907.)

Both of these volumes are well worthy the careful attention of every physician, but especially are they to be commended to neurologists and ophthalmologists. The biographies of five more eminent men are added to the list already given of great sufferers from eye-strain, and each one furnishes interesting reading, an exposition of some of the difficulties under which some of the world's best and most enduring work has been accomplished, and, food for thought regarding the backwardness of the profession in recognizing well-established facts in medical practice. Of far more value to the reader, however, should be the other chapters of these volumes dealing with the great question of the relationship between eye-strain and disease.

Chapter II (Vol. IV) on "The cause, nature, and consequences of eyestrain" and Chapter VIII on "The etiology of astigmatism" are clear, concise, and excellent presentations of the subjects named. There is no work on ophthalmology that so satisfactorily explains these things and every physician, family doctor as well as specialist, should read them, at least. Chapter IX, on "The eye-strain origin of epilepsy" and Chapter XVII (Vol. V) entitled "The ocular origin of migraine," are deserving of equal attention. Many of the chapters in Volume V simply comprise interesting case histories, illustrating the rôle of eye-strain in the production of abnormal function in other organs of the body. These and the two papers referred to above, on epilepsy and migraine, have attracted much attention as they were published from time to time in medical journals, occasioning considerable controversy and some ill-feeling.

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Dr. Gould has been accused of "gross exaggeration" in his statements regarding the possible evil consequences of over-working an inefficient eye. An unprejudiced review of his writings, as far as the writer can make it, does not substantiate the charge. I can produce from my personal case records duplicates for nearly every case he has cited, and I have no doubt most oculists can do the same. That epilepsy is occasionally induced by eye-strain, the latter acting as the exciting factor, in persons having the necessary predisposition to that disease, is beyond question; that apparently grave cases of gastric disease, and more of nervous and mental break-downs, are cured or relieved by the use of glasses to correct errors of refraction, is the common experience of oculists; that many remote reflexes, such as tinnitus aurium, choreic movements, etc., may disappear only after the employment of correcting glasses, is a well-known fact.

•The profession should not grumble if Dr. Gould uses a bludgeon to awaken them to their responsibilities. Easier methods have been tried and failed. He has compelled them to listen, and hopes to make some of them adopt the teachings which have for a quarter of a century fallen upon their deaf ears. Mitchell, Thomson, Risley, Savage, and others have said the same things before, but too small a percentage of their audience have appreciated the importance of their work. Dr. Gould has made some original observations, and to that extent enriched our knowledge of the subject, but his main object and chief result have been to make the profession realize the true value of the normal eye and the great importance of relieving the abnormal eye from strain and the effects thereof.

In his effort to impress the lesson, he has employed strong and virile language, but, surely that is no cause for serious criticism. If a man has a message to convey and delivers it, of what consequence is it to consider the wrapping of the package or the address of the carrier? The profession is concerned only with the truth or falsity of the message; in this instance, the reviewer believes, the message is not only true, but an exceedingly important one. That this matter is not a "fad" and can no longer be treated as such is shown by the quotations given in Chapter I (Vol. IV), from leaders of the profession, not ophthalmologists, like Musser, Solis Cohen, Walton, and others.

This whole series of Biographic Clinics will prove profitable reading to any practicing physician. H. O. R.

Eighth Annual Report of the State Board of Insanity of the Commonwealth of Massachusetts for the Year Ending November 30, 1906. (Boston: Wright & Potter Printing Co., 1907.)

This report is quite up to the standard set by former issues, both in text and general arrangement and in mechanical details.

A number of questions are discussed which are of interest to all caring for the insane, as well as to those having the same charge in Massachusetts. An eight hour law has recently become operative in this State and by "broadest construction" is applied only to those employed outside of the hospital wards. In the opinion of the Board this

is a hardship to the nurses and attendants and it is recommended that steps be taken by the various hospital authorities to reduce the working hours for this class of employees. In a number of cases this has already been done. The wages paid to employees is believed to be too low and to be a cause for the difficulty of obtaining satisfactory nurses and attendants. At the same time it is stated that the living conditions, especially of this class, has been improved in recent years, though much remains to be done. Provision for married employees is advocated on plans similar to those advocated by the Scottish Commission, to which reference has been made in this journal (Vol. LXII, p. 172). With these changes it is believed that positions will be more permanently filled and the average rotation will be decreased. As illustrated by a table on page 37 the average rotation for men on ward service is 3.7; for women 2.5, and 2.6 for the whole service. This same table gives the figures for all the State hospitals and the highest is seen to be the male attendants at Worcester Insane Asylum, which is 6.4, that is, 216 men during 14 months served the places of 34 attendants, or an average term of service of about 67 days, which would seem too brief to acquire skill in caring for insane patients.

For the first time in many years there is no overcrowding of institutions as a whole, the accommodations having kept advance of the increase in number. The total number of insane under supervision is 10,371, an increase over the previous year of 219. The total number of all classes under supervision is 12,388, an increase of 274 over the previous year.

As usual the report is illustrated by a number of statistical tables.

W. R. D.

Éléments du médicine mentale appliqués à l'étude du Droit. Cours professé à la Faculté de Droit en 1905. Par le Docteur Legrain. Preface de M. GARÇON. (Paris: Arthur Rousseau, 1906.)

In 1887 Dr. Dubuisson, physician at the Asile Ste-Anne, introduced the study of mental medicine at the Faculté de Droit in Paris. The present volume is a course of fourteen lectures delivered at the school following the leadership of the founder. Dr. Legrain reviews the elements of mental medicine and discusses the important problems which arise in legal medicine.

The first lesson is a criticism of the various schools of criminal law, and he urges the bringing together of the studies of legal medicine and pathological psychology. The criminal should be studied, his character, hereditary influences and environment should be taken into consideration when judging him.

The constitution of the personality, the factors composing it, is studied, and the author shows how it is composed of sensory perceptions, how these are associated, synthetized and form ideas, how the relative activity of the mental representations is connected with the normal or to the dream state. Then he shows how these sensations can cause conscious or unconscious hallucinations, which are sometimes imperative and cause criminal acts. The personality is constantly changing, and its improvement and complication lead to systematization or generalization, according to the individual. Environment and pathological influences are always capable of further changing it and perverting it. This is well seen in the progressive and systematic evolution of the delusion of persecution.

The subconscious and its general bearing on the personality is well studied, and the content of the subconscious is shown in its relation to the various acts of life.

Alcohol and the crimes produced by it, impulsive, passionate, or automatic, the acute and chronic forms of alcoholism, and the position which alcoholics occupy are thoroughly studied.

Epilepsy and its relation to alcohol and the intoxications, the unconscious automatisms, the vertigo, the amnesia following the attacks, and the mental state of epileptics occupy with absinthism, the eleventh lesson.

The derangements of the personality, conscious automatisms, multiple personality, obsessions and impulses, moral insanity and suggestibility are discussed in their relation to crime. It is shown that intellectual enfeeblements which leave the patient without resistance may be caused by a derangement of the personality, and such patients are easily reached by temptations and suggestions and thus become criminals.

A study of criminals is urged so that the irresponsible may be treated in special institutions and not punished.

The book is one of the best on the subject of mental medicine applied to law and its study would repay every one who is brought into contact with criminals. RICKSHER

Letters on Psychotherapeutics. By H. OPPENHEIM (Berlin). Translated by ALEXANDER BRUCE, M.D. (Edinburgh: Otto Schultze & Co., 1907.)

In publishing this series of letters, Oppenheim has rendered his colleagues a distinct service, which Bruce in his translation has carried to the English-speaking members of the profession. The opening decade of the twentieth century is laying great weight upon the mental element in the treatment of disease, and upon a simplified and rational psychotherapy. Vicious mental habits in his patients are the phychotherapeutist's worst enemies. Every physician knows that the good effect of his visit and conversation with his patient is in many instances of sadly short duration, being more or less neutralized by the habit of introspective worry which has free swing during the long interval between visits, unsupported by the doctor's encouragement and advice. It is simply a question of relative mass. The doctor has personal control for perhaps a half hour or so in a busy day. During the remaining three and twenty, the patient's newly gained ground is fiercely contested by his fears and dreads and morbid fancies, perhaps even by physical discomfort, all of which combine to drag him back to his original level. Often enough the struggle is too unequal, the patient relapses, and at his next visit the doctor is chagrined to find that all his good precepts have gone for little

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or naught. In this almost universal exigency the therapeutic letter may do a good hardly to be overrated. It takes the place of the physician and continues his influence during his absence. The patient may use it as a p. r. n. order, reading and rereading it at his need. It becomes a trusty ally and reinforcement against the onslaughts of doubt and discouragement. It may even prove to be an efficient talisman against the evil genius of his disease. It is needless to say that a therapeutic letter must represent the physician's most careful, conscientious and deliberate judgment, that it should not show evidences of haste, and that it should be in his own handwriting.

The method is of course not new with Oppenheim. Every physician uses it who writes to stimulate and cheer his patient. The service of Oppenheim is that he has made public a series of actual letters which can be recommended as admirable models, and that he has furnished a practical demonstration of the ways and uses of a legitimate correspondence method as a direct aid to the doctor in his personal contact with the afflicted. FAREAR.

Insanity and Allied Neuroses. A Practical and Clinical Manual. By GEORGE H. SAVAGE, M. D., F. R. C. P., with the assistance of EDWIN GOODALL, M. D. (Lond.), B. S., F. R. C. P. New and enlarged edition. (Chicago: W. T. Keener & Co.)

In the preface to this, the fourth edition, Dr. Savage speaks of bringing the Manual up-to-date. With this statement it is probable that the majority of psychiatrists will disagree because it must be regretted, that while the book is a good one in many respects, it hardly represents the modern view of psychiatry and, indeed, may be said to give a picture of psychiatry as it was held to be fifteen or twenty years ago. While the work may be well done as viewed from that standpoint, it can hardly be said to be up-to-date.

The great defect of the book is the stress laid upon isolated symptoms. In speaking of a case of partial primary dementia the author states that "There was a feeling of unworthiness at one time in his case which caused me to look upon it as one of melancholia." Surely there should have been other symptoms present to cause this change of opinion, or else too much stress was laid upon a single symptom.

In many instances the descriptions are inadequate and the student cannot form any conception of the disease. This is notable as to dementia præcox, where the author does not seem to know the chief symptoms of this form. That he is not in sympathy with the isolation of this group does not excuse a poor description of it.

On page eighty we are told that the initial delirium of a fever may pass into mania, for which it may be mistaken, and it is stated that "I have thus had cases of smallpox and scarlet fever; and although I should have been prepared to find that typhoid fever might also have given rise to the same kind of error, yet I have not met with it." From which we might naturally infer that typhoid psychoses do not occur. In many respects the book is fairly good, but it can hardly be conceived that it will become a popular text-book. Mechanically, the general attractiveness of the book is marred by the use of type of uneven face in the text, possibly a worn font having been used to make corrections.

W. R. D.

Psychology. General Introduction. By CHARLES HUBBARD JUDD, Ph.D., Professor of Psychology and Director of the Psychological Laboratory at Yale University. 389 pp. (New York: Charles Scribner's Sons, 1907.)

The present volume is the first of a series of text-books designed to introduce the student to the methods and principles of scientific psychology. The book has been written with a view of developing a "functional view of mental life," an attempt to adopt the genetic method of treatment in its broad sense, an endeavor to give to the psychological conditions of mental life a more conspicuous place than has been given by recent writers of text-books on psychology, and an attempt to make as clear as possible the significance of ideation as a unique and final stage of evolution.

That the work does not take into consideration the works of the modern writers on pathological psychology is shown by the author's definition— "Psychology is the science of consciousness." There have recently appeared many good articles and books on the subconscious, and the subject has been shown to be of such great importance, even in our every-day life, that it merits consideration even in a book devoted to normal psychology.

The chapter on the structure of the nervous system is complete and well written, and leads the student by easy gradations from the simple to the most complex forms.

The psychological part proper is divided into the following groups:

I. Sensation Factors. This includes the description of the organs of sense and conscious processes aroused by the action of external stimuli on these organs.

2. Relations Between Sensations. These are sometimes called forms of perceptual fusion.

3. Attitudes. These correspond to a variety of popular concepts, especially to what has been designated in psychology as feeling, interest, attention.

4. Memory Contributions to Experience. These are of a great variety of types, including memory images of sensations and sensory relations and attitudes.

5. Ideational Relations. These constitute the characteristic forms of human consciousness and include such facts as experiences of languages and forms of scientific thought.

Supplementary Topics. A. Forms of behavior. B. Abnormalities in conscious and nervous organization.

The sections on sensation are very complete, but those referring to the more abstract functions of consciousness, associations especially, leave much to be desired. Since practically all our intellectual life depends on



our power of association, the subject is one of great importance and deserves a careful study.

The author's marginal summary of paragraphs is to be commended, but it is to be regretted that a bibliography is not appended. Possibly the other books of the series will correct this and we await their appearance with great interest. RICKSHER.

Clinical Psychiatry. A text-book for students and physicians. Abstracted and adapted from the seventh German edition of Kraepelin's "Lehrbuch der Psychiatrie." By A. Ross DIEFENDORF. New edition, revised and augmented. (New York: The Macmillan Company. London: Macmillan & Co., Ltd., 1907.)

This is the second edition of Dr. Diefendorf's adaptation of Kraepelin's Lehrbuch, and is based on the seventh German edition. It is considerably larger than the preceding volume, more space being given to important topics. The chapter on "Methods of Examination" is more complete than in the previous edition, but yet leaves much to be desired. A chapter on "Classification of Mental Diseases" is added, in which the various factors which must be considered in making a provisional classification are considered. The descriptions of the more important forms of insanity are given in more detail, and the psychogenic neuroses and psychopathic states, which are now attracting so much attention, are given more space than in the previous edition.

The book is as good as an abstract can be, but is, of course, incomplete. The first volume of Kraepelin's work is too briefly abstracted. This is to be regretted, because, without a good general idea of the functions deranged, the study of insanity has little value. It is to be hoped that in the succeeding editions, the author may see his way clear to amplify his text if he cannot translate Prof. Kraepelin's work *in toto*. The book, however, is the best expression of Kraepelin's ideas in the English language and is a most valuable volume for the medical student and general practitioner. RICKSHER.

The Diagnosis of Diseases of the Nervous System. By CHRISTIAN A. HERTER, M.D. (New York and London: G. P. Putnam's Sons, 1907.)

In this manual Dr. Herter first gives a brief review of the anatomy of the nervous system in which the balance between what is necessary and what is not is well preserved. Following this isolated symptoms are described, and then is discussed positions of lesions or localization.

The Diagnosis of the Nature of the Lesion is discussed in Chapter IV, under such sub-heads as hyperemia, anemia, etc. Chapter V takes up the Diagnosis of Clinical Types, meningitis, bulbar paralysis, hydrocephalus, etc. Chapter VI is entitled the Distinction of Functional and Organic Disease, and considers hysteria, neurasthenia, epilepsy, etc. Chapter VI concerns itself with the Examination of the Patient, while Chapter VIII contains a number of case histories in which the diagnosis is fully dis-

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cussed and which are supposed to illustrate what has already been said in the foregoing part of the work.

While the arrangement of the work is somewhat unusual, it is not bad, and the book may be said to be a satisfactory one. It is especially to be commended to the student, as the whole subject is put in a rational and orderly manner.

Mechanically the book is attractive and the numerous illustrations in the first chapter serve to make its perusal much easier than is often the case where anatomical descriptions are not well illustrated.

W. R. D.

Elements of Human Physiology. By ERNEST H. STARLING, M. D., Lond., F. R. C. P., F. R. S. Eighth edition. (Chicago: W. T. Keener & Co., 1907.)

A book which has passed into its eighth edition has already received the approval of the reading public, and it would seem useless for the reviewer to express his opinion. No matter what he might say against its merits, the eight editions would stand in formidable argument against him, and he would probably be accused of being spiteful or dyspeptic. In the present instance, therefore, it is fortunate for the reviewer that he has only words of praise for the work.

In this well-printed, attractively bound volume of 714 pages, Dr. Starling has given all of the essentials of physiology with a niceness as to detail which renders the understanding of his text easy and yet does not weary by prolixity. The illustrations and diagrams which are freely used to aid the text are well selected. Certain parts might be criticised in not being quite up to our present knowledge, as, for example, the chapter on general sensation which makes no note of the recent work of Head, but in a book which is intended for students especially, it would not be wise to take cognizance of work which to a considerable degree changes our conceptions derived from past experiences, and of which it may yet be said there is some question as to its general acceptance.

On the whole, the book takes first rank as a text-book for students of medicine. W. R. D.

Patologia Speciale delle Malattie Mentali. Del LUIGI MONGERI. (Milano: Ulrico Hœpli, 1907.)

Several other manuals of this series have previously been reviewed in this JOURNAL, and the above volume is quite up to the standard. It contains 264 pages, and has 26 illustrations, the majority of which show the facial expression seen in various psychoses, all being excellent.

The classification used is that official in Italy, which was adopted by the eleventh congress of the *Societa Freniatrica Italiana* and is a satisfactory one. In this the psychoses are divided into the following groups: Congenital, simple acute, chronic primary and consecutive, paralytic, of the neuroses, toxic, and infective. Under each of the above sections is treated the forms properly belonging to it; for example, under the con-

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genital psychoses are placed phrenasthia (idiocy, cretinism, and imbecility), moral insanity, and sexual psychopathies. Each form is elucidated by a brief but satisfactory description of its mental and physical symptoms, course, prognosis, differential diagnosis, etiology, treatment, and medicolegal status, and is followed by a bibliography.

The book is a good one and is to be commended to those seeking a brief treatise upon insanity in Italian. W. R. D.

Psychology Applied to Medicine. By DAVID W. WELLS, M. D. (Philadelphia: F. A. Davis Co., 1907.)

This brief treatise of 141 pages presents in a somewhat popular manner many of the important points of contact between medicine and psychology. The author occupies considerable space with the history, theory, and practice of hypnotism and psychotherapeutics, closing with accounts of the methods of several current authorities. The book is very readable and contains numerous interesting and pertinent anecdotal illustrations and quotations.

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Abstracts and Extracts.

Further Bacteriological and Experimental Investigations into the Pathology of General Paralysis and Tabes Dorsalis. By W. FORD ROBERTSON and DOUGLAS MCRAE. Journal of Mental Science, Vol. LIII, p. 590, July, 1907.

A brief summary of previous reports of the work done by the authors on this subject is given and mention is made of the work of O'Brien and Langdon. O'Brien claims to have isolated an organism resembling the Klebs-Loeffler bacillus in 95 per cent of cases of general paralysis.

The present work concerns the broth reactions and virulence of a series of diphtheroid bacilli obtained from various sources, the experimental production of general paralysis in rats, the experimental and clinical study of intracorpuscular bacteriolytic indices in relation to certain species of these diphtheroid bacilli, and also some special phenomena that bear upon the views maintained.

The reactions of the various members of the diphtheroid group to various litmus broth tests and to Neisser's method are given and are followed by a table giving the reactions of bacilli isolated from various cases of general paralysis and tabes dorsalis. The latter, as a rule, give a positive reaction to glucose, 15 out of 19 cases. Ten cases give a positive reaction to saccharose and two give a positive to lactose. All the strains give a positive reaction with Neisser's method, but in three cases the metachromatic granules were minute and occurred in only a comparatively small number of the bacilli.

The report of the experimental production of general paralysis in rats previously published is referred to and mention is made of further examinations which show that the lesions presented by the subjects resemble those found in certain cases of general paralysis, even more closely than was hitherto claimed.

Last autumn another series of similar experiments with rats was begun. Sixty animals have been fed with cultures of various strains of diphtheroid bacilli derived from cases of general paralysis or of tabes dorsalis. The first experiment consisted in the feeding of twelve animals with cultures of a diphtheroid bacillus isolated from the cerebro-spinal fluid of a case of general paralysis *post mortem*. As yet only three animals have died, none of which exhibited very evident paretic symptoms and all were found to have advanced pulmonary tuberculosis. In the second experiment twelve rats were fed with a bacillus isolated from the urine of a case of taboparalysis. One animal died after about seven weeks, and microscopical examination showed acute degeneration of most of the nerve cells of the spinal cord. The lesions in the cells of the brain were much less severe. One other rat died twenty-two, and one twenty-four weeks after inocula1907]

tion. The remaining nine rats became thin, enfeebled, lethargic, impaired in their power of coordination and stupid looking. Five died and the other four are feeble, irresponsive and demented looking. All the rats which have died showed similar changes affecting the nervous system, differing only in degree in the individual cases. In rats in three other experiments the morbid phenomena are much less distinct, but paretic symptoms are now developing in some of the animals in two of the cages.

On the grounds of these observations the authors maintain that there are at least two different species of diphtheroid bacilli that are capable of producing general paralysis and tabes dorsalis. One organism resembles the Klebs-Loeffler bacillus, but is distinguished from it in frequently being virulent to mice and rats, and in having a thread form which is assumed when it invades the partially immunized animal, and under analagous conditions *in vitro*. This organism is called by the authors Bacillus paralyticans. The other species has a similar relationship to the Xerosis bacillus, but differs in showing prominent metachromatic granules, in producing acid quickly and abundantly in glucose and saccharose broths, and in frequently being virulent to mice and rats. This organism has little or no tendency to form threads, is thinner and shorter than the other, and on this account is called B. paralyticans brevis, while the former is called B. paralyticans longus.

The previously published report of a method of estimating the bacteriolytic power of the polymorphonuclear leucocytes in relation to the Bacillus paralyticans is referred to, and the authors give a table showing the results of the immunization of four sheep and contend that their former conclusions are justified, but admit that in the human subject the matter is complicated by the circumstance that more than one species of diphtheroid bacillus is capable of causing the disease.

Mention is made of experiments upon two sheep which had been previously immunized and which, the authors claim, prove that the bacilli are rapidly destroyed in the blood by the leucocytes.

A case of tabes was treated by injecting definite doses of killed cultures of the bacillus isolated from the urine and by injecting and feeding the patient serum from a sheep immunized with the same bacillus. The case showed improvement, but the pains returned if four or five days were allowed to elapse without a dose of the serum. The urine is now sterile. The patient had been taking helmitol for about six months. Another case treated with helmitol still shows the bacillus in the urine.

The authors claim that the infective foci in tabes are the whole of the genito-urinary tract and the lower part of the alimentary canal, and in general paralysis the buccal and pharangeal mucosæ. The clinical phenomena of amimia, affecting mainly the lower part of the face, dysarthria, and facial tremors are essentially dependent upon the local invasion of bacilli and the consequent formation of toxines which are in large part carried to the cranial cavity by way of the cranial nerves.

In the discussion following Dr. Eyre spoke of the great frequency of contamination of clinical material by diphtheroid organisms and of a case of tubercular meningitis in which the only organism which could be found in the cerebro-spinal fluid drawn off during life was one almost identical with the Klebs-Loeffler bacillus, but was non-virulent and had certain other cultural peculiarities which led him to call it, provisionally, the Xerosis bacillus. The speaker did not think the fermentation tests were convincing and called attention to the fact that only 70 to 80 per cent of the diphtheria bacilli gave Neisser's reaction.

Dr. George Dean thought that the position in regard to the question under discussion was one of caution, both in regard to criticism and in reference to the acceptance of Dr. Ford Robertson's views. Considering the frequency with which the diphtheroid organisms were met in nature one must exercise great caution in accepting any diphtheroid as having a causal relation to general paralysis unless it had very well-marked characteristics, including pathogenic action on experimental animals.

Dr. David Ferrier said that he had not found that the diphtheroid organisms were more common in general paralysis than in other forms of insanity, or even in ordinary people.

Dr. C. E. Beevor remarked that if the bacillus was the cause of the disease it ought always to be found in cases of general paralysis and tabes, and yet it had not so been found, and if the authors' views were correct, it should not be found in healthy people, and yet it is. As far as he could gather the symptoms caused by injecting the organisms were not those of general paralysis nor were the pathological changes resulting the same as those in that disease and therefore he did not think they could say that they were on the high road towards a means to combating the disease.

Dr. Candler referred to some investigations which he had been making at Claybury and stated that he had not been able to isolate the diphtheroid organism in any large proportion of the cases which he had examined for it.

Dr. George Robertson said that he was pleased to be able to say he could confirm Dr. Ford Robertson's original theory that general paralysis was associated with a diphtheroid organism, but that he did not believe that the organism was the cause of general paralysis. At the Stirling District Asylum the organism had been found in eight of thirteen cases of general paralysis. A careful comparison of this organism with a culture which had been sent by Dr. Ford Robertson, and which, in his opinion, was B. paralyticans, showed that it differed in many respects from the organism found at Stirling. At Stirling they had not yet obtained in any case Dr. Ford Robertson's organism, but possibly they might come across it later.

Dr. Ford Robertson, in replying to the discussion, took up Dr. Eyre's experimental work, and said that, although the latter had stated that the broth reactions were not constant in the experiences of others, the reactions were remarkable for their constancy. Dr. Eyre had said that their method of estimating the intracorpuscular bacteriolytic index was open to grave fallacy, but Dr. Eyre had not worked with their method and was, therefore, not in a position to say that it was fallacious. He would like to read the account of the method, but it had been published in detail, and he thought it would conduce more to good feeling in these discussions if Dr. Eyre read their papers before criticising them. Dr. Beevor had asked about the pupils of the rats. It was very difficult to examine the pupils of rats. If

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they had brought the rats with them and had shown them at the meeting, he did not think anyone would have any doubt about their being general paralytic rats. The histological changes were such that both Dr. McRae and he were convinced that the lesions were those of early general paralysis. The rats died too soon for the complete picture of the disease to be developed. Accompanying periarteritis there were in some of the animals plasma cells, just as in general paralysis. Dr. Candler's investigations were very interesting. With regard to finding the bacilli in other patients than those suffering from general paralysis, it must be remembered not only that diphtheroid organisms were very common on mucous surfaces, but that those other patients were contacts. He had read the paper by Stanziale, who found diphtheroid bacilli in the urinary tract in control cases and in skin cases in his skin clinique at Naples; but that observation did not disprove any of their contentions. RICKSHER.

Les remissions dans la démence précoce. Par MLLE. PASCAL. Revue de Psychiatrie, Tome XI, pp. 99 and 147, Mars and Avril, 1907.

In beginning the author calls attention to the similarity historically between paresis and dementia præcox, and how the question of their prognoses has excited the same debates, the same objections, and the same criticisms. The question of cure and remission in paresis is briefly discussed, and it is stated that "we may admit that cases of paresis may recover or at least the improvement may be such that the patient returns to work and his former method of life," and as for incomplete and temporary remissions their occurrence is indisputable.

The question of remissions in dementia præcox is then taken up, and the three forms, catatonic, hebephrenic, and paranoid, are considered, numerous citations being made from the literature. Quotation is made from Aschaffenburg who found 46 cases of dementia præcox out of 118 of puerperal insanity, and gave this form the name of dementia præcox puerperal.

Careful abstracts of seven cases observed by the writer in the service of Dr. Serieux at Ville-Evrard are then given and the statement is made that as a result of the examination of the opinions of various writers and from the author's personal observation it is believed that there is no cure of dementia præcox in a strict scientific sense. All pretended cures are accompanied by symptoms of dementia which are more or less marked and are always followed by relapses. Remissions in dementia præcox are of many kinds. The first group showing a disappearance of delirious states and hallucinations, but a persistence of symptoms of dementia. These are false remissions. A second group shows the arrest, weakening and disappearance of symptoms of dementia. These last may be said to belong to two classes: the essential (apathy, aboulia, intellectual defect), and secondary (tics, stereotypies, verbigeration, impulsivity of manner, etc.). It is nearly always the secondary symptoms which disappear or are weakened. As for the essential symptoms they persist in more or less marked degree. "It is always in the affective sphere," says Kraepelin, "that one can find traces of dementia præcox."

In the second part the statement is made that for many reasons it is im-

possible to compare the remissions observed in dementia præcox with those observed in other dementias, chiefly on account of the lesion of the affective sphere being more profound in the precocious dement than in the senile or paretic. The consequent disturbance of memory, of the recording faculty, so that he cannot store up new impressions and lives in the past, is in direct contrast with the senile dement, and there is no accompanying emotion.

"The phenomena of dissolution of the personality in the paretic and senile dement begin by profound disturbance of memory and the elements of the affective sphere are not disturbed until a more advanced period, but in dementia præcox the dissolution begins by an affective paralysis and does not end except slowly and especially in the severe forms in a total amnesia."

Two phases may be distinguished in typical dementia præcox. In the first corresponding there are affective regressive phenomena in which are concerned the disturbances of intellect and will. It is in this phase that the true and long remissions occur in which the patient can return to ordinary life.

In the second, amnesic, phase the memory becomes defective, but many patients do not reach this stage.

Certain long remissions are explained by the fact that they are favored by the relative integrity of the body economy and an absence of vascular lesions.

Remissions usually occur spontaneously, but may follow fever, suppuration, etc. They occur more frequently in the catatonic form than in the hebephrenic, and more frequently in the latter than in the paranoid.

The *formes frustes* are discussed at some length and the most important symptoms are said to be the loss of power of adaptation and the lesion in the affective sphere. These forms are most important on account of their medico-legal importance and include acquired moral insanity.

The periodic evolution of certain cases is spoken of as the circular variety and the diagnosis of circular insanity is discussed. Incidentally, the relation between dementia præcox and menstruation, pregnancy, etc., is brought out. W. R. D.

A Case of Narcolepsy. By SIR WILLIAM GOWERS. Review of Neurology and Psychiatry, Vol. V, p. 615, August, 1907.

The term "narcolepsy" was introduced by Gelineau in 1880 to describe a peculiar condition characterized by the presence of attacks of sleepcoming on suddenly and lasting for from one to five minutes. There were at times as many as 200 attacks in 24 hours. Otherwise the patient was normal. No treatment modified the condition. In the case described by the author, the patient was a girl of 22. Family history negative. The peculiar attacks of sleep had troubled her from the time she was 16-no cause could be ascertained. Attacks usually occurred on two or three successive days, and then would follow a free interval of a month or two. They lasted from 5 to 15 minutes. The attack began with yawning and a feeling of heaviness of the eyes. The patient would then quickly go to sleep and dream vividly. The content of the dreams was varying in character and could only be poorly recalled. It was possible to waken the patient out of the sleep, but it required considerable effort, and she would usually go off to sleep again. If the patient made no attempt to ward off the attack it was usually of short duration, on the other hand if an attempt was made the attack which followed was of longer duration. Patient slept and ate well and her general health was good. No headaches followed the attacks. Citrate of caffein relieved the attacks for several months; with the removal of treatment, however, the attacks recurred.

The condition of "narcolepsy" must be distinguished from attacks of minor epilepsy and from attacks of somewhat similar nature occurring as manifestations of hysteria. The author believes that we should exercise caution in the use of the term and apply it only to cases whose symptompicture coincides with the case originally described by Gelineau. The pathology of the condition has yet to be described. FITZGERALD.

The Differential Diagnosis of Imbecility and Dementia Pracox. By A. R. DIEFENDORF. New York Medical Journal, Vol. LXXXVI, pp. 336-338, August 24, 1907.

In this paper read before the Medical Society of the County of New York, in May, Diefendorf discusses not only the differential diagnosis of imbecility and dementia præcox, but also certain other psychoses. He defines imbecility as "an arrested mental development, congenital or acquired," and cases are quoted in which the picture presented by a case of dementia præcox in the last stage might possibly have been thought to be one of imbecility. In these cases the author states that the retention of school knowledge which we often find in the precocious dement is nearly always lacking in the imbecile because they have never acquired it; further, that the mannerisms so characteristic in the one are absent in the other.

Diefendorf states that from 5 to 7 per cent of his cases of dementia præcox develop on an imbecile basis, naturally the differential diagnosis is extremely difficult here, but the progressive mental deterioration and especially the affect dementia serve to distinguish the two conditions, the exacerbation in imbecility which is transient and often leaves the patient in much the same mental state as previously, is also of value in differentiation.

The author lays particular stress on the very marked change in the emotional sphere, which is practically pathognomonic of dementia præcox. The author then discusses the question of distinguishing between certain of the constitutional psychopathic states, psychopathic personalities and dementia præcox. At first he refers to those cases of constitutional depression and constitutional excitement. The chief characteristics of the cases of depression are an early disturbance of volition as a result of continued application. They are also mildly hypochondriacal, and with it all there is a constant feeling of sadness. The absence of any deterioration serves to distinguish these cases from dementia præcox.

The cases of constitutional excitement whose condition is characterized by lack of stability and constant activity; the writer refers to them as

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"those individuals who are constantly devising various schemes and taking up new ventures, which are never carried out, but are soon laid aside for other ones." The pervading emotional tone is usually one of exaltation, but occasionally alternates with irritability. Again the absence of progressive deterioration is the key to the situation and the patient's psychopathic constitution becomes identified with him, and, as he is usually able to get along, his eccentricities are thought nothing of.

The third group of cases are those in whom there is lacking, chiefly, will-power, they are frequently bright and talented, but are deficient in judgment, and, as a rule, are quite unable to concentrate for any length of time. They also show emotional instability; they may complain of various somatic disorders such as: headaches, feeling of weakness, etc. Owing to the disturbance of volition they are frequently led astray and may become criminals. The fact that these patients do not become demented as time goes on enables one to diagnose them from dementia præcox, and these cases never at any time show mannerisms which further aids the physician in giving an opinion as to the final outcome. FITZGERALD.

The Signs of Pre-Dementia Pracox: Their Significance and Pedagogic Prophylaxis. By SMITH ELY JELLIFFE. American Journal of the Medical Sciences, Vol. CXXXIV, p. 157, August, 1907.

The writer discusses in a general way a class of individuals in whom certain deteriorating processes are at work which result in a fairly definite symptom-complex (dementia præcox) and urges the attempt to recognize this potentiality early so that by the application of proper medico-pedagogic direction these cases of pre-dementia præcox may be benefited, and even in favorable instances rescued to a useful existence.

The etiology of dementia præcox receives due consideration. In regard to the question of heredity the writer believes that we are prone to place too much importance on a history of spinal disease, apoplexy, etc., and not enough on abnormality in ancestral personality.

Jelliffe points out that puberty, with its sudden expansion of personality and individuality and with the coincident developmental fluctuations in the physical, intellectual, and emotional states, is the most important epoch in life and, as yet, the most neglected. It is at this period that abnormal tendencies should be detected—their persistence or exaggerated development prevented. The means to this end is not punishment an.' severity, but rather more of sensible sympathy and firm, educating persuasion—qualities hard to find in a too often ignorant parent who has in many instances indeed transmitted the pathologic tendency to the offspring. The "simple life" in the widest acceptation of the term is to be recommended; the life of these individuals must be carefully regulated—their energies not to exceed the limits of their restricted capital.

The paper is well worth careful reading. Especially is it important for the general practitioner, because to him falls the observation of these cases in their very early stages, before a frank display of symptoms shows that the deterioration has progressed to such an extent that prophylaxis has become a question of the past. BARNES.

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ABSTRACTS AND EXTRACTS

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Hysteria: Nature of the Malady. Diagnostic significance of its motor, sensory, and psychic manifestations—its medico-legal relation. By ALFRED GORDON. New York Medical Journal, Vol. LXXXVI, p. 250, August 10, 1907.

This article opens with a brief historical resumé giving the early views and showing the influence of the Charcot school on the opinions held up to the time when the work done at Salpêtère did so much to crystallize knowledge in regard to the nature of the condition.

Charcot's view is given; namely, that hysteria is essentially a psychic malady presenting certain constant and characteristic physical and psychic stigmata. The author then adds, "One fact is definitely accepted; viz., that hysteria is in reality a psychic affection, which in view of a special irritability of the nervous centers reproduces to an exaggerated degree various activities, whether in motor, sensory, or psychic spheres."

The marked susceptibility of the hysteric to all impressions is the key to the variability in the phenomena displayed, and this very susceptibility suggests another factor of almost equal import, namely predisposition. Various conditions in the parents that predispose to the development of hysteria in the offspring are enumerated and the writer believes that the transmission from the mother is apparently the most frequent. Believing, then, that primarily the basis of the affection is a "state of degeneracy" any of the usual exciting causes of emotional disturbance may be sufficient to precipitate the condition.

The symptoms are next enumerated beginning with the sensory—the characteristic anæsthesia is dwelt on; hyperæsthesia and the changes in the special senses also spoken of. Headaches simulating those of lues are not uncommon. The author then cites a case in which cerebral hemorrhage as the result of a fall, was thought of, and operation suggested, but a careful examination revealed the presence of many stigmata. The differential diagnosis of hysteria from meningitis by the absence of fever; from tabetic crisis by absence of usual neurological signs of tabes; and from gastric ulcer where the hysteric complains of constant epigastric pain are to be kept in mind.

The motor symptoms are gone over, and, in passing it is noted that the characteristics of organic disease, such as change in electrical reaction, etc., are never found. The condition of astasia abasia is often found in hysteria, where there is a functional weakness in gait and station; the patient can neither walk nor stand, but when seated he can perform every movement with his limbs. Other symptoms such as aphonia, dysphagia (the intermittent spasm of pharynx and œsophagus), anuria, retention, etc., are mentioned briefly. In the realm of mental phenomena; suggestibility is an element of extreme importance and suggestion on the part of the operator causes ideas to develop automatically in the subject; autosuggestion may also occur, and fallacious sense perceptions may also be present. The remarkable hysterical amnesias receive notice and the paroxysms are next considered, the psychic aura, such as emotional depression or irritability or even auditory or visual fallacious sense perceptions or

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"globus," may precede the onset of the convulsion which, usually, is easily distinguished from a true epileptic attack. Somnambulism is considered by the author as essentially a hysterical symptom and occurs usually in children.

The importance of recognizing hysteria where there may be some medicolegal complications is to be remembered, and usually objective symptoms only are acceptable to the court. FITZGERALD.

The Opsonic Index to Various Organisms in the Sane and Insanc, with Results Produced by Injecting Tuberculin. By C. J. SHAW. The Lancet, Vol. CLXXII, p. 1287, May 11, 1907.

The Liability of the Insane to Tubercular Infection as Demonstrated by an Examination of the Tuberculo-Opsonic Index. By C. J. SHAW. Journal of Mental Science, Vol. LIII, p. 522, July, 1907.

In these two articles Shaw draws the following conclusions from his determinations of the opsonic indices of six normal and thirty insane individuals, all of whom were presumably free from tubercular infection.

I. As the insane are particularly liable to tuberculous infection a comparison of the average indices recorded in the sane and insane and also in the various classes of insane patients would indicate that the opsonic power of the blood serum can be used as a measure of the liability to infection and that a low opsonic index precedes infection.

2. The injection of a small dose of tuberculin T. R. in healthy persons produces no negative phase to the tubercle bacillus and, therefore, may be used as a method of diagnosis. A smaller dose of tuberculin will, however, produce a negative phase in a predisposed person than in one less liable to tuberculous infection.

3. In determining the value of a negative phase after injection, the daily variation in opsonic power as well as its level at the time of injection must be estimated. For this reason a number of consecutive observations are necessary, a single, or a number of isolated observations is not sufficient. (All figures given are averages based on observations taken at the same hour on five consecutive days.)

4. The tuberculo-opsonic index of insane individuals is lower than that of normal persons (.88 and 1.07, respectively), and that of both classes varies from day to day, the variations in the insane are, however, greater than in the sane.

5. Patients resident in an asylum for a period of one year or more have higher indices than those resident less than this period (.92 and .82, respectively), and thus the duration of residence does not predispose to tubercular infection.

6. The acutely insane (index .87) are more liable than the chronic insane (index .93) to tubercular infection. Further, among the acute cases the adolescents have a lower index than adults (.84 and .89, respectively), and among the adults the cases of melancholia have a lower index than cases of mania (.88 and .91, respectively).

7. In cases of general paralysis the low index of .79 explains the frequent occurrence of tuberculous infection in these patients. 8. 91 per cent (12 patients) of the insane and 50 per cent (four persons) of sane showed a negative phase with 1/500 mgr. T. R.—the reaction being more prolonged in the former than in the latter and among the former even more so in acute than in the chronic cases.

9.22.2 per cent (18 patients) insane and neither of the two control cases showed a negative phase with 1/750 mgr. T. R. In the remaining 77.8 per cent of the insane cases the reaction was slower and more prolonged than in the two control cases.

10. 1/750 mgr. T. R. is a sufficiently small dose in healthy normal individuals, but not in the insane for diagnostic purposes. BARNES.

La Reaction des Anticorps Syphilitiques dans la Paralysie Générale et la Tabes. By A. MARIE and C. LEVADITI. Bull. de la Soc. de Med. Mentale de Belgique, No. 133, p. 153, June, 1907.

The writers, following the work of Wassermann and Plaut, have applied the method of Bordet and Gengou to detect syphilitic antibodies in the cerebro-spinal fluid of cases of general paralysis. Their results in these cases and in certain others which they have observed may be summed up as follows:

(A) Paresis, 39 cases, divided into three groups according to the stage of advancement:

(1) Atypical cases—pseudoparesis; 10 cases of which one gave a positive reaction, i. e., 10 per cent.

(2) Cases more advanced than class (1), but still capable of caring for themselves to some extent; 9 cases of which 7 gave a positive reaction, i. e., 77 per cent.

(3) Very advanced cases; 20 cases of which 19 gave a positive reaction, i. e., 95 per cent.

Of these 39 cases, 20 were syphilitic, and of these 20, 80 per cent gave a positive result.

(B) Tabes, 4 cases of which 2 or 50 per cent gave a positive reaction.

(C) Tabo-paresis, 5 cases of which 4 or 80 per cent gave a positive reaction.

(D) 17 other cases (melancholia, epilepsy, Little's disease, idiotism, hemiplegia, alcoholism, dementia præcox, etc.), of which 2 were syphilitic, gave a negative reaction in every case.

They find no relation between the cellular content of the spinal fluid and the presence or absence of the serum reaction. There is, however, a striking parallelism between the albumin content and the positive serum reaction.

For a positive reaction the writers believe two factors are essential:

(I) The existence of syphilis of a sufficient duration, and

(2) A cortico-meningeal syphilitic or para-syphilitic inflammatory process of sufficiently prolonged duration and intense degree.

A positive reaction seems to be present in a sufficient percentage of the cases to consider the specific substance to be almost constant in the cerebro-spinal fluid of cases of general paralysis. The reaction does not

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appear early enough in the disease to make it of value as a method of early diagnosis.

Marie and Levaditi attribute the formation of the specific substance to the cells that take part in the cortico-meningeal inflammation of G. P. but disagree with Wassermann and Plaut in that they think it due to the leucocytes, especially to the lymphocytes, and not to the action of the nervous elements themselves. BARNES.

The Physical and Mental Effects of Gynecological Operations. By W. P. MANTON, M. D. Detroit Medical Journal, p. 281, August, 1907.

This article is of special psychiatric interest only in that the concluding paragraphs touch on the perennial topic of the relative value of gynecological procedures as therapeutic measures in the treatment of the psychoses.

Within the past few weeks several articles have appeared, in a number of periodicals, upon the results of operation in isolated cases, and from such a wide (?) experience the authors have at once concluded that almost every case of mental disease in women could be cured or at least vastly improved if only some local pelvic condition could be discovered (even though it were trifling in nature and its removal of slight significance) and corrected.

For this reason it seems quite worth while to quote the section of this article in full, because, coming as it does from Manton, it necessarily must carry weight. He says:

" Physically, the patient relieved of the sources of irritation and mental worry, is in a condition to make use of all her possibilities for perfect health, while, mentally, for the same reason she is made better and more comfortable. As regards the effect of operations on the insane, increased experience has not changed the opinion which I have held for years. The insane woman is as much entitled to relief from bodily suffering as is the sane, and in all instances the abatement of physical distress is followed by more or less improvement in the mental state. Instances, however, in which the mental alienation is cured by operation alone are the exception, if they ever occur, the reporters of such happy results usually failing to take cognizance of the other phases of treatment which have preceded operation and are continued during convalescence. I have seen many insane women cured of their psychic disorder and leave the asylum in excellent mental health following operative treatment, but I have yet to see the case where I could honestly say that my own efforts were alone responsible for the results.

The frequency of insanity following surgical operations has been, I believe, greatly exaggerated, but occasionally acute mania, melancholia or other mental disorder is undoubtedly met with. In 5500 surgical cases noted by Simpson, there were only 10 instances in which the mental derangement could be traced to operation. Homans saw two cases in one thousand abdominal operations, and my own study of the subject at the Eastern Michigan Asylum also showed but two instances of post-operative insanity in about two thousand patients who have been committed to that institution up to the time of my investigations in 1897." FITZGERALD.

Appointments, Resignations, Etc.

- ANDERSON, DR. W. H., Superintendent of Eastern Washington State Hospital at Medical Lake, Wash., resigned February, 1907.
- ANTHONY, DR. C. C., Assistant Physician at Illinois Hospital for Incurable Insane at Bartonville, resigned.

AVERY, DR. HARRY B., appointed Medical Interne at Manhattan State Hospital at Ward's Island, New York, April 1, 1907.

BAILY, DR. ALEXANDER, appointed Superintendent of Kentucky Institution for Education and Training of Feeble-Minded Children at Frankfort.

BALDWIN, DR. LOUIS B., appointed Superintendent of the State Hospital for the Insane of North Dakota at Jamestown.

BARNES, DR. FRANK M., JR., appointed Clinical Assistant at Sheppard and Enoch Pratt Hospital at Towson, Md., July 1, 1907.

BARRETT, DR. ALBERT M., Associate Professor of Psychiatry and Director of the Psychopathic Wards of University Hospital at Ann Arbor, Mich., promoted to be Professor of Psychiatry and Neurology.

BEESE, DR. A. H., Assistant Physician at Illinois Hospital for Incurable Insane at Bartonville, resigned to enter private practice.

BELLEG, DR. CHRISTOPHER C., Third Assistant Physician at New Jersey State Hospital at Morris Plains, resigned July 1, 1907, to enter private practice.

BELL, DR. CLARENCE R., appointed Interne at Government Hospital for the Insane at Washington, D. C.

BLAISDELL, DR. RUSSELL E., appointed to Staff position at Hudson River State Hospital at Poughkeepsie, N. Y.

BOWERS, DR. WALTER G., appointed Assistant Physician at Insane Department of Philadelphia Hospital at Philadelphia, Pa., March 30, 1907.

BRICKER, DR. HOWARD E., appointed Clinical Assistant at Insane Department of Philadelphia Hospital at Philadelphia, Pa., August 15, 1907.

BROWN, DR. GORDON T., a graduate of McGill University and interne for one year at Lawrence General Hospital, appointed to a Staff position at Danvers Insane Hospital at Hathorne, Mass.

- BUCKLEY, DR. ALBERT C., appointed Assistant Physician at Friends' Asylum for the Insane at Frankford, Pa.
- CALHOUM, DR. JOHN C., late House Physician at Erie County Hospital, Buffalo, N. Y., appointed Medical Interne at Buffalo State Hospital at Buffalo, N. Y., June 7, 1907.

CALLAWAY, DR. L. H., Superintendent of State Hospital No. 3 at Nevada, Mo., resigned April 1, 1907.

CARD, DR. D. PARKER, Junior Physician at Manhattan State Hospital at Ward's Island, New York, resigned April 22, 1907, to accept a position in U. S. Army.

CHAPIN, DR. CHARLES W., Junior Physician at Manhattan State Hospital at Ward's Island, New York, resigned August 11, 1907, to accept position in U. S. Marine Service.

CRETWYND, DR. J. W., appointed Interne at Massilon State Hospital at Massilon, Ohio.

CLARE, DR. HARVEY, Second Assistant Physician at Hospital for the Insane at Toronto, Ont., resigned September 1, 1907, to become Assistant Superintendent at the Public Hospital for Insane at New Westminster, B. C.

CLARE, DE. CHARLES H., Clinical Director at Government Hospital for the Insane at Washington, D. C., appointed Superintendent of Cleveland State Hospital at Cleveland, O., April, 1907.

CLARE, DR. F. B., appointed Assistant Physician at Illinois Western Hospital for Insane at Watertown.

- CLARKE, DR. HOMER E., for five years Assistant Physician at Eastern Michigan Asylum at Pontiac, Mich., appointed Assistant Physician at Oak Grove Hospital at Flint, Mich., August 1, 1907.
- Соруля, Da. HARRIET, Clinical Assistant at Rochester State Hospital at Rochester, N. Y., appointed Woman Physician at Central Islip State Hospital at Central Islip, N. Y.
- COLLINS, DR. R. A., appointed Assistant Physician at City Asylum at St. Louis, Ma. CONNELL, DR. W. T., of Queens University, appointed Pathologist at Rockwood Hospital for the Insane at Kingston, Ont.
- CONSER, DR. M. EDITH, appointed Interne at Government Hospital for the Insane at Washington, D. C.
- CONZELMAN, DR. FRED. J., Medical Interne at Manhattan State Hospital at Ward's Island, New York, resigned April 1, 1907, to accept a position in U. S. Army.
- COOK, DR. WALTER G., appointed Medical Interne at Manhattan State Hospital 2: Ward's Island, New York, September 1, 1907.
- DARNALL, DR. MOSES H., appointed Interne at Government Hospital for the Insane at Washington, D. C.
- DELL, DE. LILLIAN A., Third Assistant Physician at Agnews State Hospital at Agnews. Cal., killed by the earthquake, April 18, 1906.
- DEVILBISS, DR. E. F., appointed Assistant Physician at State Hospital No. 3 x Nevada, Mo., June 1, 1907.
- DISHONG, DR. G. W., appointed Second Assistant Physician at Hospital for the Insane at Norfolk, Neb.
- DOLLOF, Da. C. H., appointed First Assistant Physician at New Hampshire State Hospital at Concord.
- DOSH, DR. LOUIS P., Medical Interne at Manhattan State Hospital at Ward's Island. New York, resigned August 30, 1907, to enter private practice.
- DUNBAR, DR. LEE ROY, appointed Medical Interne at Manhattan State Hospital # Ward's Island, New York, May 1, and resigned May 13, 1907.
- DUNCAN, DR. JOHN G., appointed Superintendent at Asylum for the Insade # St. John's, Newfoundland.
- EMERICK, DR. EDWIN J., appointed Superintendent of Columbus State Hospital ist Feeble-Minded Youth at Columbus, O., March 15, 1907.
- ENGLISH, Da. W. M., appointed Superintendent of Asylum for the Insane at Hamilton, Ontario, June 1, 1907.
- FERGUSON, DR. BISMARK, appointed Assistant Physician at State Lunatic Asylum # Austin, Texas, May 1, 1907, and resigned July 1, 1907.
- FOSTER, DE. CHARLES A., appointed Medical Interne at Manhattan State Hospital # Ward's Ialand, New York, May 2, and died May 19, 1907.
- FOSTER, DR. LITTLEBERRY S., Superintendent of Norfolk Protestant Hospital at Norfolk, Va., resigned to enter private practice in Norfolk.
- GARVIN, DR. WILLIAM C., appointed Junior Physician at Manhattan State Hospital # Ward's Island, New York, July 4, 1907.
- GAY, DR. FREDERICK P., Bacteriologist to Danvers Insane Hospital at Hathorne, Massresigned to become Assistant in Pathology at Harvard Medical School.
- GEORGE, DR. J. C., Interne at the Deaconess Hospital at Cincinnati, O., appointed Assistant Physician at Columbus State Hospital at Columbus, O.
- GILBERT, DE. HORACE, Assistant Physician at State Lunatic Asylum at Austin, Tersi, resigned May 1, 1907.
- GOODWIN, DR. H. C., who succeeded Dr. Hills as Assistant Superintendent of New Hampshire State Hospital at Concord, resigned July, 1907, to be Superintendest of the Albany General Hospital.
- GRAHAM, DR. SAMUEL A., Chief of Staff at Illinois Eastern Hospital for the Insane # Hospital, resigned to enter private practice in Clinton, Ill.
- HAMILTON, DR. JOHN C., appointed Medical Interne at Manhattan State Hospital st Ward's Island, New York, May 27, 1907.
- HANES, DR. E. L., Assistant Physician at Rochester State Hospital at Rochester, N. Y., appointed Physician in Charge at Dr. Combes' Sanitarium at Flushing, L. I.
- HARPER, DR. PAUL T., appointed Medical Interne at Manhattan State Hospital a Ward's Island, New York, July 6, 1907.



- HARRINGTON, DR. ARTHUR H., formerly Superintendent of Danvers Insane Hospital at Hathorne, Mass., appointed Superintendent of Rhode Island State Hospital for the Insane at Howard, R. I.
- HARRISON, DR. J. FRANK, Assistant Physician at State Hospital No. 1 at Fulton, Mo., appointed Superintendent at State Hospital No. 4 at Farmington, Mo., June, 1907.
- HAYNES, DE. HABLEY O., for five years Physician at Michigan State Reformatory at Ionia, resigned to be Assistant Physician at Michigan Home for Feeble-Minded and Epileptic at Lapeer.
- HENSCHEL, DR. LOUIS KAUFMAN, appointed Third Assistant Physician at New Jersey State Hospital at Morris Plains, N. J.
- HILL, DR. ELEANOR J., formerly Second Assistant Physician at State Hospital for Insane of North Dakota at Jamestown, resigned to enter private practice at Minneapolis, Minn.
- HILL, DR. JOSEPH W., Superintendent of Kentucky Institute for the Education and Training of Feeble-Minded Children at Frankfort, resigned to enter private practice.
- HILLS, DR. FREDERICK L., Assistant Superintendent of New Hampshire State Hospital at Concord, resigned to be Superintendent of the Massachusetts Sanatorium for Consumptives at Rutland, Mass.
- HOAG, DR. ROBERT, Assistant Physician at Home for Feeble-Minded Children at Lincoln, Ill., transferred to Illinois Northern Hospital for the Insane at Elgin.
- HOLLIDAY, DR. MARGARET, Assistant Physician at State Lunatic Asylum at Austin, Texas, resigned September 1, 1907.
- HOUGH, DR. ROBERT B., Assistant Physician at Asylum for Feeble-Minded Children at Lincoln, Ill., appointed First Assistant Physician at Illinois Northern Hospital for the Insane at Elgin.
- HOWLAND, DR. JOSEPH B., Superintendent of State Colony for the Insane at Gardner, Mass., resigned April 1, 1907.
- HowARD, DR. A. B., Superintendent of Cleveland State Hospital at Cleveland, O., resigned April, 1907.
- HYDE, DR. ARTHUR G., of Rows, O., appointed Assistant Physician at Cleveland State Hospital at Cleveland, O.
- IVERSON, DR. CHRISTINE, appointed Medical Interne at the Michigan Asylum at Kalamazoo, September 1, 1907. JENNINGS, DR. S. S. M., promoted to be Second Assistant Physician at Southern
- California State Hospital at Patton.
- JONES, DR. LODRICK M., appointed Superintendent at Georgia State Sanitarium at Milledgeville, Ga.
- JOHNSON, DR. ANDREW, Superintendent of Nebraska State Home for Feeble-Minded, resigned.
- JOHNSON, DR. LUCIUS W., appointed Clinical Assistant at Insane Department of Philadelphia Hospital at Philadelphia, Pa., August 1, 1907.
- JOHNSTONE, DR. E. R., Assistant Physician at Oak Grove Hospital at Flint, Mich., resigned August 1, 1907, to study abroad.
- KARPAS, DR. MORRIS J., Junior Physician at Manhattan State Hospital at Ward's Island, New York, promoted to be Assistant Physician, June 16, 1907.
- KEARNEY, DR. JAMES N., appointed Assistant Physician at Illinois Northern Hospital at Hospital.
- KEELER, DR. JOHN W., Clinical Assistant at Rochester State Hospital at Rochester, N. Y., appointed Medical Interne at Manhattan State Hospital at Ward's Island, New York, June 11, 1907.
- KELLEY, DR. E. A., Second Assistant Physician at Agnews State Hospital at Agnews, Cal., killed by the earthquake, April 18, 1906.
- KING, DR. JOHN C., Surgeon to Pulaski Iron Co. of Patterson, Va., and formerly Second Assistant Physician at Southwestern State Hospital at Marion, Va., from 1901 to 1903, appointed First Assistant Physician at Southwestern State Hospital, February 15, 1907.
- KUHN, DR. WM. F., Superintendent of State Hospital No. 4 at Farmington, Mo., resigned and appointed Superintendent of State Hospital No. 3 at St. Joseph, Mo., June, 1907.

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- LAMOURE, DR. H. A., First Assistant Physician at Minnesota School for Freie Minded and Colony for Epileptics at Faribault, Minn., resigned to become Superintendent of North Dakota Institution for Feeble-Minded at Grafton.
- LEARY, DR. THOMAS J., Clinical Assistant at Insane Department of Philadelphia Hospital at Philadelphia, Pa., from July 8 to August 5, 1907, resigning to become Interne in the Hospital Department.
- LIGHT, DR. S. R., formerly Assistant Physician at the Michigan Asylum at Kalamazo, resigned October 1, 1907.
- LOIZZAUX, DR. EDOUARD S., appointed Third Assistant Physician at Southern California State Hospital at Patton, Cal.
- LOBENZ, DR. WILLIAM F., appointed Medical Interne at Manhattan State Hospital & Ward's Island, New York, May 27, 1907.
- McBaoom, Du. D. E., Interne at City Hospital at Springfield, O., appointed Assisted Physician at Minnesota School for Feeble-Minded and Colony for Epileptics # Faribault, Minn.
- MCCARTY, DR. P. D., formerly Medical Interne at the Michigan Asylum at Kalamana promoted to be Assistant Physician.
- MCINTOSH, DR. JOHN A., Assistant Superintendent of Texas State Insane Hospital San Antonio, resigned to be Resident Physician at Moody Sanitarium.
- MCKINNIS, DE. C. R., Assistant Physician at Columbus State Hospital at Columbus. On resigned and appointed Assistant Physician at Department for Men of Suff Hospital for the Insane at Norristown, Pa.
- MACARTNEY, DR. CHARLES B., Assistant Physician at Oak Grove Hospital at Find Mich., resigned August 1, 1907, to study abroad.
- MACDONALD, DR. THOMAS D., appointed Medical Interne at Manhattan State Hospital at Ward's Island, New York, April 1, 1907, and promoted to be Junior Physical May 29, 1907.
- MAGNESS, DE. FRANK H., Assistant Physician at Manhattan State Hospital at Wall Island, New York, died June 15, 1907.
- MALONE, DR. EDWARD F., appointed Clinical Assistant at Sheppard and Enoch Pu Hospital at Towson, Md., June 1, 1907, and resigned September 23, 1907. study abroad.
- MANN, Dr. JOSEPH W., for seven years Assistant Physician at Long View Hospital & Cincinnati, O., died February 23, 1907, aged 42.
- MALONEY, DR. JAMES E., appointed Medical Interne at Willard State House 4 Willard, N. Y., July 5, 1907.
- MILLER, DR. HARRY W., Pathologist and Assistant Physician at Taunton International Assistant Physician at Cook County International Asylum at Dunning, Ill., June, 1907.
- MILLER, DR. H. W., appointed First Assistant Physician at State Hospital for Instit of North Dakota at Jamestown.
- MINER, DE. FREDERICK, appointed Assistant Physician at Oak Grove Hospital at Fifth Mich., August 1, 1907.
- MITCHELL, DR. H. W., Senior Assistant Physician at Danvers Insane Hospital Hathorne, Mass., for the past eight years, resigned July, 1907, to become Superintendent at Eastern Maine Insane Asylum at Bangor.
- MITCHELL, DR. MARY PAULSELL, Assistant Physician at Danvers Insane Hospital # Hathorne, Mass., resigned July, 1907.
- MOORRS, DR. EMMA W., formerly Assistant in Pathology at McLean Hospital al Waverley, Mass., appointed Assistant Instructor in the Psychiatric Klimk at Munich, Germany.
- MONTGOMERY, DR. H. B., of Washington, O., appointed Assistant Physician at Cleve land State Hospital at Cleveland, O.
- MOORE, DR. DWIGHT 8., resigned as Superintendent of State Hospital for the Instant of North Dakota at Jamestown, April 12, 1907.
- MOSES, DR. KATHARINE R., Assistant Physician in charge of the Women's Department of the Cleveland State Hospital at Cleveland, O., for seven years, resigned inenter general practice in Cleveland.

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07] APPOINTMENTS, RESIGNATIONS, ETC.

RLIGAN, DR. LOUIS H., Assistant Superintendent of Eastern Kentucky Asylum for the Insane, appointed Acting Superintendent of Kentucky Institution for the Education and Training of Feeble-Minded Children at Frankfort. And later was appointed Superintendent of Central Kentucky Hospital for the Insane at Lakeland.

v, DR. CHAS. F., Pathologist to Central Indiana Hospital for the Insane at Indianapolis, resigned October 31, 1906.

CROLS, DR. J. R., First Assistant Physician at North Texas Hospital for the Insane at Terrell, resigned September 10, 1907.

DAT, DR. SYLVESTER, Junior Physician at Manhattan State Hospital at Ward's Island, New York, resigned May 1, 1907, to accept a position in U. S. Army.

LMACHER, DR. ALBERT P., formerly Superintendent of Ohio Hospital for Epideptics at Gallipolis, and recently connected with the biologic laboratory of F. Stearns & Co., resigned to enter private practice in Detroit, Mich.

row. Dr. SAMUEL T., appointed Pathologist at Columbus State Hospital at Columbus, O.

MER, DR. FRANK E., appointed Superintendent of Nebraska State Home for Feeble-Minded.

NUR, DR. HOWARD, appointed Assistant Physician at Eastern Michigan Insane Hospital at Pontiac.

NURR, DR. WILLIAM S., Superintendent of Iowa State Hospital for Inebriates at Knoxville, resigned.

Nozo, Dz. J. W., appointed Assistant Physician at State Lunatic Asylum at Austin, Texas, September 1, 1907.

JIR, DR. CHARLES B., appointed Medical Interne at Manhattan State Hospital at Ward's Island, New York, July 3, 1907.

WILL, DR. WALTER, Medical Interne at Buffalo State Hospital at Buffalo, N. Y., resigned May 1, 1907, to take up the study of ophthalmology in Philadelphia.

MAYAN, DR. NISHAN A., Junior Physician at Kings Park State Hospital at Kings Park, N. Y., transferred to Manhattan State Hospital at Ward's Island, New York, May 11, 1907, promoted to be Assistant Physician August 26, 1907, and resigned August 31, 1907, to enter private practice.

10007, DR. ANNA H., formerly on laboratory duty at Danvers Insane Hospital at Hathorne, Mass., promoted to special ward duty.

State Hospital at Cleveland, O.

ace, Dz. G. A., appointed Assistant Superintendent at State Colony for the Insane at Gardner, Mass., June, 1907.

CALM, DR. CHARLES W., President of New York State Lunacy Commission, resigned May 7, 1907, and appointed Superintendent of Hudson River State Hospital at Poughkeepsie, N. Y., a position he formerly held.

², Dz. HEMRY R., formerly Medical Interne at the Michigan Asylum at Kalamazoo, promoted to be Assistant Physician.

REBOY, DR. JOHN L., Medical Interne at Manhattan State Hospital at Ward's Island, New York, resigned April 6, 1907, to accept position in U. S. Army.

THL, Da. THEOPHILUS O., Superintendent of Georgia State Sanitarium at Milledgeville, Ga., with which he has been connected for twenty-eight years; President of the American Medico-Psychological Association 1897; President of Medical Association of Georgia 1887; once President of National Medico-Legal Society; a Confederate veteran; died at Tate Springs, Tenn., August 18, 1907, from pneumonia, after an illness of ten days, aged seventy years.

DOT, Da. A. S., President of Southwestern Virginia Medical Society, formerly First Assistant Physician at Southwestern State Hospital at Marion, Va., and recently in special practice at Bristol, Va.—Tenn., appointed Superintendent of Southwestern State Hospital, October 11, 1907.

^{ITCHARD,} DR. J. ALBERT, Junior Assistant at Willard State Hospital at Willard, N. Y., transferred to Kings Park State Hospital at Kings Park, N. Y., and promoted to be Assistant Physician August 22, 1907.

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RICKSHER, DR. CHARLES, Clinical Assistant at Sheppard and Enoch Pratt Hospital # Towson, Md., appointed Assistant Physician at Danvers Insane Hospital, # Hathorne, Mass., October 15, 1907.

RICHARDS, DR. JOHN S., Medical Interne at Manhattan State Hospital at Ward's Island, New York, promoted to be Junior Physician August 12, 1907.

ROBINSON, DR. G. WILSE, of Kansas City, appointed Superintendent of State Hospital No. 3 at Nevada, Mo., August 1, 1907.

Rows, Dz. R. J., appointed First Assistant Physician at North Texas Hospital in the Insane at Terrell, Texas, September 10, 1907.

RUSSELL, DE. JAMES, Superintendent of Asylum for the Insane at Hamilton, Ontaria, resigned June 1, 1907.

SANDORN, DR. C. F., Assistant Physician at Cherokee State Hospital at Cherokee, Ion, appointed Second Assistant Physician at Agnew's State Hospital at Agnew, Cal

SCHAIBLE, DR. FRANK G., appointed Clinical Laboratory Assistant at Manhattan State Hospital at Ward's Island, New York, September 1, 1907.

SEIPPEL, DE. CLARA P., appointed Second Assistant Physician at State Hospital in Insane of North Dakota at Jamestown.

SEMPLE, DR. JOHN M., appointed Superintendent of Eastern Washington State Hospital at Medical Lake, Wash., June 12, 1907.

SHEEP, DR. WILLIAM L., appointed Interne at Government Hospital for the Intern # Washington, D. C.

SHRONTS, DR. CLAUDE F., Assistant Physician at Illinois Northern Hospital at Hospit. Ill., resigned.

SIMPRON, DR. JESSIE H., appointed Woman Physician at Southern California State Hospital at Patton, Cal.

SINGER, DR. H. D., First Assistant Physician at Hospital for the Insane at Norfolk, Neb., appointed Director of the State Psychopathic Institute of Illinois.

SMITH, DR. BERNARD, appointed Assistant Physician at State Lunatic Asylum at Astria Texas, July 1, 1907.

SMITH, DR. WILLIAM A., appointed Clinical Assistant at Willard State Hospital # Willard, N. Y., June 27, 1907.

SNOW, DR. GOODRICH, appointed Senior Physician at Cook County Insane Asylum # Dunning, Ill., September 1, 1907.

STEPHERSON, DR. J. W., appointed Superintendent of Western Kentucky Hospital for the Insane at Hopkinsville.

STEWART, DR. HARRY M., Assistant Physician at Philadelphia Hospital at Philadelphia. Pa., resigned April 1, 1907, to enter private practice in Altoona, Pa.

STRIBLING, DR. J. W., formerly First Assistant Physician at State Hospital in Insane of North Dakota at Jamestown, resigned to enter private practice # Jamestown.

SUGG, DR. EDMUND G., Junior Assistant Physician at Connecticut Hospital for the Insane at Middletown, Conn., since June 20, 1906, resigned August 27, 1907, to accept a similar appointment in a private sanitarium.

TAIT, DE., formerly Superintendent of Asylum for the Insane at St. John's, New foundland, resigned.

THOMAS, DR. GRORGE C., appointed Assistant Physician at Insane Department of Phildelphia Hospital at Philadelphia, Pa., August 1, 1907.

THOMAS, DR. STAWLEY, appointed Assistant Physician at Minnesota State Hospital is Insane at St. Peter.

TIDWELL, DR. M. L., appointed Interne at Bryce Hospital at Tuscaloosa, Ala.

THOMPSON, DR. CHARLES E., Assistant Superintendent at State Colony for the Insane at Gardner, Mass., promoted to be Superintendent April 1, 1907.

THOMPSON, DR. J. J., appointed Clinical Assistant at Hospital for the Insane at Toronto, Ont., July 1, 1907.

THOMPSON, DR. JOSEPH R., Assistant Physician at Cleveland State Hospital at Cleveland, O., resigned to accept a position in one of the general hospitals in Cleveland.

TRIGG, DR. DANIEL, First Assistant Physician at Southwestern State Hospital at Marion, Va., resigned February 15, 1907, to enter private practice at Johnson City, Tenn.

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UNTERBERG, DR. H., Assistant Physician at State Hospital No. 3 at Nevada, Mo., resigned May 5, 1907.

VAUGHAN, DR. R. T., Senior Physician at Cook County Insane Asylum at Dunning, Ill., resigned September 1, 1907.

- WARD, DR. JOHN W., who had been connected with the New Jersey State Hospital at Trenton for over forty years, and had been its Medical Superintendent since 1876, and Medical Director since 1891, retired July 28, 1907.
- WARREN, DR. O. Y., Superintendent of State Asylum at Warm Springs, Mont., resigned to enter private practice at Butte, Mont.
- WATERMAN, DR. CHESTER, Medical Interne at Manhattan State Hospital at Ward's Island, New York, resigned to accept a position in a private sanitarium May 29, 1907.
- WILCH, DR. W. A., of Canton, O., appointed Night Medical Officer at Cleveland State Hospital at Cleveland, O.
- WEST, DR. K. S., promoted to be First Assistant Physician at Cleveland State Hospital at Cleveland, O.
- WILLETTS, DE. DAVID G., appointed Interne at Government Hospital for the Insane at Washington, D. C.
- WILLIAMS, DR. V. O., Assistant Physician at State Hospital No. 3 at Nevada, Mo., resigned May 1, 1907.
- WILSOW, DR. GUSTAV, promoted to be First Assistant Physician at Southern California State Hospital at Patton, Cal.
- WILSON, DR. W. T., Second Assistant Physician at Asylum for the Insane at Hamilton, Ontario, transferred September 1, 1907, to Rookwood Hospital for the Insane, at Kingston, Ontario.
- WINTER, DR. F. E., appointed Assistant Physician at Minnesota State Hospital for the Insane at St. Peter.
- WISE, DE. PETER M., formerly President of New York State Lunacy Commission, died suddenly September 22, 1907, aged 56.
- Woopsow, Dz. C. R., Superintendent of State Hospital No. 2 at St. Joseph, Mo., resigned June 14, 1907, following his vindication of charges of misconduct. He has entered consultation practice in St. Joseph, and recently has organized a company to conduct a sanitarium in the suburbs.
- WOOLLEY, DR. HERDERT C., Medical Interne at Manhattan State Hospital at Ward's Island, New York, resigned to accept a position in U. S. Army.
- WYLLE, DE. A. R. T., Assistant Physician at Minnesota School for Feeble-Minded and Colony for Epileptics at Faribault, Minn., promoted to be First Assistant Physician.
- YOUNG, DR. ERNEST H., appointed Clinical Assistant at Hospital for the Insame at Toronto, Ont., July 1, 1907.

Pampblets Received.

Le alterazioni del sangue. By Raffaele Galdi. Reprint from Archi di Psichiatria, etc. Il Manicomio. Anno XXIII, N. 1-2.

Eighty-third Annual Report of the Officers of the Hartford Rem April, 1907.

Tenth Annual Report of the Trustees of the Boston Insane Hosp for year ending January 31, 1907.

Biennial Report The State Board of Charities and Reform, State Wyoming, 1906.

Eleventh Annual Report of the Long Island State Hospital to the S Commission in Lunacy (New York) for year ending September 30, 1

The Propaganda for Reform in Proprietary Medicines. American M cal Association, Chicago, Ill.

New and Non-Official Remedies. Reprint from the Journal of American Medical Association.

The Climate of Southern Maine in the Treatment of the Later So of Hypertonia Vasorum. By Louis Faugeres Bishop. Reprint from Journal of the American Medical Association, April 20, 1907, Vol XLV p. 1350.

The Prevention of Epilepsy. By M. L. Perry. Reprint from the J nal of the Kansas Medical Society, April, 1907.

University of Denver, Catalogue, 1907-1908.

Albany Medical College. Register of Students 1906-1907. Announcement for Session 1907-1908.

Bulletin Maryland Agricultural College, Vol. 3, No. 4. Caula 1907-1908.

Bulletin 117 Maryland Agricultural Experiment Station. April, Molasses Feeds.

Alfalfa in Maryland. Bulletin 118 Maryland Agricultural Experim Station. June, 1907.

The Timber Supply of the United States. By R. S. Kellogg. U. Department of Agriculture, Forest Service, Circular 97.

Fertilizer Analyses. Chemical Department Maryland Agricultural O lege. August, 1907.

Bulletin Atlanta School of Medicine. Announcement Issue, Sessi 1907-1908.

The Contamination of the Air of Our Cities with Sulphur Dioxid. Cause of Respiratory Disease. By Theodore W. Schaeffer. Reprint fro Boston Medical and Surgical Journal, Vol. CLVII, No. 4, pp. 160-11 July, 25, 1907.

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The Physiological Effect of the Waters of the Hot Springs of Arkansas. By E. H. Martin. Reprint from Mississippi Medical Monthly, May, 1907.

The Treatment of Gonorrhœal Epididymitis. By Julius J. Valentine. Article which won the prize in the Readers' Discussion of the New York Medical Journal, July 27, 1907.

Massage of the Prostate and Stripping the Seminal Vesicles. By Ferd. C. Valentine and Terry M. Townsend. Reprint from Medical Record, June 29, 1907.

Urethral Hemorrhage. By Ferd. C. Valentine and Terry M. Townsend. Reprint from the American Journal of Urology, March, 1907.

Education in Sexual Subjects. By Ferdinand C. Valentine. Reprint from the New York Medical Journal, February 10, 1906.

Urethral Dilatations with Expansible Instruments. By Ferd. C. Valentine and Terry M. Townsend. Reprinted from the American Journal of Surgery, January and February, 1906.

The Emergency Dilatation of Urethral Stricture. By Ferd. C. Valentine and Terry M. Townsend. Reprint from the American Journal of Surgery, May, 1907.

The Hand of Iron in the Glove of Rubber. By Robert T. Morris. Reprint from Medical Record, March 9, 1907.

Harmful Involution of the Apendix. Robert T. Morris. Reprint from Medical Record, April 6, 1907.

The Status Medicus: A Statement and a Proposition. By James Krauss. Reprint from North American Journal of Homceopathy, July, 1907.

Medico-Legal. By E. S. McKee. Reprint from the Medical Bulletin, inne, 1907.

Obstetrics and Gynecology. By E. S. McKee. Reprint from the Lanxt-Clinic, May 11, 1907. Also on same subject by same author, reprint rom the Lancet-Clinic, August 17, 1907.

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AMERICAN JOURNAL OF INSANITY

A REPORT OF TWENTY-SEVEN CASES OF CHRONIC PROGRESSIVE CHOREA.'

BY ARTHUR S. HAMILTON, M. D., MINNEAPOLIS, MINN.,

Instructor in Pathology of the Nervous System, Medical Department, University of Minnesota.

In the following paper, I desire to consider some cases of chronic chorea which I have had the opportunity to study during the last nine years. Ten were personally observed during a seven years' service in a state hospital; ten were taken from the early records of the same institution and, of these, the histories are, unfortunately, very meagre; three were relatives of some of the above patients and were seen in their homes. The remaining four were studied in private practice.

CASE No. I.-Male, age 84, married, laborer.

Clinical History.—Little known as to the patient and practically nothing as to his family. He was born in New York State and is a blacksmith. Nothing is known as to his wife or children. From 1895 until his admission at Independence he was an inmate of the Clinton County Poor Farm. During this time he was insane and probably had been so for many years

¹Read in abstract at the meeting of the Chicago Neurological Society, Oct. 25, 1906. Of the series of cases here reported, ten (Cases I, II, III, IV, V, VI, VII, IX, XII, XXI) are taken from the records of the State hospital for the insane at Independence, Iowa; ten (Cases VIII, X, XI, XIII, XIV, XV, XVI, XVII, XVIII, XIX), also from that institution, were personally observed during my service there, and for the records of the former group and for many facts in relation to the latter group, I desire here to make acknowledgment to the other physicians connected with that institution; three (Cases XXII, XXIII, XXIV) were studied in their homes at various points in Iowa; two (Cases XX, XXVI) were seen in the service of Dr. W. A. Jones, and one (XXVII) in the service of Dr. A. B. Cates. For much of the history of Case XXV, I am indebted to Dr. H. A. Tomlinson, superintendent of the St. Peter State Hospital.

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before. He had the reputation of being a troublesome and dangerous man, the most of his life, and for many years past his neighbors have feared him. As one expressed it, "He has been a mighty mean man." He was generally suspected of numerous petty crimes in his neighborhood, but never convicted of any of them. While at the poor farm he claimed to have been the inventor of a well-boring machine and was determined to prosecute everyone who had a bored well as having infringed on his patent. No argument in this connection had any effect upon him. He insisted that his patent would never expire and that the prosecution of the infringments would immediately make him a multi-millionaire. He also believed that he could cure all forms of disease, including insanity, with kerosene, and if he could in any way find an opportunity he would pour kerosene on the heads of the insane men about him and immediately claim that they were cured. It is said that when he was young, he was a giant in strength, and the steward of the poor farm states that, with the exception of his legs, he had retained this strength to a remarkable degree to within a short time of his commitment to the hospital. He was accustomed to walk about with the assistance of two canes and when an "ugly spell" came on he would throw himself on his back and lay about him right and left with both canes. The steward thought his mental condition had deteriorated quite rapidly of late and said he had become quite filthy.

He was admitted to the State Hospital March 10, 1004. At the time his temperature was 100, but nine hours later it had fallen to 97.2, and 02 tinued there up to shortly before his death. He was cross and irritable and did not want any one to assist him in any way. At the same time be could not walk unless firmly supported by the arms and even then his feet dragged. He was constantly in bed. There were well-marked chordform movements of the right upper extremity, including the shoulder; also of the head, particularly the mouth, eyelids, and eyes. There were moderate movements in the abdomen and right leg and foot, and very slight movements in the left arm and leg. Articulation was much inpaired. At first he swallowed readily, but at the last with much difficulty. He appeared to understand questions quite well, but was exceedingly initable in answering, and would even get angry with himself for his help i lessness. Control of the bowels and bladder was much impaired. In the daytime he was usually restless, and at night he slept only fairly. He died, at 8 a. m., March 17. One and one-half hours before, his temperature had " been 102.4 and respiration 36. At admission his urine examination was as follows: Clear; yellow; acid; Sp. g., 1025; no sugar; trace of albumin; numerous hyaline casts and some granular casts; a few pus cells and many calcium oxalate crystals.

CASE No. II.-Male, age 53, married, farmer.

Family History.—Nothing known of his antecedents except that his parents were natives of Germany, as was also the patient. He has four children, not yet fully grown.



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Personal History and Present Illness.—In earlier life the patient is said to have been addicted to the excessive use of liquor. His present trouble has existed for many years and of late has been practically stationary. No attempt at suicide and no disposition to filthy or destructive habits, but he has been violent toward his wife.

Clinical Record.—Admitted to the hospital in December, 1891. There is no record of any physical or mental examination. He was thought to be in good general health, but had well marked choreiform movements involving practically his entire body. He ate and slept well and was quiet and well behaved. Had no delusions. After 15 months he was discharged and re-admitted three years later. There had been little progress in his physical ailment, but there was a history of several intervening acute outbreaks of mental disturbance, and an increasing tendency to be violent. A few days previous to this admission he had threatened to burn some houses and barns and to kill several individuals, and had carried a club about with him. No attempt at suicide.

Remained subsequently in the hospital up to his death, four years later. During the first three years his history was quite uneventful. His general health was good, and he was quiet and inoffensive, though at times depressed. A variety of treatment was tried without benefit. During this time he passed through an attack of typhoid fever, but there is no record of this influencing his mental or physical condition. During the last year of his life, his failure was much more rapid, and his movements became so marked that he could, only with difficulty, walk even short distances, and at times he would even fall out of bed. He finally died with marked symptoms of respiratory distress, but without gross pulmonary lesions. He is also said to have been paralyzed and unconscious for three days previous to his death.

CASE No. III.-Female, age 55, married.

Clinical Record.—Almost no history of the patient. She was the wife of a farmer, but had no children. Nothing known as to her parents. Her chorea had existed since she was 43 years of age, and at the time of her admission to the hospital was severe, though otherwise she was in good general health, and ate and slept well. At times she was unruly. Six months after admission she died of "exhaustion."

CASE No. IV .- Female, age 57, married.

Clinical Record.—History very meager. Patient was born in Vermont and is the mother of 12 children whose present condition is not known. A sister and a brother are affected in a similar manner. Nothing known as to the antecedents. Ten or more years ago symptoms of the patient's present condition were first noted. Since then her trouble gradually progressed until she became demented and filthy. No suicidal or homicidal tendency. When admitted, her choreiform movements were general and very violent, so that she had to be fed with a spoon, and could walk only with the greatest difficulty. She was very much demented. Death occurred two months after her admission, but the cause is not stated.

CASE No. V.-Female, age 51, married.

Family History.—The father and mother were English people, who did in advanced age of unknown cause. The father had no nervous or menul disorder, but the mother had moderate choreiform movements. A sister had a similar disorder and was insane. A brother died of tuberculosis at 43. Other brothers and sisters are thought to be well. Patient, also born in England, had six children. One died in infancy very suddenly and two at six and eight years, respectively, of scarlet fever. There are also three grandchildren, of whom two are well, and one is "very nervous."

Present Illness.—Choreiform movements observed since patient was j^{0} years old, said to have come on as a result of weakness following childbirth. When admitted to the State hospital, October 22, 1880, she was demented and occasionally violent. Had a disposition to hide things would break dishes and soil and tear her clothing and bedding. No record of any examination except that she was in fair physical health, and had marked choreiform movements so that she walked with difficulty and at times fell. Two months after admission she died of dysentery. The movements continued to the end.

CASE No. VI.-Female, age 25, single.

Family History.--As given in Case No. VII.

Personal History.-Normal in childhood, except for mumps, measies whooping cough and la grippe; the latter of which was very severe. No history of severe injury. Went to school until about 16, and did as well as her brothers and sisters. Exact time and manner in which her mention and physical ailments appeared is uncertain, but the symptoms, if present at all, were certainly not marked until shortly before her admission to the hospital in February, 1897. Two months previously had had a fever of some sort from which she seemed to fully recover in a few days, but one week later her movements and, a little later, her mental symptoms appeared Movements began in her hands and were severe from the outset. The mental disturbance began with incoherency. She frequently imagined she was talking with some one, but her speech was altogether disconnected There was no tendency to injure others, to suicide, or to filthy or destructive habits. When admitted to the hospital she seemed stupid, though apparently conscious of her surroundings. She frequently made mintelligible noises, but did not speak. Is said to have had marked choreiform movements, but no detailed statement is given. Reflexes of both apper and lower extremities increased, well marked ankle clonus on both sides Pupils responded to light. About this time she developed a fever of 102 b 105 with a weak pulse of 112 to 125. Occasionally vomited and her hands and feet were quite cyanotic. The least disturbance brought on a marked attack of the choreiform movements. Urine examination showed nothing

except a trace of albumin. From this acute illness, she gradually recovered, but her choreic condition continued, and she lived for three years, ultimately dying of pulmonary tuberculosis. There is no careful note of her condition during this time, but she is known to have been extremely demented, rarely spoke, and paid no attention to any one or anything. The dementia was the most noticeable feature in her case, but the irregular movements were present throughout the body to the end.

CASE No. VII.-Male, age 45, married, farmer.

Family History.—Father's history very uncertain. He is thought to have died of old age and not to have had chorea. Mother died of this disorder. They had nine children, some of whom died of pulmonary tuberculosis and of dropsy. Three of the sons had chorea.

Personal History.—Patient, born in Canada, was healthy in childhood. No rheumatism, venereal disease or alcoholism. In adult life fairly healthy except occasional sick headaches. No severe injury. In school did as well as the average. Was married at 22 and has had five children, of whom one died of typhoid fever, and one from accident. Others ordinarily strong and healthy. Two have continued so, have married, and have borne children who are normal. The remaining child (the third in order of birth) developed chorea, and is Case No. VI.

Choreiform movements were first noticed at 35 years of age. The face and extremities were first affected, but later the entire body was involved, no one part more than another. At about 40 his disposition changed, and he became cross and sullen. He gradually grew worse, imagined that every one was trying to injure him, frequently abused his family, and finally attempted to kill his wife. Shortly after the latter action was sent to the State hospital. Was then in good general health, not suicidal or destructive in his tendencies, but very stubborn, fault-finding and discontented. Thought the medicine given him made him worse, was unreasonable about going to meals and changing his clothes, and made a great deal of trouble. At night he would often pound on the floor of his room and call for help, but when spoken to usually had a trivial, fancied grievance to complain of. Choreiform movements were very marked throughout his body. He is said to have told of a large number of relatives afflicted like himself, but at the time of making this record I am unable to find anything concerning them except as above. Soon after admission to the hospital he began to fail both mentally and physically and, after five months, died of a septic infection of the finger.

CASE No. VIII.-Male, age 50, married, merchant.

Family History.—The father, a native of Ireland, was a hard-working farmer who amassed considerable property. He was always considered queer, and, particularly in his later life, would never speak unless spoken to, and was cross and depressed much of the time. At 80 years of age committed suicide. The history as to whether he had chorea is not satis-

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factory. The mother, also a native of Ireland, died many years ago. Nothing known as to her condition. They had three sons and one daughter. The oldest son has had mild choreiform movements for three years; is unsocial, but not regarded as insane. He is married and has no children. The next son is the present patient. The youngest son has not been heard of for years. The daughter is Case No. IX.

Personal History.—In childhood the patient was normal mentally and physically, but secured a limited education on account of having to work very hard. His habits were good. Drank considerably for a short period when about 35 years old. No history of syphilis or gonorrhœa. Was married at 32 and has had two boys. One is an excellent student, but quiet and reserved. The other is strong, rugged, and a good worker, but has little liking for books. Neither is choreic. The patient was never severely injured, and has never had a severe illness except typhoid fever at 35, since when he has never been quite right mentally.

Present Illness.-Two years after the attack of typhoid a little more ment of his feet and hands appeared. He would sit cross-legged and keep one of his legs in almost constant motion and twirl his fingers. The morement grew worse and gradually spread to arms and shoulders. Mental power also declined. Was first admitted to the State hospital in May. 1806. Mental disturbance had been quite noticeable for one year and was increasing. He was listless and would lie all day in a kind of stupor unless spoken to. At the same time would worry about not having any work to do. Suicide mentioned, but not attempted. No tendency 10 vicious, filthy, or destructive habits. When examined he was found to be well developed and well nourished. Height, 5 feet, 8 inches. Weight, 141 pounds. Pulse, 60; regular and moderately full and strong. Muscles im and skin healthy. Ate well but slept poorly. Choreic movements present throughout the entire body. Urine examination negative, except for high specific gravity. He was fully conscious of his surroundings, and said be came to the hospital to be treated for his "nervousness," which he thought had been present not more than one year. He had felt badly because his condition had kept him from working. Six months afterwards was discharged as "improved," but was shortly returned because he had been cross to his wife and family. At this time the patient stated that his father had had "fainting spells," and that he also had similar attacks orcasionally. When they appeared he would fall down unless he had some thing to hold to. There is no record of these attacks occurring while the patient was at the hospital, and I could learn nothing of them from his friends. He was a quiet and orderly patient at the hospital, giving no trouble, and two years after his first admission he was discharged and remained absent for five years. During the greater part of this time he was cared for by friends. In November, 1903, he was re-admitted. He had grown quite irritable and at times talked to himself in a rambling way. For the preceding month he had been filthy, but previous to that he had

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been very tidy. For some time had had trouble in swallowing and recently had failed very rapidly. For three days previously his face had been much more affected than previously. His third admission to the State Hospital was Nov. 12, 1903. A few days before he had fallen out of bed and lain on the bare floor for some time afterwards. The numerous ulcers on his body, mentioned in the physical examination, were produced at this time by his constant moving on the floor.

Physical Examination.—The patient is a medium-sized male, fairly well developed but greatly emaciated; height, 5 feet, 8 inches; weight, 150 pounds; temperature, 100.8; pulse, 80. His face is covered with a grizzly beard and moustache, and there is a moderately heavy growth of hair over the body. Eyes blue, vision good. The forehead is rather low and not very broad. The eyes are very deep set, and there are very dark lines underneath them. Ears normal in appearance and hearing good.

The skin is not very healthy anywhere, and there are numerous superficial ulcers at different points over the body. These are especially prominent over the hips, sacrum, and around the knees and ankles. Feet and hands well formed; ridges of the tibiæ smooth. Muscles small and flabby.

As nearly as can be determined the area of heart dulness is normal. Radial pulse fairly strong; radial arteries considerably thickened. Chest moderately well developed. The lungs are normal as far as it is possible to determine their condition. The respiratory movement of the chest is very jerky and much modified by the general movements. Abdominal and genito-urinary organs normal.

The choreiform movements are very striking. The muscles of the face are in almost constant motion, particularly those of the lower jaw. His entire head also moves constantly to the widest possible degree, sometimes laterally and sometimes antero-posteriorly. The hands, arms, shoulders, chest, and abdomen move freely, but the lower extremities are but little affected.

Mental Condition.—He is quite unable to speak, but he seems to understand what is said to him and answers by giving affirmative or negative grunts in such a way as to be understood. As far as can be determined in this way he is fully oriented as to place and surroundings and recalls his previous detention at the hospital. One of his former attendants he is also able to recognize. After being put to bed he soiled the sheet, and this occurred again in the course of the day. He eats fairly well, but it is necessary to have the nurse feed him, since he cannot get the articles of food to his mouth with his own hands.

November 19, 1903.—Has failed gradually since admission and died to-day. The ulcers have increased in size, and he has grown weaker daily. His temperature has ranged from 97 to 101.6, pulse 56 to 98. So far as observed, his movements have not entirely ceased, even in sleep, but he has not slept soundly.

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CASE No. IX.—Female, single, age 22.

Family History.-See Case No. VIII.

Personal History.—Her mother died when the patient was young and she has always worked hard, borne considerable responsibility and has been much of the time alone at home. Has always had a violent temper. Education fair.

Present Illness.-Was admitted to the State hospital in June, 1882. For two years previously had been unsocial, despondent, and suspicious of others, so that she had alienated all her friends and neighbors. Two weeks before admission complained that the neighbors were putting spots on her eyes so that she could not see to work; thought herself bewitched and that she was being slandered. One week later attacked a man without cause and subsequently was greatly excited; thought she had been both in heaven and hell, and had returned. When admitted she was stubborn and surly, and would not eat or take medicine until forced to do so to avoid the use of a stomach tube. Would not enter into conversation except to frequently demand to be set free. Was very careless in personal matters, frequently tried to escape and twice attacked the attendants. Later see improved a little, became quiet and occasionally would talk pleasantly, but most of the time was unsocial and had several attacks of acute mental disturbance. By December she had improved considerably, except that she was still indisposed to associate with others, but in the February following became much worse. She remained at the hospital for three years, much of the time quiet, but at times loud and vulgar in speech and vicious in her habits. There is no record of any choreiform manifestrtions during this time. In 1895 she was removed to the local County Poor Farm where she remained until 1896 when she was returned to the State hospital. She was then much demented and was still solitary in her habits and ordinarily quiet, but at times she was much excited, talked a great deal and was profane and vicious. At this time she had well-marked choreiform movements in her face and head. Not much is known of her since, except that she was still living in 1904.

CASE No. X.—Female, age 87, married.

Family History.—Father died at 95 of old age, had been insame for 10 years. The mother was insane, following the birth of her last child. It is said that neither had chorea, but the history as to this point is insufficient. They had two sons and four daughters. One daughter is the present patient. The other children are all dead. There is practically no history concerning them, except that one son was choreic, and the others were "nervous." So far as known there were no other cases of mental or nervous trouble in the family, including the patient's children and grand-children.

Personal History.--Was born in New York State, is married, and the mother of eight children. Had a good common school education.

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Present Illness.—The choreiform movements were first noticed when about 35, and two years after a severe attack of scarlet fever. As she grew older her movements grew worse, and particularly so during and after the menopause. Mental symptoms are said to have been first observed at 69 years of age. She became afraid that some one would hurt or kill her, and was particularly in fear that she would be hurt by snakes. Ran away from home at times. In earlier life her disposition had been kind and charitable. She was admitted to the State hospital in 1888, and was then 71 years of age. There is very little history of her condition at this time, but she was a quiet, inoffensive patient who made no disturbance, and was as strong physically and, in many ways, as strong mentally as could be expected at her age. In the course of years she became weaker physically and was at times irritable and quarrelsome. Her choreic movements were quite marked. The following examination was made in 1904.

Physical Examination.—An emaciated old woman. Tissues of face much atrophied and teeth absent. Mouth sunken. Complexion sallow. Hair gray and thin. Eyes deeply sunken. Cornea of right slightly hazy. Vision probably fair. Ears normal. Hearing fair. Forehead rather low; otherwise head and face negative.

Skin wrinkled and rather dry. Muscles very small and flabby. Strength fair in proportion to her age and nutrition.

The heart and lungs cannot be accurately examined on account of her voluntary resistance and involuntary movements. No abnormal sounds heard. Heart dulness probably about normal. Radial arteries thickened and somewhat nodular.

Pupils equal. Reaction to light uncertain but probably slight. All the muscles are kept in a state of such tension that it is impossible to examine any of the deep reflexes satisfactorily. The patellar are certainly present in at least a slight degree. She has slight trouble in articulation, but none in swallowing. The tongue is protruded straight without much trouble, and shows some choreic movement.

There is a constant, marked movement of practically the entire body. It is quick and jerky, certainly much quicker than is ordinarily seen in chronic progressive chorea. She attempts to write, but is wholly unable to do so. The movements appear to grow worse in the attempt, but, in general, purposeful movements seem to somewhat restrain the involuntary movement. Both sides of the body are equally affected. There is no abnormal movement of the eyeballs. She shows fair coordination in her hands in helping to dress herself, but the fingers are held almost constantly in semi-contraction and there is also slight tendency to flexion of the toes and inversion of the left foot.

Mental Condition.—She is a tall, thin, frail, old woman, with a nervous, somewhat worried expression. Dress neat. She sits usually with knees crossed and hands folded in her lap. Does not talk much, but occasionally becomes irritable, and then is more loquacious. At times talks to herself in a low tone. When spoken to she answers jerkily and often in an irrele-

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vant and would-be-smart way. Enunciation is not very distinct, party account of the low tone in which she speaks. She often seems to she is talking to some one and relapses into muttering soliloquy of but few words can be made out. When the physician tried to physical examination for purposes of study, she became exceeding picious and resisted everything; at times scolding, and again, even resisting, she would laugh in a petulant sort of way as if half a that she should be objecting to so simple a procedure. She seem cially afraid of the stethoscope, but when assured it would not be laughed rather scornfully and said she knew that but—and pushed tically away. Afterwards said she was afraid of being killed. repeats the question asked her and sometimes forgets to answer her age is asked, she says:

"I'm 50 some years."

"What year were you born?"

"It's sot down in the Bible. I can't tell now."

"Can't you tell the year?"

"No, can you?" Laughs as if she had said something witty

"Do you know where you are now?"

"Do I know where I be now? Morristown Institute."

"What is this building you are in?"

"Why, they say the Barrets own this building."

"Who are all these people we see about here? Are they Barrets?"

"I don't know them all. I wasn't one of these runagates, I great There's one that's Dr. Jim."

In reply to questions says: "It looks like it was in the spring, but asay there's two crops in the season—some of 'em do, yes, sir."

"Are any of your family here?"

"Why, they say John Sten's wife's here." (No such name kut "Is she a relative of yours?" To this gives a low but apparent

vant reply.

"How many children have you had?"

"I had seven." Then whispers something. "George Robinson and Arkport, New York." Swears under her breath.

Says in reply to questions that her father died of old age and contracted in the war. About her mother says, "My mother's against disease. She has, by gosh—some calls it turn of life."

"Was there anything the matter with your mother's mind. died?"

"Not then, but she had been crazy—had the fever. No, the anything the matter with my father's mind, but he got childish." I has been here 17 years and has had the movements all this time.

CASE No. XI.-Male, age 53, married, laborer.

Family History.—Parents both natives of this country. The fatter of chorea at 40 years of age, and the mother is said to have died in a

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PLATE V.



FIG. I.



FIG. 2.

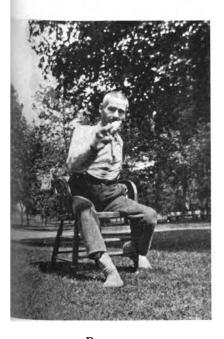




FIG. 3. FIG. 4. FIGS. 1 to 4. CASE No. XI. Note the extensive movements and peculiar attitudes.

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pital for the insane. A grandmother, three aunts, two uncles, one brother (Case No. XII), and one sister died of chorea, and a living brother and sister have the same disease.

History of Present Illness.—Symptoms of chorea were present as early as 1892. Previous to 1898 the patient had served a short sentence in the State penitentiary. He was then sent to the local poor farm, where, in 1898, he made a vicious assault on the steward. Was sentenced to serve out a period in the county jail, but was so noisy and troublesome there that the governor was induced to pardom him, and he was sent to the State hospital for the insane, and admitted there July 27, 1899. At the time he weighed 139 pounds, but his previous weight had been about 180 pounds. His muscles were of moderate size and firmness. The thoracic and abdominal organs were normal. The left patellar reflex could not be obtained; otherwise nothing unusual was found in the reflexes. Sensation for pain, touch, heat and cold was unimpaired. There were marked, coarse, irregular movements of all parts of the body. Urine examination negative. Temperature, pulse, and respiration normal.

He was fairly well oriented as to time, place, and surroundings, but recognized that his memory was impaired, and said he could not recall names and faces nearly so well as before. Said he did some work at the poor farm, but thought he was not shown sufficient consideration and complained of mistreatment in many ways. Admitted that he once became angry and struck the steward with a cane. He spoke several times of tiring quickly when trying to read.

Subsequent to the above there was no marked change in his mental condition for some time. In March, 1900, he was transferred to one of the men's cottages on account of his irritable, peevish disposition and his inability to walk with the patients on the ward. Complained a great deal about trivial matters, and at times would strike other patients with very little or no cause. Usually ate well, but, occasionally, if something occurred to anger him, would refuse to take any food for two or three meals. He was usually restless and his choreic movements were so marked that he got about with difficulty. On the 21st of August, 1902, he was given a careful examination with the following results:

Physical Examination.—He is a man of good frame, quite well developed, but anæmic and rather poorly nourished. Forehead narrow, low, and retreating, and there is a quite marked prominence in the region of the anterior fontanelle. Ears large, but normal in shape, except that the lobules are adherent. Lower jaw unusually large, and the hands and feet are also very large and bony. Head measurements: A. P. D., 20; B. P., 15.5; B. T., 11.25; M. B., 26.

Sight and hearing normal. Skin generally healthy, except for numerous bruise marks where he has struck himself. Muscles of good size and quite firm. Left patella fractured and the upper fragment is six inches above the knee joint.

Heart sounds and area of heart dullness normal. Pulse full, strong, and regular, but somewhat accelerated. Radial arteries slightly thickened. Veins of the lower extremities slightly dilated. Lungs normal. Palate normal in shape. Teeth poorly preserved and many absent. Tongue clean. Bowel movements regular or slightly constipated.

Pupils equal and react equally, readily, and together for light. No patellar reflex or ankle clonus. The abdominal reflex cannot be obtained on account of the choreic movement of the abdominal muscles. Cremasteric reflexes normal. Sensation for touch and temperature unimpaired. All over the body are choreic movements of the most violent character, but they are worse in the upper half of the body than in the lower (Figs. I to IV). As he lies in bed his arms and legs are thrown about in every direction, and his head also is constantly moving. He frequently strikes his hands and his head against the wall with considerable force and sometimes strikes his face with his hand, but does not seem to feel any pain on account of it. There is little, if any, increase in the movement of the eyeballs or twitching of the lids, but there is marked twitching of the muscles of the face and particularly of the muscles of the lower jaw. At times he has much difficulty in beginning to speak. Frequently he attempts a word several times before he succeeds in pronouncing it, but when once started he speaks fairly well. At times his voice is very high pitched. He protrudes his tongue in a straight line, but in a very jerky way, and it is quickly retracted, though when asked to hold it out he succeeds in doing so for a little time. There is no difference in the movements of the two sides of the body, though his head is almost always held to the left. When asked to rise he assists himself by holding to various objects. He leans far forward, rises on one foot, remains suspended on it for a moment, twists around on it, and then comes down heavily on the other heel. In walking he goes through very similar movements at each step, swaying from side to side, at times executing a hopping movement, and all of the time going through the most varied movements with his arms. He cannot go up or down stairs and sometimes falls even when walking on a flat surface. During the examination he urinates twice, both times rather small amounts. The attendant says he passes urine much more frequently than the other patients, and that each time he has difficulty in getting the stream started, after which it flows intermittently, as if dependent upon spasmodic contraction of the bladder, until he is satisfied. He eats rather rapidly, but masticates his food fairly well, and seems to have no difficulty in swallowing. He feeds himself with a spoon, but spills considerable food. Is able to drink from a cup of water without spilling very much, buttons his clothes with considerable difficulty. Volition lessens the movements decidedly for a time and anger greatly increases them so that occasionally, while sitting in a large, solid chair, if irritated, the violence of his movements will upset the chair.

Mental Condition.—His mental condition is most unhappy, and is constantly dominated by delusions of persecution. He complains particularly about "being starved," and says the nurses will give him nothing to eat; notwithstanding the fact that his appetite is enormous, and he often eats as much as three of the other patients. He is equally sensitive about other matters and often breaks out in paroxysms of rage on the slightest provocation. These come on more often at night than in the daytime and frequently for hours at a time, during the night, he will keep up an almost constant, loud, bellowing noise, and appear to be in a perfect frenzy. If asked the reason for these demonstrations he generally gives a most trivial cause; thus on one occasion he excused himself by saying that during the day he had been given a vest in the pocket of which was a hole, so he could not carry his tobacco in it. He takes a daily newspaper and reads it regularly, seems to comprehend what it contains, and is quite familiar with current events.

From this time his course was gradually downward. He lost in flesh and his movements, if possible, became even more marked. Occasionally, for a little while, he would seem to gain in flesh, be in better temper, and have a little more control over his body, but these periods were of short duration, and were always followed by still greater retrogression.

On the 25th of December, 1902, an infected area appeared in his right hand. It was opened and treated antiseptically, but he gradually grew worse, and died at 11.30 a. m., on the 2d of January, of septicæmia. During his last illness his movements had been less marked than previously, and this was more noticeable in the affected hand and arm than in other parts of the body. A little before death the movements ceased almost entirely, but this was probably due to progressive weakness.

CASE No. XII.—Male, age 26, single, farmer.

Family History.-See Case No. XI.

Clinical History.—Has never used liquor to excess, but six years ago received some sort of injury to the head. His trouble had been present for at least four years previous to his admission at the State hospital. It was thought to be increasing. He was irritable and had even attempted to injure others. No tendency to suicide. Was filthy in his habits. In the history as given at his admission, he was said to be an epileptic, but no symptom of epilepsy was ever noted after his appearance at the hospital, and it is highly improbable that there ever were any. He was admitted to the hospital in 1882 and lived one year. There is little stated as to his condition during this time, except that he was very much demented, and at times irritable, and that he had well marked choreiform manifestations. The cause of his death is not given, except that he had had more or less constant diarrhoea for three months previously.

CASE No. XIII.—Male, age 43, married, laborer.

Family History.—Patient and parents born in Germany. The father, a man of good habits, died of chorea, as did also his brother. Mother living and well in old age. The patient has one sister and three half-brothers

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and sisters, all well. A half sister died of pulmonary tuberculosis at a Two children of the patient, not yet grown, are said to be in normal ment and physical condition.

Personal History.—As far as can be learned the patient was bealthy early life. Walked and talked at a year and a half. No history of spar rickets, or scrofula in childhood. Attended school eight years and learn readily, but was always a little morose and quick-tempered. Has us beer, whiskey, and alcohol, possibly to excess. When 20 years old w very ill with what was called "the fever" and had severe attacks of similar disorder at 23 and 40. He is married and has two children, b his wife is divorced on account of domestic trouble.

Present Illness.-The exact date of onset cannot be determined, but is said to have been more or less disturbed mentally for 15 years, and choreiform movements have been present for at least that length of the The movements began in his legs and have progressed slowly until the now involve the whole body. Marked mental symptoms have been pres for six years. He was committed to the hospital for the insane at Ind pendence, Iowa, April 6, 1899. According to the physician's return, insanity was due to intemperance, masturbation, and chorea. He was a suicidal and was not disposed to injure others. When examined was for to be in good physical health and weighed 146 pounds. Choreiform more ments were present in the muscles of the extremities, of the face, and the tongue. They were much less marked in "various parts of the trunk He was oriented as to time, place, and surroundings, and told a sto about as follows: "I am born in Germany; came to this country about i years ago, the time they shot one of them presidents. I am a day labore I didn't do anything, but they said I was crazy. I am married and have girl and boy. My wife told me to go away and said she would not t anything for me; said I choked her. She likes other men better. I and men in bed with her three times. She goes away from home every me She said to me 'I wish the old devil was dead and out of the way.' A soon as we were married the trouble began. She hated me and scolded # all the time. She would fight me and scratch my face." He remained the hospital about three years. Was somewhat cross and irritable and frequently made complaints about insignificant matters. At times wake the floor in a restless way. He continued well oriented and talked in a rational manner on most subjects, but persisted in the ideas previously mertioned about his wife. (The history available throws no light on the wife's real attitude.) He seemed to realize his condition and was a fairly good worker about the hospital. In January, 1902, he was discharged if be sent to a private hospital where he evidently did not do well and, or July 28, following, he was returned to the State hospital, at which latter time I saw him.

Physical Examination.—A rather small male, quite well developed and well nourished. Height, 5 feet, 6¼ inches; weight, 140 pounds. Vision probably good. Ears normal in appearance, except that the right has a

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well-marked, and the left a slight Darwinian tubercle. Hearing good. Head measurements: B. T., 11.75; B. P., 15; A. P., 19.5; M. B., 23.75. Nothing very unusual in the shape of the head or face. Skin quite healthy in appearance and everywhere of an olive-brown color. Mucous membranes have a normally pink color. Muscles of fair size and quite firm. Muscular power is diminished in the hands. Ridges of tibize very slightly roughened. Hands and feet of moderate size and normal formation. The patellar and abdominal reflexes considerably exaggerated. No ankle clonus. Cremasteric reflexes normal. Pupils equal and about normal in size. They react equally, consentaneously, and to about the normal degree to light. He is unable to walk a crack, but after much effort it is possible to get and keep his feet together for a short time, and he stands erect with eyes closed without difficulty. No disturbance of the pain and temperature senses, but when he is touched lightly with tooth-picks he has some difficulty in determining the number of points. No one region is affected more than another. Chest well developed and lungs normal. Breathing easy and natural. The apex beat of the heart cannot be seen and, on account of the constant twitching, it is difficult to palpate, but it seems to be in the fifth interspace and about 1.5 cm. inside the mid-clavicular line. Dulness begins above at about the fourth rib. Heart sounds regular, loud and clear. Radial and temporal arteries not abnormally thickened. Pulse normal in rate, but not very full. No varicosities. Palate normal. Teeth largely absent and those present in a poor state of preservation. Tongue clean. Relative liver dulness begins in the mid-clavicular line at the fourth interspace and absolute at the sixth interspace. It lacks about two fingerbreadths of extending to the costal arch in the same line. Abdominal organs apparently healthy. Bowels move once each day. No hæmorrhoids. Genito-urinary organs normal. He denies venereal disease and the penis shows no scar. Urine negative. Blood examination: hæmoglobin, 98 per cent; red corpuscles, 5,480,000; white corpuscles, 7,526. In stained preparation the red and white corpuscles appear normal. No differential count made. Temperature, 98; pulse, 74; respiration, 18.

As he lies in bed at the time of examination, he keeps up an almost constant choreic movement. Occasionally the motion ceases, but it is only for an instant. The movement is most marked in the hands, less so in the forearms, and still less in the arms. The head, and more particularly the lips and lower jaw are in frequent motion, but here the movement, except for a slight twitching of the lips, stops at times for as much as a couple of minutes. In the legs the movement is unequal. In an hour's time the left knee is not once elevated while the right is raised, at least slightly, every four or five minutes, and sometimes much oftener. There is an almost constant twitching of the muscles in the fore part of both legs, causing slight flexion and extension of the foot and toes. In the left thigh there is no movement noted except a slight twitching of the quadriceps. In the right thigh this movement is more marked and at the same time that the knee is raised, the leg and thigh are rotated somewhat outward. In the

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pectoral and abdominal muscles a frequent moderate contraction is noted. Usually when the abdominal muscles contract the scrotal muscles contract also. At times this latter contraction is marked and bilateral, and both testicles are drawn well upward, but much more often the contraction is only moderate, and then almost invariably affects the right side of the scrotum alone. Occasionally the movement of the muscles of the face is such as to produce grimaces, but not usually. There seems to be slight twitching of the eye-balls in irregular directions, and at frequent intervals the eye-lids are tightly closed for an insant. The tongue is put straight out, but he has difficulty in keeping it out, and it is usually jerked quickly backward and the teeth closed tightly. There is slight difficulty in swallowing and in articulation. Voluntary actions seem to lessen the movements-thus he is able to dress himself, including the buttoning of his clothes and, as he does so, the movements seem less than at other times. Tickling the soles of his feet produces some hyper-extension of the toes, but it is doubtful if this is greater than occurs almost constantly from the choreiform movements. When seated, he often holds to the arms of the chair, apparently to keep his hands from constant motion. At times he sits with his hands clasped in his lap. He rises from a chair without difficulty. In walking the feet are raised more than is normal, and at times this is specially marked, producing a kind of loping gait. His heels always come down first and with more force than is natural. Ordinarily his feet are not separated widely, but at times this is the case and occasionally one flies out to the side as if beyond his control. Occasionally, when he raises his foot, he will hold it quite high for a moment, unable, apparently, to place it, and at the same time he has considerable difficulty in balancing himself. The movements cease when he is asleep. He usually eats heartily and very rapidly.

Mental Condition.-He seems more demented than at the time of his first admission. Knows where he is and recognizes familiar faces, but it is difficult to tell the exact extent of his knowledge, as he does not care to talk on subjects which are introduced, but always wanders off to others which seem uppermost in his own mind. He talks a great deal about God and his heavenly Father, earth, and heaven. Thinks he has no father in the ordinary sense, but that God is his heavenly as well as his earthly father; God made all the earth and the land and made it all for him, and he wants to know if God has not left him a deed. He continually speaks of this father as if he were an ordinary man endowed with a power which is divine. This father has made a home for him in California, and he is expecting every day to be taken there. The father will come with wings and transport him. He speaks of a certain individual who once preached in the hospital and describes him as a man with a long gown, evidently meaning the Episcopal minister. This man, he says, is the "great Satan," though the man himself thinks he is the greatest preacher living. This man, he says, made the Bible, but the heavenly Father will come some day and burn it up; he will turn it into "black dirt," and make a new Bible

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out of "pure gold." Questioned further, he says that the heavenly Father will come on the 18th of August next, which will be 10 days before the patient's birthday. He is sure that God will not disappoint him, " for He loves His son." God talks to him "Oh, so many times." God looks just like him (the patient) except that He has a black moustache. Nobody else looks like these two; there is nobody like them in the world. He denies that he ever had a wife, says she never belonged to him; that she ran off the first day; that she began to "devil" him as soon as she secured the license; that she ran round at night with other men; that he had lots of money and she threw it away, gave it away, threw it into the fire. This woman who is called his wife has three children, but they are not his. They are fathered by the woman's own father. There is not a good woman in the world; they are all wicked; he will never have anything to do with another one. The heavenly Father made them all, but he cannot understand why they are not better. He recalls the exact date of his first admission, and thinks he left sometime in January; has been away six months. They took him away to cure his asthma, but they did not do him any good; they could but they would not. He has no chorea; that is only a name the doctors call it; it is asthma; more than half the world has asthma; more than half in the hospital have asthma; the priest at Dubuque could have cured him if he would. He will destroy all the Catholics; be is not a Catholic. He explains his asthma by saying that his mother ran away from the heavenly Father and took him with her and married another man. After that he had nothing but "lickings," and that brought on his asthma. His expression is generally fairly pleasant, and he is quick to take note of the conversations going on about him and to recognize the conditions and peculiarities of other patients. He gives his age correctly, and the present date also; can name the state and national capitals and the President. In other matters he seems to have a fair general knowledge, and his memory is fair. Says 2 plus 4 minus I equals 5. Cannot go beyond simple problems of this kind, however. Says he cannot remember things of this kind, as it is a long time since he went to school. All the time the conversation is going on he is keeping up a series of meaningless choreic movements. They affect particularly the head, upper extremities, and trunk. In the feet and legs there is scarcely more than a slight swaying movement. There is some defect of speech.

One month after the above date he was transferred to another State hospital. There had been no material change in his mental or physical condition.

CASE NO. XIV.—Male, age 70, widower, farmer.

Family History.—The father, a native of Germany, died at 63 years of age of some septic condition. He drank beer moderately; had no chorea. The mother, also born in Germany, died of some bowel trouble at 85 years of age. She was "nervous" in her later years, but it is very doubtful if she ever had chorea. She used no liquor. The patient had three brothers

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and four sisters, of whom one brother and two sisters are living and well. One brother and one sister suffered a good deal from rheumatism, and the brother died from that disorder. Both are said to have had the same movements as the patient, except that they were of mild degree. Neither showed any mental disturbance. Another brother died when about 75 of unknown cause. Another sister is supposed to be living and well, but this is not positively known.

The patient is married and has six girls and four boys living. One girl died in infancy of "cramps." At admission patient was accompanied by four children who stated that all of the ten children are married and in turn have children, all of whom are healthy. It was noticed, however, that two of the girls seemed quite nervous, and at a later time when the oldest son, who is 40 years of age, was seen, it was observed that he at times had twitchings in the thumbs, spasmodic movements in the shoulders and jerky movements of the whole body. He was not very bright, and had had asthma quite badly for a good many years. A letter, received from the family physician, states that all the children seem to be quite as healthy as the average in a general way, but that all are of a neurotic temperament and all are quick and jerky in their movement and speech.

Personal History and Present Illness.-As far as can be learned, the patient was normal in childhood and young manhood. In early life drank a little beer, but never to excess. For many years past has taken no liquor whatever. He was married at 27, and two years later went to the Civil War where he served three years. Early in his period of service he had a severe attack of dysentery, lasting three months. At a later time, somewhere near the close of the three years, he was engaged in a severe, forced march, lasting three days. On the third day he became completely exhausted and was unable to continue with the troops. He gives the date as September 24, 1864, and says that directly after this the choreiform movements began, that at first they were not so bad as they now are. The children are rather uncertain as to when the signs of chorea first appeared in their father, but believe they were present as far back as any of them can remember, and their mother has told them that ever since the patient returned from the war these movements have been noticeable whenever he was excited or angry, though they were not very bad until he was past 40 years of age. Eighteen years ago they became much worse, and at about that time signs of mental aberration were first observed. Since then his wife has had entire charge of the property, and it is probable that the father's mental disturbance has been greater than the children are willing to admit. For a good many years he has done a little work about the farm and yard but could not work steadily for any great length of time; was quite unsteady on his feet and it was impossible for him to stand still. If he did not keep his feet almost constantly moving he would fall over. Eighteen years ago he began to talk about getting a pension, but has not been able to get it, and this has worried him a great deal. For 10 years past he would run away at times. At first he would return voluntarily, but of late

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it has been necessary for the family to bring him back. During the past summer he was very bad in this respect. Last fall he began to complain of "burning up" and has spoken of it much more frequently the past spring and summer. He would often say to one of his children that his blood was "getting hotter all the time." Last summer he began to have delusions that he was Christ and has continued since to believe this. He also at times says he is the governor. Two days before coming here he tried to kill himself. Previous to this he had repeatedly said that he could not live. He secured an old rusty knife, sharpened it a little, and made eight or ten cuts on his throat sufficiently deep to bleed quite freely. For 12 or 15 years he had been talking about the Free Masons. He has never belonged to them and, so far as is known, has had no reasonable grudge against them. One week before his abortive attempt at suicide, however, he sharpened an old horseshoe to use as a weapon and with this and a large monkey wrench he started out afoot to the neighboring town with the intention, as he expressed it, of killing all the Free Masons.

So far as the children know, there has been no difference in the movements of the two sides of his body. There has never been any trouble in swallowing, but the patient's appetite has been quite irregular. At times he ate enormous quantities, and at others would take almost nothing. He was sent to the State hospital September 18, 1902.

Physical Examination.—A medium sized male; height, 5 feet, 6½ inches; weight, 112½ pounds; somewhat stooped and considerably emaciated. The skin has a wrinkled appearance. Hair iron gray and almost wholly absent over the top of the head. Eyes pale blue and have a much faded appearance. Moderate arcus senilis. Vision rather poor. Ears are small and stand out prominently from the head. The right presents a fairly well-marked Darwinian tubercle. Hearing fair.

Forehead low and narrow. Right malar region much more prominent than left, and left side of head much more prominent than the right, giving to the head and face a peculiar, unsymmetrical appearance. Nose very prominent and eyes deep set. Skin falls in loose folds about the face. Muscles of medium size but not very firm.

Pupils equal and rather small; react equally but rather slowly to light. Patellar reflexes somewhat diminished. No ankle clonus. The Romberg sign cannot be made out, as he cannot even keep his feet together. Cremasteric and abdominal reflexes sluggish. As nearly as can be made out, sensibility for heat and cold is normal. He bears the pricking of a pin everywhere with but little manifestation of pain, though he says it hurts him. It is impossible to secure any reaction to pricking the soles of his feet, though he says he feels it.

Chest narrow and not very well developed. Some increase of percussion resonance and some lengthening of the expiratory sound. Apex beat of heart in fifth interspace about one cm. outside midclavicular line. Dulness begins above at third interspace. No murmurs. Heart sounds not very strong and quite irregular. At times the rapidity of the beat will be almost twice as great as at others. This acceleration occurs irregularly, but on an average of about every two or three minutes. No weakening of the sounds corresponding to the increase or decrease of the rate. Radial arteries moderately thickened. Pulse very fair except for its irregularity.

Tongue coated, cracked, and not very moist. He protrudes it readily, but it is quickly withdrawn and continues to rapidly jerk outward and inward. He seems to control the action of the jaws with considerable difficulty at the time, and twice the jaws shut tightly on his tongue. Teeth badly preserved and many absent. The abdominal organs seem ordinarily healthy, except for a complete, right-sided, indirect, inguinal hernia which comes down when he stands erect and is reduced with ease.

At admission, temperature, 99.8; pulse, 64; respiration, 16. The blood examination shows 5,680,000 red corpuscles and 14,800 white corpuscles. Urine: Cloudy, reddish yellow, acid, sp. g. 1025, no sugar, some albumin, no casts.

As he lies in bed there is an almost constant movement in some part of his body. His head is much of the time raised from the pillow, but sometimes as if in fatigue he supports it with his hands clasped behind. Voluntary muscular action inhibits the movements to some extent. Thus he can hold his head still for a little time, but such effort is usually followed by an unusually vigorous series of movements. Sometimes his head moves from side to side, and sometimes forward and backward. In a general way there is a tendency towards circular movements. His eyes and the lids are fairly quiet, but there is frequent twitching of the muscles in the cheeks, thus causing an elevation of the corners of the mouth. When he supports his head with his hands the arms seem fairly quiet, but when his arms lie on the bed there is almost constant, slight twitching of the fingers with occasionally more marked movements in the forearms, and, more rarely, movements in the upper arms. At the time of the examination he was lying on his back in bed with the right leg crossed over the left. In this position the movement is confined exclusively to the right leg. It consists chiefly in flexion of the toes, particularly the great toe, and a contraction of the adductors of the thigh. When the position of the legs is reversed, so that the left lies over the right, the movements continue to be confined to the right leg. When his attention is called to the matter he says the movement is the same on both sides of his body and under the stimulus of his attention slight movements begin to appear in the left leg. When he rises he sways from side to side and finds it necessary to move his feet about in order to keep from falling. When he walks the peculiar, swaying, jerking movement continues. Some steps are long and others are cut short with a jerk. At times he rises on his toes or heels and jerks quickly to the right or to the left, evidently with some difficulty maintaining his balance. Also in walking he is not always able to go straight ahead, but will whirl around on one foot and start in a new direction, although he is always able to return to his proper course again. So far as can be seen there is no more tendency to turn to one side than to the other.

Calling his attention to his movements always increases them. They cease when he is asleep. A specimen of his writing is given below.

(JOHN NERGE.)

Mental Condition.-He lies quietly in bed except for a slight constant movement in parts of his body. He knows where he is, recognizes the character of his surroundings, and can tell the name of Independence. He knows the year and month and gives the day of the month approximately. Says he knew where he was coming and was willing to come because he had no other place to go. He admits that he attempted to commit suicide, and, when asked why, says something about having "military blood" and that it is different from other blood. Later, when asked the same question, he says that he is Christ; that he tried to commit suicide in order that he might be sent here and wanted to be sent here in order "to prove out the government." In speaking to the physician he often uses the expression "your government" and seems to feel in some way that he lives under a new regime. It may be that he refers to the divine government. He names the president and previous president without difficulty, but cannot name the governor. On prolonged questioning he seems to have a better grasp of affairs and to be less demented than would appear on a superficial examination.

He was kept in bed the greater part of the time until the third day of October, after which he was permitted to be up. While in bed his morning temperature taken in the mouth varied from 96 plus to 97 and the evening temperature was 97 or 97 plus. His pulse ranged from 60 to 110, and his respiration from 16 to 24. Occasionally, he would eat a good meal without persuasion, but usually it was necessary for the attendant to feed him with a spoon. He ordinarily swallowed his food with almost no mastication. Occasionally he would spit it out almost as soon as it was placed in his mouth. When he did not eat well he explained it by saying that he did not wish to burden his family with the expense. He continued to talk of himself as the governor and once said he was the Christ. After getting up he did fairly well until the morning of November 5 when he became very restless and violent. He broke some of the furniture and also the window glass in his room, attempted to injure the nurses and the other patients, and refused to eat anything. Was given one-eighth grain of morphia, hyperdermatically twice but as this had no effect he was placed in a tub of water, ranging from 98 to 110 degrees, and was kept there for 25 minutes. At first he was very troublesome in the bath, but eventually went to sleep and was returned to his room and remained asleep until noon. He then ate a little dinner and after dinner became very noisy and restless. Another hot bath had no effect. As he became more noisy the violence of his movements increased.

During the entire month of November he continued much more min and restless than previously, though not so bad as on the 5th. Almost all of this time, he refused to take food, and it was necessary to feed im mechanically, even to the extent of giving him water in this way. It is possible that he was in fear of being poisoned, since on a few occasion, he would drink water from the water bucket if permitted to do so alone. but would not take it if given by anyone else. Several times during the month, hot baths were tried but with very little effect. During December he was very quiet and remained in bed, but refused to take either solid at liquid food, and it was necessary to feed him by means of a tube. He mouth became very dry and the tongue, lips, and interior of the cheeks were covered with a half-dry, flaky material. His temperature at this time i was 96, or even slightly lower in the morning, and usually about 97 in the evening. His pulse varied from 56 to 94, and his respiration from 16 10 1 22. At the end of December his weight was 99 pounds. At that time is (began to eat a little, and gradually gained in strength so that by the middle t of January he was able to be up again, but almost immediately after state ting up he again refused to eat and was returned to bed. In the last part of January he became very noisy, but not violent. In February is i again began to eat some, but did not regain his former strength and remained in bed until his death which occurred on the 17th day of March During the early part of March, so far as his strength permitted, he we very noisy and restless. Several times he got out of bed and broke wir dow panes, and often he would throw himself on the floor and strike in head and hands against it and the wall as hard as he was able. His monments were more marked on the day preceding his death than for a loss time previously, and he also seemed much better mentally. His destin was unexpected, and no special cause could be assigned for it. During the last two weeks he had developed a marked fancy for looking at him 1 self in a looking glass.

CASE No. XV.—Male, age 41, married, weaver.

Family History.—Father died in a hospital for the insane with chore form trouble. Mother died at 71 with heart trouble and paralysis. No blood relationship between them. They had five sons and three daughters Two sons died when young, cause unknown. Two sons and two daughters are living and well. The remaining daughter is choreic and has some mental trouble, and the remaining son is the patient described. He is married and has four children, the oldest and youngest of whom are excessively nervous, and one at least is an imbecile and is practically an invalid from some cause. The other two are said to be normal.

Personal History.—The patient was born in New York, and when first admitted to the State Hospital, January 4, 1896, was 35 years old. No history of his childhood, except that, when a baby, he cried a great deal and seemed in pain, no cause assigned for it. He was not intemperate until after this illness appeared.

Present Illness.-Was married at 21, and even then was "nervous," but, according to his wife, this condition was not very noticeable until nine years later when it grew much worse. He became very amorous and thought his wife was untrue to him. Was filthy in his habits and speech and very ugly about the house. Often threatened suicide, but never attempted it. A little time before coming to the hospital, while blasting stone, a charge of powder went off near him, and after that his hearing was impaired. His wife thinks that his movements and mental condition were both worse directly afterward. He would sit like one dreaming for hours at a time and did not seem able to fix his mind on anything. Thought he ought to be in possession of a hotel which his brother really owned and worried greatly because of this. When admitted at the hospital he was well nourished, with large firm muscles. Complained of a roaring in both ears and could hear the ticking of a watch only at one foot distance. Vision, smell, taste, and the sensations and reflexes were normal. He was oriented as to place and surroundings and talked in a rational manner on most subjects. His urine contained considerable albumin. Four months later he was discharged. The albumin had disappeared from his urine, but he had well marked choreiform movements and was described as "feeble minded." Three months later, he was returned and continued at the hospital until his death in 1903. At first he was quiet and inoffensive, and made no trouble except that he often requested to be released so that he might return to his family. Talked often about his business (weaving) and thought he should be at home in order to care for it. Said he could make a good deal of money and support his family in that way, though, as a matter of fact, he was quite unable to do more than the simplest labor. In 1899 he was noted as disoriented as to time and place and could not do the simplest sums in addition and subtraction. Still talked at every opportunity about going home and thought he could do a good deal of work. Was nervous and easily excited. In 1900 he had become unable to do work of any sort, was noisy at night and difficult to manage, and his movements had grown much worse. He occasionally quarreled with other patients, but was not particularly irritable. At this time, also, he began to eat rather excessively, and would steal food from other patients when opportunity offered. He grew gradually worse both mentally and physically. The following examination was made October 21, 1902.

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Physical Examination.—The patient is a large male, well developed and well nourished; height, 6 feet ¼ inch; weight, 186 pounds. He still stands erect, though he walks with many contortions. Hair slightly tinged with gray. Eyes deep set. No arcus senilis. Vision seems quite good. Moderate ptosis of eyelids. Complexion dark. Forehead rather low, otherwise nothing unusual in appearance of head or face. Ears symmetrical and about normal in appearance. No Darwinian tubercles. He says his hearing is good and that there is no difference in the two sides, but it is evidently considerably impaired, and he hears a watch only when held a foot or less from his head. Skin healthy in appearance. No scars of any importance on the body. Muscles of good size and quite firm.

Chest broad and well developed. Breath sounds very irregular, but otherwise normal. Apex beat of heart in the fifth interspace and heart area normal. Heart sounds not quite regular, otherwise normal. Radial arteries soft and pulse quite good, rate 62. Abdominal organs seem healthy.

Pupils equal and about normal in size. They react for light and distance. Patellar reflexes both considerably exaggerated. Quite well marked ankle clonus. No quadriceps spasm. He can put his feet together and stand with eyes closed for a short time, probably as long as with eyes open. Cremasteric reflexes normal. Abdominal probably normal, but difficult to make out since his abdominal muscles are in almost constant movement. No Babinski. So far as can be seen sensibility to heat and cold and touch and pain are present, but their degree is difficult to make out. He bears quite sharp pricking with a pin with but little manifestation of pain.

As he lies in bed the most active movements are in the head, neck, abdomen and scrotum. The entire abdominal muscles are in almost constant movement. The scrotum also is in almost constant contraction or semicontraction, being never completely relaxed. There is no movement whatever in his feet, legs or thighs as he lies undisturbed, but when his soles are pricked, the feet and legs make two or three quick, spasmodic jerks, always in the line of extension and flexion. As he lies with hands and arms beside his body, there is, at long intervals, a slight, sharp flexion of the forearm and hand on the arm; more often there is a slight extension of the hand on the wrist, but the most common movement in the upper extremities is one confined to a single muscle or small group of muscles in the hand or forearm, producing only a slight twitching or movement of a single finger. There is a very frequent but slight and rather rythmical contraction of the muscles in the chest, producing an irregular respiration. He usually lies with his head flat on the pillow, but it is very frequently drawn from one side to the other, and occasionally it is drawn forward on the chest. Generally, there will be three or four movements of flexion, and then for some time the head will be drawn from side to side without further movement anteriorly. The mouth also is in very frequent motion, the movement here consisting of a contraction and relaxation of the orbicularis oris. His eyelids frequently contract firmly for a

considerable interval, then relax slightly, and then again contract slightly for a couple of times, after which they remain open for a period. The muscles of speech seem particularly affected, and it is impossible to understand the noises which he makes, though he evidently comprehends a part of what is asked him and at times attempts to answer. When sitting in a chair his head is in almost constant movement, consisting in a flexion of the head on the chest and a lateral swinging movement of the head when in this flexed position. The movements of the eyelids and mouth are as above. The jerking and twitching is seen in both hands, but is much more marked in the right than in the left. Occasionally, both hands take part in some coarse movements, and, following this, are a little quieter for a short time. He sits down in a chair with difficulty, almost falling into it, and as he rises his hands, arms, legs, and head exhibit a variety of coarse movements. In walking he starts off with a rush and nearly always moves quite rapidly when in motion at all, but frequently he quickly slows up or altogether stops with a sort of jerk. His heels come down heavily, the right more so than the left, and the remainder of the foot follows with a slap. The left leg and foot are turned outward more than the right, and the left leg is always more or less flexed at the knee. As he brings himself up short in his walk, there is often a tendency to sway to the right or to the left. Handling an arm or leg at once makes its movements worse. Urine examination: Clear, amber, acid, sp. g. 1020, no albumin, sugar or Blood count: red blood corpuscles, 5,568,000; white corpuscles, casts, 9,856.

A specimen of his writing is given below:

(FRANK C. CHAPMAN.)

Mental Condition.—His face generally has an anxious, worried expression, and his clothing is usually in more or less disorder. He is no longer able to speak so that he can be understood, but at times he tries hard to say something. On account of this speech defect it is difficult to learn his exact mental condition. He still frequently picks up a newspaper and evidently comprehends something of its contents, for he will take it to the nurse and point out certain paragraphs. Not infrequently, however, he is found holding a paper upside down and acting as if reading it. In speaking to him it is often necessary to repeat a question several times, while he looks at the questioner in a stupid way, before a response is secured. He never makes any attempt to get the other patients to underently finds little to complain of. February 9, 1903.—Subsequent to the above period little change in his condition was noted until yesterday when he seemed to the nurse unusually irritable. He struck at several other patients and repeatedly tried to get out of the doors and windows. This morning he was unable to get up and was carried to the sick ward. His temperature was 1038; and respiration, 26. Pupils equal and reacted normally to light. Many rales were found in his lungs. At noon his temperature was 104.8 and respiration 48. He was unable to swallow at noon or afterward. All of this time he was suffering severely from dyspnce and his pulse was so weak and rapid that the nurse could not count it. His choreiform movements continued to the last.

A specimen of urine taken post mortem resulted as follows: Clear, amber, acid; sp. g. 1022, some albumin, no sugar, no casts, many epithelial cells.

CASE No. XVI.-Male, age 74, widower, farmer.

Family History.—The father, a native of Norway, died of unknown cause. It is not known if he had chorea. The mother had chorea and died of pulmonary tuberculosis. A sister of the patient also had chorea. The patient is married and had nine children, four of whom, at from 8 to 27 years of age, died of pulmonary tuberculosis. Two sons and three daughters are living and well physically. All are very commonplace people and one is distinctly defective. All are married and all but one have large families, none of whom is as yet choreic.

Personal History and Present Illness.—Patient was born in Norway and was a very strong and vigorous man in early life. Served through the Civil War and for many years drank heavily, but not of late. No history of rheumatism. For at least 10 years has had choreiform movements and at the time of their appearance he was drinking unusually heavily. Two years later his wife died, and he has since been depressed. For four years there has been distinct mental impairment. He has been negligent and unthrifty in business. Signed a note for \$5000 which he was compelled to pay. Became very melancholy and twice attempted suicide, once by jumping into a cistern and once by holding his head under water in a tank. Both times was rescued with difficulty. Was admitted to the State hospital, February 6, 1899. For a month previously he had had diarrhom and had very little control over his bowels.

Physical Examination.—A medium sized man, rather poorly nourished. Height, 5 feet, 8 inches; weight, 136 pounds. Hair tinged with gray. Eyes blue, vision fair. He reads with the aid of glasses. Face broad, cheek bones prominent. Head measurements: A. P., 18.5; B. P., 14; 1908]

M. B., 20.5; B. T., 11.5. Ears normal in appearance and hearing good. Skin fairly healthy. Muscles small and soft.

It is very difficult to examine the heart and lungs, but so far as can be determined, there are no gross lesions. The radial arteries are moderately thickened, the temporal arteries, very hard and prominent. Teeth much worn and many absent. Abdominal organs healthy as far as can be determined. He urinates about twice at night. Urine clear, amber, acid, sp. g. 1025, no albumin, no sugar, microscopical examination negative.

Knee jerks slightly exaggerated. Pupils equal and react rather sluggishly to light. The tongue is protruded straight, but is quickly withdrawn on account of its choreic movements. During the examination, or when disturbed in any other way, there is almost constant, coarse, diffuse, choreiform movement. When asleep the movements cease and when in repose they are much diminished. He has little control over the muscles of his face. A voluntary effort with his hands decreases the movements in the hands temporarily, but subsequently the movements are all increased. He is unable to feed himself.

Mental Condition.—He speaks English poorly, and this, combined with his impaired articulation, makes it difficult to get an accurate idea of his mental condition. When no one notices him, he is silent, but if anyone attempts a conversation he is guick to enter into it, and will continue talking for some time, even if no one listens. His remarks are always more or less incoherent. As nearly as can be determined, he is completely disoriented as to place and almost as much so for time and persons. He has no appreciation of the place where he is, but is surprised to find so many people about him. Thinks he missed his train on the way and accidentally reached his present location. Says he is going back to Norway soon "if God permits." In talking he often uses the expression "if God permits." He is dissatisfied with his present position, but is not much given to complaining. Has almost no knowledge of current events.

March 4, 1899.—Says he is getting better every day and seems quite content. When anyone will listen talks a great deal. Frequently refers to his guardian by name, but his remarks are so incoherent that it is impossible to understand what idea he means to convey. His coarse movements continue.

April 10, 1899.—Says he has been in the hospital more than a year. He thinks it is an immense boarding house and is apparently entirely satisfied to remain. Says his movements have been present "a year or two." Uses this expression to answer all questions involving the element of time, regardless of its appropriateness. Sometimes says he is getting "better and better," and sometimes that he is completely cured. He was visited a few days since by his guardian. Seems to remember that the visit occurred, but has no idea of how long it was. Whenever started, talks on indefinitely, regardless of whether anyone is listening.

The notes subsequent to this date are not very full, but there does not appear to have been any marked change for some time. He grew slowly

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weaker and his choreiform movements became more marked, so that it was increasingly difficult for him to get about. In 1901 he could walk only short distances and even then frequently fell. His movements also had become more marked. He was much demented, could remember very little and often soiled his bed and occasionally his clothes. Required the assistance of a nurse in dressing. Much of the time was restless, but talked less than at first. Was never particularly irritable. His general health had continued quite good, but at the close of 1901 he began to lose weight. On January 10, 1902, was placed in bed because he had fallen so often. He also was more confused and more noisy than before. His temperature, pulse and respiration were normal and continued so up to the 22d. On the night of the 21st he became faint while sitting on the stool and fell over. Was unconscious for 10 minutes, and his pulse was almost imperceptible. After consciousness returned he was still very weak. Up to the 27th he had no further fainting attacks, but was constantly in bed and was more noisy, restless, and confused than before. The afternoon of the 27th had another fainting attack. Temperature at 6 p. m., 95.4; pulse, 80; respiration, 20. He died at 2.50 p. m. on the 30th. On the 28th and 29th he was very noisy and confused, but all day of the 30th was stupid. Paid little attention to anyone and could scarcely swallow. At 6 a. m. temperature, 97; pulse, 66; respiration, 32. At noon temperature, 96.8; pulse, 66; respiration, 34.

CASE No. XVII.—Male, age 72, married, farmer.

Family History.—The paternal grandfather, a native of Germany, was a heavy drinker and a man of very ugly disposition. He died at 95, probably of old age. Had been totally blind for some time. A relative states. "He was not insane other than would occur on account of old age." The father, also born in Germany, was a moderate drinker and a very violenttempered man. He died at 80 years of age. He had some motor disturbance, though it is not positively known that it was chorea. The mother was born in Pennsylvania, and died at 80 years of age of dropsy. No nervous or mental disorder in her family. They had four sons and seven daughters. All the sons are living and, excepting the present patient, are well. One sister died "of fits" at 35 and another of "child-birth" at 30. The others are living. One of the sons drank to excess. None of the other children had a nervous condition in any way similar to that of the patient.

Personal History.—The patient was strong and hearty in babyhood and has never suffered from any severe ailment except as below. He has had several attacks of quinsy and at 33 had a severe attack of fever. Ten years ago he was kicked in the abdomen by a colt. He was very ill for some time after this. He drank beer and whiskey moderately and smoked excessively. From childhood had a vicious temper. He was married at 32 and has had five sons and one daughter, all living. One son constitutes Case No. XVIII. The other children are all well, though all have a ner-

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vous temperament. The oldest son is married and has five healthy children, the daughter has two healthy children.

Present Illness .- The wife thinks that ever since their marriage the patient has been changeable, nervous, and excitable. His jerky movements came on gradually and have certainly been present for many years. They appeared first in his legs. Twenty-four years ago he received a slight sunstroke, and after this his mental disorder was more pronounced. He became indifferent to his wife, refused to provide for her and was jealous of her. On the 24th of March, 1892, was committed to the State hospital. Two years before he had had an acute outbreak of insanity, lasting six weeks. This second attack had begun 10 days previously. He had threatened to kill himself and wife and had been prevented only by physical force. Thought his wife was the cause of his troubles. Often used indecent language and had a particular dislike for the churches and church members, though this was contrary to his previous views. In the language of the committing physician he would "rave like a maniac and smash everything he could get hold of. Often tore his own clothes." When first admitted he was described as emaciated, and ate and slept poorly, but he improved after a time and twice went home on parole, but each time was returned. Was finally discharged October 14, 1892. On the 24th of March, 1899, he was re-admitted. He had been at home in the interval, but twice had been up for re-commitment. He had had frequent outbreaks of uncontrollable temper, would not undress at night, and would sleep in his day clothes for months at a time. At one time became very religious, but later was quite the reverse. The following is an abstract of the notes made at the time of his second admission.

He is fairly well nourished; weight, 137 pounds. Muscles of fair size, but soft and flabby. Skin pale, dry, and wrinkled. Temperature, 98.2; pulse, 84; full and regular. Heart area slightly enlarged, a blowing, systolic, aortic murmur. Lungs, abdominal and genital organs normal. No disturbance of reflexes or sensations noted. Choreic movements are present in the entire body, breathing is somewhat affected by these movements. He is oriented as to time, place, and surroundings. Says he always got along well with his family until 10 years ago, when he began to have trouble, and it has increased ever since. Says "It finally ran me out of my house. It grew out of jealousy as much as anything between me and my wife. I found fault with her because she neglected home affairs too much. She would go to camp meetings and stay two or three weeks at a time and leave me and the children to look after things at home. She finally left me. She had nothing to live on, and I got her to come back, but things have been getting worse." He thought his wife was improperly intimate with other men, and he talked to her about it, but she used him badly. She attended camp meeting too much, and the preachers came constantly to the house. Except for his remonstrances his wife would have become criminally intimate with them. One day his wife and son attacked him, and threw him into the wire fence because he wanted to take a team

out of the barn. He swore at them and threatened them. Once threatened to kill his wife. (The history shows nothing wrong on the part of the wife.)

The following is an abstract of the ward notes made from time to time:

June 28, 1899.—Has increased in weight, is idle, and shows no interest in any work. Says he has no wife; he had one, but he thinks she is now divorced.

February 28, 1900.—In December had a slight attack of illness, considerably reducing his weight. Is again in good health and weighing more than before. The choreic movements and his mental condition continue 25 before.

May 7, 1900.—Recently has decided that a young insane man on his ward is his son and treats him accordingly. This morning he refused to put on his coat, said he had been scared by the smell of urine in it and would never touch it again. When the attendant attempted to compel him to put the coat on he threw himself on the floor and kicked and bit and struggled with everyone who came near him. Was moved to another ward, where he immediately became quiet; acted as if unable to remember anything of the previous trouble and asked who had taken his coat. His wife, when informed of the occurrence, said he had behaved similarly at home, many times.

April 30, 1901.—Is generally restless and always rather irritable. At times attacks other patients and a few days since he passed through m attack almost exactly like the one detailed above. Does no work.

January 31, 1902.—Has recently had a severe attack of colitis, but recovered, and is now in very fair general health.

On October 29, 1902, I had an opportunity to give him a careful examination, of which the following is a record:

Physical Examination.—He is a medium sized male, fairly well developed, but rather poorly nourished. Hair white and very thin over the top of the head. Face covered with a moderately heavy growth of white whiskers. Eyes bluish-gray, slight arcus senilis. He says his vision is good. Head measurements: B. T., 11.25; B. P., 15.5; A. P. D., 1925; M. B., 24.25 Forehead rather low and somewhat retreating. Head rather more prominent on the right side than on the left. Eyes deep set and face much wrinkled. Ears of medium size and symmetrical in appearance. In both, the helix is much flattened and turned backward. No Darwinian tubercles. As nearly as can be told, hearing is fair. Skin dry and hangs in loose folds everywhere. No scars of any importance. Complexion medium. Muscles small and flabby.

Pupils equal and rather small. They react equally and consentaneously, but slowly to light. Patellar reflexes equally and considerably exaggerated. No ankle clonus. He has a good deal of trouble in keeping his heels and toes together at the same time. Generally as soon as the heels come together the toes spring outward and vice versa. Finally he succeeds in bringing both together and shuts his eyes for a little time. His body wriggles and sways about a good deal, but he does not fall or show any particular tendency to fall. No Babinski. Abdominal reflexes difficult to make out on account of the movement of the abdominal muscles; probably about normal. Scrotum firmly drawn up. Only a very slight scrotal reflex is made out.

Chest moderately well developed except that it is rather hollow above. Supra- and infra-clavicular fossæ prominent. Percussion note decidedly impaired, but no real flatness and no rales, coughing or other sign of lung disturbance. The apex beat of the heart cannot be seen and, on account of his movements, cannot be felt. It is heard best in the fifth interspace and a little outside the mid-clavicular line. Heart dulness begins above at the third interspace. There is a prolonged, blowing, musical, aortic, systolic murmur heard more or less all over the front of the chest, but especially in the aortic region. The musical element is gradually lost as one goes upward, and in the carotid arteries a well-marked blowing, but not musical sound is heard. The radial arteries are very firm. Pulse fairly full and strong, not quite regular. Slight œdema over the tibiæ.

Tongue considerably coated. He projects it without difficulty and has no trouble in keeping it protruded. At times it moves from one corner of the mouth to the other, but only after a considerable interval is it once retracted, immediately put out again and again kept out for some time. He does not close his jaws on his tongue. Has no teeth. Abdominal organs seem about normal; abdomen moderately pendulous.

Right testicle somewhat increased in size, left quite small. Patient thinks it has always been so. Says the right testicle was once injured. Penis small.

As he lies flat on his back in bed, there is an almost constant movement of one or more parts of the body. His head rests upon the pillow, and about the only movement in which his entire head takes part is a moderately frequent lifting of the chin with some consequent movement of the entire head. His eyelids are in almost constant movement. They twitch six or eight times, at first only about half closing, but the movement becomes more and more marked until the lids finally shut tight over the balls for a little time. They then open and this series of movements is repeated. There is considerable lateral movement of the eyeballs, but none anything like so marked as the movements of the lids. He follows the movements of a finger, the eyeball moving with the finger, and the lids following the ball fairly well. While this test is carried out the twitching of the lids is almost stopped. There is an almost constant movement of the lips and cheeks and of the abdominal muscles. The lower part of the chest moves almost as freely. There is also considerable movement in the upper part of the chest, but not nearly so marked as in the lower part. The shoulders are shrugged frequently, and this is about equal on the two sides. The hands and arms are perhaps the most quiet part of his body. At infrequent intervals there is a slight coarse jerking in the arm, but a little more in the left than in the right. Occasionally there is a slight twitching of the fingers or flexion of the hands on the arms. In the left thigh there is an almost constant tremor in the quadriceps muscle. This is fine, but appreciable both to eye and touch. The same phenomenon is present in the right thigh, but less well marked, and, at times, to a slight degree, in the pectorals. In addition to the tremor, there is a rather frequent coarse contraction of the left quadriceps. This is usually not suffcient to move the leg but often moves the patella upwards. This movement is present in very slight degree in the right thigh. There is no tendency for the quadriceps to remain in contraction when the patella is tapped. In the legs there is practically no movement. Occasionally there is flexion of the left foot on the leg or flexion of the toes of the left foot. Rarely there is slight flexion noted in the toes of the right foot, especially the little toe.

The movements are worse when his attention is called to them, but be can inhibit them to some degree. He ordinarily dresses himself, but does so rather clumsily. Goes walking with other old men who walk a short distance. In starting to perform a voluntary movement, it seems as though he must wait an appreciable interval in order to gather headway to carry it out. The following is a copy of his signature made October 29, 1902.

(JACOB SADDLER.)

There is no great impairment of the muscles of speech, and he articulates quite well. As he sits in his chair there is a frequent movement of the muscles about his mouth, some swaying of his body, and some morement in his legs, but more in the right than in the left. He rises from a chair by assisting himself with his right hand. When first on his feet, be staggers a good deal and sways as if about to fall, but recovers himself and starts off quite rapidly. He raises the left foot very high and brings it down heavily on the floor. There seems less tendency to bring the heel down first than there is in most of the other cases. He frequently brings himself up quickly with a jerk, half stopping, and as he does so, each time he brings the anterior portion of the left foot down first, sliding it along until the heel touches the floor. This movement always involves the left foot. At the examination his temperature is 97.8; pulse, 74; respiration, irregular and difficult to count, but certainly slow. Red corpuscles, 5012-000; white corpuscles, 6,420.

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Mental Condition.-He is always found sitting in a certain chair on the ward. If, in his absence, anyone else gets the chair he promptly ejects him, if able to do so. His face is always covered with a bushy growth of beard, and his eyes, which are deep-set, are bright, and he has a rather shrewd expression. He seems to like a certain fantastic element in his dress. At times he converses readily, and again he will say nothing to anyone. He is always sarcastic and often witty, and when he succeeds in making a joke is much pleased. His conversation is always somewhat fragmentary and incoherent, but this is probably partly, at least, because his thoughts flow more freely than he is able to express them. His orientation as to place is fair, as to persons not so good, and as to time very poor. He gives the year as 1892, then 1891, and finally 1893. Thinks the month is April, and seems to give no attention to the condition of things outside as bearing on this. Says the leafless trees present a peculiar condition, but he has seen it that way before in April. He thinks his memory is just as good as it ever was and excuses any errors in time by saying that he pays no attention to dates. He cannot tell the present President, says he has no reading matter. Recalls the date of the rebellion. At first he cannot name the president at that time, though he evidently has some general recollection of him. After considerable delay, says Lincoln. Says he was married at 32 and has four boys and one girl living; that his movements have existed only two years, and began after a cyclone. He attends well to questions and probably comprehends them, though his answers are by no means always relevant. He continues to be very irritable.

December 30, 1903.—Has failed both mentally and physically since the last note. Is always excited and restless and at times noisy. Frequently quarrels with the other patients and is often disobedient to the attendants. Walks with considerable difficulty. His temperature, pulse, and respiration have recently been taken twice a day for a considerable period and show practically no variation from the normal.

April 12, 1904.-Has a habit of speaking very abruptly and his incoherency is increasing. Sometimes his replies to questions are very bright and sometimes they are silly and not at all to the point. When approached to-day by the physician, the following conversation took place. It is evident that the patient has been thinking some of going out of doors. He starts off as follows: "Take an overcoat, large size, put it on." Q .- "How are you to-day?" A .- "Quite well." Q .- "How old are you?" A .-"Can't tell you, no sir; it is an unreasonable question; don't like that starving; coming up and down; I fell down several times, threw everything around; threw a ground floor clear around; I'll take my chances I guess on clothes (points to torn coat). Look at the buttons! (there are none). I guess they have been eat off. I like coffee best for dinner; a mixed up mess; whatever we get we have to take; don't like to go up and down, up and down; jerk a man head over heels." Q .- "Would you like to see your family?" A.--(laughs) "No I guess I see them about often enough; suit yourself, doctor." Q.-" How many children have you?" A.-

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(laughing) "Can't answer that question; that's an unreasonable question (laughs); it don't pay, going up there yesterday something came pretty near killing me; might have been a carpet; dangerous going up there I like out-door work best; no peace here; I feel well, but when we get pay we got to get up. What's the matter with that fellow (pointing to a general paralytic who is rubbing his knees). (Laughs.) You tell. I guest it is a bossie, it is a breed of folks; got most too many boarders here; you wasn't born to die." Q .-- "What were we born for?" A .-- "Oh, 19 do good, do good to our fellow-men, but crowd, crowd, crowd, no chance to go home at all. I would like to be where there is a lounge, lounge. Q.-"What is the date?" A.-"To-day, I can't tell, I can't guess at it. guess Monday (is told it is Tuesday). Well?" (laughs). Q.--" Can you give the month?" A.--"I guess it is about December." Q.--"What year?" A .- "You tell that. There is just as much danger of a man getting killed, those step-ladders." Q.—"Does it seem like December?" A.--(Laughs) "Oh, sometimes, judge for yourself." Q.--" What is the institution?" A .- "I don't know what it is run into, we got to be comtrolled by the weather." Recently he asked the woman attendants for some cake. When they failed to produce it he slapped them; was put in a side room and broke out the window; was then taken from the room and held until he became quiet. When spoken to about the matter he says: "Don't recollect breaking the window, believe it is a lie; there is not a window in the house, can swear to that. Q.-(Pointing to window) "Are not these windows?" A.-" Name them yourself." Q.-" But I do not see why you say there are no windows in the house." A.—" Be your own judge"

The abruptness of the sentences and the sudden changes do not necessarily indicate such rapid changes of thought. At times there does seen to be a quick change without any cause. When sitting quietly, his more ments are not very prominent. There is an occasional slight movement throughout the body, but more marked in the face than elsewhere. The movements in the legs are about equal. The patellar reflexes are much exaggerated.

I saw this man the last time late in 1904. He was still failing and died sometime early in 1905.

CASE No. XVIII.-Male, age 33, single, farm laborer.

Family History.—This man is the son of the patient described under Case No. XVII. He is the third of six children. At the time of his birth the father was "peculiar," but not noticeably choreic. For further family history see Case No. XVII.

Personal History.—Patient was fairly strong and hearty in childhood Learned to walk and talk at an early age. Had chicken-pox and whoopingcough in infancy and measles in young manhood, none very severe. At two years of age had a severe attack of bowel trouble which nearly ended fatally. At 10 years of age was thrown from a horse and his clavide broken; his head also was injured and he was mildly delirious for a few

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hours and subsequently could not recall what had happened to him. In the end seemed to fully recover. Began attending school at six or seven and quit at sixteen; did as well there as his brothers and sisters. Never drank or dissipated in any way. No history of convulsions, syphilis, or gonorrhœa. Was sensitive in disposition and quite feminine in his tastes, preferring work in the house to work outside. Was ordinarily cheerful most of the time and quite ingenious and inventive in his tendencies. From 16 to 20 he worked about the farm.

History of Present Illness.-When about 20 he helped to build a stone wall. The work was heavy, and he complained of his inability to do it, but his father forced him to continue. Shortly after this his mother noticed some tendency to jerk his feet about. The patient and mother think that this heavy work may have had something to do with bringing on his trouble. At first he would raise his feet and legs up quickly, like a horse with "stringhalt." A little later it was noticed that he would drop things which he might be carrying, for example, a pail of water. After the appearance of motor symptoms he began to have pain in his arms and occasionally in his feet and legs. The pain distressed him a good deal and his hands and arms swelled considerably. The mother thinks it was rheumatism. It lasted for one month, and then quickly disappeared. On the third day of December, 1897, he was admitted to the hospital. According to the physician's return there had been a gradual weakening of his mental powers for three years. He had become restless and inattentive to his occupation. Did not wish to converse with the members of his family and, though showing no delusions or hallucinations, seemed always apprehensive. He was rather slender, but well developed and well nourished, and his muscles were firm and of good size. Almost his entire body was covered with an eruption of papules and pustules from the continued use of bromides. He had a peculiar twitching movement of the head and limbs which was much worse when he was watched. If left entirely to himself there was noted only a slight movement of the finger and thumb and of the muscles of the neck. He was perfectly oriented as to time and place, recognized he had a nervous trouble and said he had come to the hospital to be treated for it. He remained at the institution until the following June, but there was practically no improvement, and he then went home. On July 2, 1903, he was re-admitted and his mother gave the following history:

Four years ago after a very hard day's work he complained of a pain in his back. He went to bed in the evening, and when he awoke in the morning he was "very insane." After this he was always inclined to run away, and had to be watched constantly. Would remove his clothing. All of that summer he had a good deal of trouble, but was better toward winter, though never nearly so well as before this acute outbreak. Has failed faster since. For one and one-half years has soiled his clothing, and during the last year or two his feet and legs have been somewhat swollen. At the present time his arms, particularly the left, hang loosely at his

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sides, and he likes to sit in an arm chair in order to have something to support them. This condition has been noticed during the last year. Last winter he imagined he saw wolves and sheep about the house. Had previously heard his brother speak of wolves catching his sheep. At present rarely speaks and when he does so at all it is usually only a word For example, in asking for bread he will simply say the word "bread," and not use the entire sentence. He is quite obstinate and was of a rather suspicious disposition at home as long as he was bright enough w show it. He usually sleeps quite well but at times is restless. A little previous to this second admission his mother had written: "He is much worse since he left the hospital, his case is dreadful in the extreme, he is at home and I care for him as best I can. He is guite hearty and is in good flesh, his mind is quite weak, he is helpless, I have to hathe and dress him, and he feeds himself with great difficulty, and drops most of his food on the floor. His bowels move and his urine passes anywhere His speech is difficult to understand, at times he is quite obstinate and hard to get along with."

The following record was made at his second admission:

Physical Examination.—A tall male, fairly well developed but poorly nourished. Height about 6 feet. Hair very dark and abundant over the head. There is a moderately heavy growth on the body and a moderately heavy moustache and beard. Eyes brown and apparently normal. Vision appears to be good. Forehead moderately broad but seems unusually low on account of the hair growing far down upon it. Right side of head more prominent than left. Eyes deep set and there are dark lines underneath them. Well marked ptosis of lids. Face broad in the region of the cheeks. Nose and lips prominent. Lobe of the right ear adherent. The upper part of the rim of the left ear is more prominent than the right. There are no Darwinian tubercles. Hearing seems to be good.

Skin dark and quite healthy in appearance, but there are numerous scars about the body, probably due to injuries received in falling. Sha of scrotum red and, in places, lacerated. Dermographism moderate on the chest and slight about the extremities. Feet and hands quite well formed. Ridges of the tibiae smooth. Muscles small and flabby. Grip in the right hand registers only five on the dynamometer. The left registers nothing.

As nearly as can be told the heart is normal in size and position, and there are no murmurs. Radial pulse small and weak, and radial arteries a little thickened. No varicosities and circulation in extremities appears to be fair. Chest rather narrow and flat. Percussion resonance normal. It is impossible to make out the breath sounds clearly. The respirator movement is jerky and much modified by his general movements. Temperature, 98.6; pulse, 78; respiration, 15. The teeth seem fairly well preserved. Abdominal and genito-urinary organs normal.

Pupils equal and normal in size, and react normally for light. The cannot be tested for accommodation. Patellar reflexes both much exempted there is at once a marked

reaction, the extensors bringing the entire extremity into a condition of stiffness. There are then a couple of slight relaxations, and after each one a slight contraction, the quadriceps showing an unusual tendency to remain in contraction. No Babinski. Scratching the skin to produce the cremasteric and abdominal reflexes, produces a marked general movement. It is evident that there is at least a slight cremasteric reflex, but the abdominal cannot be elicited with any certainty on account of the general abdominal contraction. Triceps reflexes are both very well marked. Biceps reflexes are normal.

As he lies flat on his back, it is at once noted that his movements are much more marked in the head and body than the extremities. It is difficult to get him to attempt any movements, but at times he will try to grasp things with his right hand and in so doing the movements seem to be less in that extremity for the time being, but the movements in other parts become much more marked and, in general, any attempt at action seems to make his movements much worse. If an effort is made to move any part of him, as a leg, and it is done very slowly and gently, the leg generally can be moved without difficulty, but if the effort is hurried or much force is employed the muscles seem to at once contract firmly, the extensors more than the flexors, and the limb becomes very rigid for a moment. He lies in bed with his head almost constantly turned to the left and his eyes drawn to the left of their sockets. He is able, however, when requested, to turn his head and eyes to the right. The forehead is frequently wrinkled and the eyebrows are often raised and lowered, the left a little more than the right. There is, occasionally, slight movement in the eyelids, but though watched for a considerable time he does not wink, and his eyes are constantly open. His mouth is closed and there is no movement about the lips or cheeks. The whole head moves occasionally, but it seems to be in response to and dependent upon the frequent movements in the shoulders. He is unable to open his mouth more than a half inch when asked to do so and cannot protrude his tongue at all. When trying to do this, he simply opens and closes his lips slightly and rather rapidly. He cannot keep his head still when trying to drink, swallows with much difficulty and often chokes. As he lies quietly in bed at the time of the examination an occasional gurgle and half choking sound is heard in his throat. There is almost constant movement in his shoulders, something like an exaggerated shrugging, and these movements are about equal on the two sides, first one and then the other, with a sort of rhythmic character. The pectoral muscles can frequently be seen contracting strongly. In addition there is constant movement in the body which also has a rhythmic, twisting character. The greater part of the time there is no movement, whatever, in the lower extremities, except what is communicated from the body; but at times there is a slight contraction of the toes or movement of the foot, and at longer intervals a general, awkward throwing about of the lower limbs. The movements of the toes and foot seem to be a little greater on the

right side than on the left. The upper extremities are about the same as the lower, and seem to have very little movement except that which they receive from the shoulders. No movement is noted in the scrotum except what is communicated to it from the surrounding parts.

Mental Condition.—When first seen he is sitting in a chair on the ward His expression is not very intelligent and he is in constant motion. He does not speak unless spoken to and even then answers with much difficulty. For instance, when asked his name, he gives a kind of grunt in reply, and after repeated trials does a little better, but still does not speak the name sufficiently plainly to be understood. He seems to know where he is and with much difficulty says something like Independence. After some questioning he either will not answer or else becomes unable to answer any more questions except for an occasional grunt. At the same time it appears that he knows more than his general appearance might indicate. He is fed by the nurse and swallows with much difficulty; is very untidy.

July 25, 1903.—Has been constantly in bed since the last note. His temperature, pulse and respiration are all slightly increased though it is diffcult to make sure of the latter on account of his movements. Under excitement, these movements increase greatly. He is rarely found in a sound sleep, but if so he is perfectly quiet. In a light sleep, however, some twitching is constantly present. He is still unable to protrude his tongue, but that may be because his mouth will open only about one-half inch, though he seems to have very little control over the tongue itself. In the evenings his temperature is about 100, but it is at times as high as 102.5. There is no cause made out for this except his rather persistent constipation. This morning he lies with his head to the right, but this is not usually the case.

August 15, 1903.—His temperature now rarely reaches much above normal, and he at times sits up in a chair, but this seems to make his movements worse, and not infrequently they become so severe as to throw him from the chair. Has vomited his food several times lately.

August 20, 1903.—Nearly the entire day he has been in a sound sleep, but when carefully watched there is still noted an occasional twitching of the fingers or shrugging of the shoulders. This is the first time since his admission to the hospital that he has slept so long consecutively, either day or night. He vomits his food frequently, usually throwing it up soon after meals, and sometimes directly after. The food comes up with one violent movement, and there is never any persistent retching or apparent nausea. The food is usually ejected so forcibly as to throw parts of it over the foot of the bed. A hand placed over the epigastrium feels no contraction during the act of vomiting. He always seems very hungty, and will take large quantities of food if permitted.

August 23, 1903.—Vomited very frequently yesterday. At first a water, then a greenish and finally a brownish material came up. None of it had a bad odor. There is no retching or nausea. Is somewhat better to-day. August 30, 1903.—He has vomited scarcely any of late and his temperature has been quite near to normal, but the nurse to-day called attention to the cyanotic condition of his hands and feet. At the time of examination they are moderately cyanotic, but the nurse insists that a little time previously they had been almost blue, and this, notwithstanding the fact that he had been lying quietly in bed. At the time of the examination the pulse is slightly accelerated and heart action rather feeble.

September 7, 1903.—He is badly constipated, and his bowels move only with artificial aid. His diet is exclusively liquid, and even then he swallows with difficulty. Almost every day his hands and feet become blue for certain periods of time. His heart at such times acts feebly. Strychnine and digitalis have been used without effect.

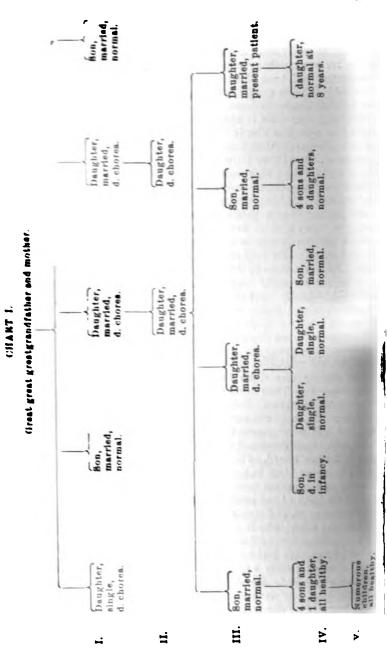
October 10, 1903.—Grows constantly thinner and weaker. Has a small sacral bed sore. Vomits occasionally but the food is ejected in a feeble manner. Urine: Clear, pale amber, acid, sp. g. 1031, a faint trace of albumin, no sugar, a good many uric acid crystals and abundant mucous spirals; a very few leucocytes and a good many long rod-shaped bacilli.

October 18, 1903.—He died to-day at 7 P. M. Had grown progressively weaker. He was unusually restless during the latter part of last night, but to-day and especially toward evening has seemed so weak that he moved with difficulty, though his movements have never been absent. Yesterday morning temperature, 98.2; pulse, 76. This morning temperature, 96, and pulse, 62. This evening temperature was 97.8; pulse, 68, and respiration possibly, 40, though the latter was very uncertain.

CASE No. XIX.—Female, age 36, married.

Family History (see Chart I).-The family history goes back to the great grandparents. Their medical condition is not known, but they had two sons and three daughters. Both sons were married and had children, but neither they nor their children had chorea. One of the daughters had chorea, but was never married. The second daughter married and had one daughter. Both developed chorea and died of it, but their descendants cannot be further traced. The third daughter married, developed chorea and died in giving birth to her only child, a daughter. This daughter is the mother of the patient reported. She was married at 17 and remained well until the birth of her third child, when she was twenty-four ycars of age. She died at 39, and is said to have had chorea in a severe form. Her first child was a boy, who is now a strong and hearty man, and who has four girls and one boy. All are well and all the girls except the youngest are married and have healthy children. The second child was a girl who married at about twenty and continued well until she was twenty-four, when chorea appeared. She died at forty-four. She also had the disease in a severe form, but was not as badly affected as the mother. Her first child, a boy, died at one and one-half years of age of croup. After that she had two daughters born and then a son. All three are living and free from the disease though well along in life. The daughters have never

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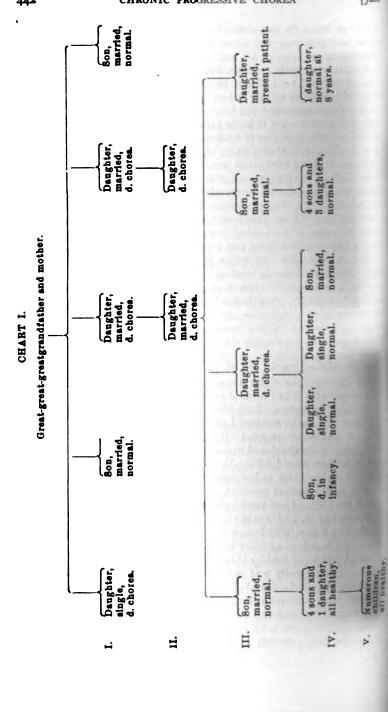
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CHRONIC PROGRESSIVE CHOREA

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CHRONIC PROGRESSIVE CHOREA

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FIG. 5. FIG. 5. FIG. 5. FIG. 6. The awkward, fixed position of the hands, the vacuous smile, and the drooping lids. The movements were very slight in this patient, but the spasticity was marked.



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been married or pregnant. The third child was a son who is healthy and the father of four sons and three daughters, all well but not married. The fourth child was a daughter and is the present patient. There is no history of tuberculosis, cancer, excessive use of alcohol or of any nervous or mental disorder in the family except the chorea. The family have noticed particularly that no male, or female descended through a male line, has ever been affected with the disease and that no female, descending through the female line, has escaped the disease except two who have never been married or pregnant and that no female, save one, (one of the original three sisters) has ever had the disease until after marrying and bearing children. It is also an opinion in the family that they "are growing out of the disease," both as to the proportion of the whole number affected and as to the severity of the disease in individual cases, but I can find no confirmation of this in the latter sense. A brother of the patient's father had rickets when a child, is hydrocephalic and since fifteen has had epilepsy.

Personal History.—The patient is a native of the United States and now thirty-six years of age. As a child she was bright and healthy. Learned readily at school and has a common school education. Has worked hard all her life. Was naturally social, neat and industrious. At twenty-six years of age married a laboring man and her life since has not been very pleasant. One year after marriage she miscarried with twins at six months. Later she had a daughter now eight years old and bright and healthy. Has had some pelvic trouble for years.

Present Illness.-Four years ago her husband noticed that she had some difficulty in walking. A year later he noticed a jerking of her shoulders and body, particularly when she was tired. After this there appeared some difficulty in speech and in the movement of her arms and some stiffness of the fingers. She gradually grew worse but was able to do her household work until committed to the state hospital for the insane, May 9, 1902. For two or three months previously she had been somewhat forgetful; would begin to do a thing and forget what she wished to do. Her memory for remote events seemed much better than for those of recent occurrence. When admitted she was found in fairly good physical condition; height, 5 feet, 6 inches, weight 125 pounds. The face was asymmetrical. The hands were cold to the touch and were distinctly cyanotic. Chest examination negative. Tendon reflexes all exaggerated but pupillary reflexes normal. Urine negative. There was a right sided perineal and a bilateral cervical tear. Uterus anteflexed. The irregular, jerky movements were widespread and almost constant during her waking hours. In general her movements were slow but when walking, after once getting started, she moved rather rapidly. At such times her feet were kept wide apart and all her muscles were in a state of more or less rigid contraction. There was no movement or tremor when asleep. She was well oriented but her memory and intellect were only fair. There was no special irritability. The matter that interested her most and of which she talked most

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was getting well and going home. On June 10, 1902, I had an opportunity to make the following examination:

Physical Examination.—She is a rather large female, quite well developed and fairly well nourished; hair dark brown and not very ubundant; eyes gray. Vision does not seem to be very good. When given a newspaper she reads only the larger type, but it is difficult to tell whether this is due to poor vision or to her mental condition. Ptosis is very well marked (see Figs. V and VI).

Forehead not very broad or high. Cheek bones rather prominent, the right more so than the left, and the chin seems to turn a little to the left, giving the face an unequal appearance. Both ears stand out quite prominently from the head and there is a well marked Darwinian tuberde in the left. Aside from this they are normal in appearance. When tested with a watch her hearing seems to be good but judged from her ability to understand conversation it is decidedly impaired.

Skin fairly healthy in appearance. Muscles small. Grip in the right hand $7\frac{1}{2}$ and in the left 15, measured by the manometer. At a second trial the results are the same in both hands. The little fingers tend to stand out prominently from the others, as seen in Figs. V and VI. The ridges of the tibiae are smooth.

Temporal arteries not visible or palpable. Radial arteries quite leathery; pulse, 73, regular but not very full or strong. Apex beat of the heart very prominent in the fifth interspace and a trifle outside the midclavicular line. Upper border of heart dulness at the upper border of the third interspace and right border of heart dulness at the left border of the sternum. Heart sounds about normal. Her hands continue very red throughout the entire examination and the color does not readily return when pressure is made locally. The feet, up to the ankles, are also red but not to the same degree as the hands. The attendant has noticed that her hands and wrists not infrequently become blue and this is particularly true when out walking.

Chest fairly well developed. The lungs appear to be normal. As she lies in bed the respiratory movement is regular and slow and the excursions slight.

Urine.—Clear, amber colored, acid, sp. g. 1030, no albumin, no sugar; a few leucocytes and some epithelial cells and granular debris.

Pupils normal in size, equal and react normally for light and rather faintly for distance. Both eyes quite prominent and the balls partake to a limited degree in the choreiform movements. Patellar reflexes both much increased, but no ankle clonus. Achilles jerks very marked. When an attempt is made to test for the Romberg sign she cannot put her feet within six inches of each other and even at that distance cannot stand without assistance. Cannot walk a crack. No Babinski. Biceps and triceps reflexes increased in both arms. She cannot protrude her tongue, and says she cannot raise the angles of her mouth. She makes a great effort to do both these things, but it seems as if she could not bring the necessary muscles into action, even to the slightest degree. When asked to shut her eyes closely she does so quite loosely and when told to open them, does so slowly. She has a good deal of trouble in touching the end of her nose with the index finger and more with the left hand than with the right though she says the left is the better of the two. It is almost impossible for her to touch the lobes of her ears with the hands crossed. She sits down in a chair slowly and with considerable hesitation and rigidity, but does not grip the chair with her hands to assist her. She holds her head up but her eyes are about two-thirds closed the greater part of the time. The eyelids rise and drop at short intervals, but the movement is rather slow. The movements seem a little more marked in the right eyelid than in the left. There is an occasional slight elevation of the brows.

At the time of the examination her hands are clasped in her lap in a rather awkward way. There is very little movement seen anywhere in the body, but ordinarily as she sits about the ward there is a more or less general slight movement of the head and body but not of the extremities. When she talks the movement in the eyelids and the raising of the eyebrows becomes very marked. In smiling, her face is drawn mostly to the right. She rises from a chair without much difficulty and without catching it with her hands. She takes considerable pride in the way she walks and explains that it is not better because she has corns and they nurt her. Each step is very short and about of equal length with the two feet, but the foot is raised higher than usual, and as she lifts either foot her body sways forward, one side and then the other, alternately. The body seems to be in a very rigid attitude when she walks and if an attempt is made to hurry her, or to turn or move her quickly in any new direction, her body is at once thrown into an extremely rigid condition and she resists the movement in every way. It is doubtful whether this is wholly voluntary, but she says it is because she fears that she will fall and tries to save herself in this manner. This, however, only after the explanation has been suggested to her. She does not look down in walking as much as one usually does but keeps her eyes partially closed and fixed at a point some distance in advance. She not infrequently falls and always forward. This occurs more frequently on the ward than elsewhere, which is probably because she is there walking only short distances. When once she gets well started she can walk for a considerable time without any apparent tendency to fall. Her greatest trouble is always just as she starts when there is a tendency for her body to move faster than her feet and thus she falls forward. It is noticed that there is some tendency to walk on the forward part of her feet with a peculiar jerky spring. As she walks the right arm is flexed at the elbow nearly to a right angle and is held against the side. The left arm is also flexed and to some degree, but it is held out from the body and the fingers are separated and held in a peculiar attitude. At times the right hand is closed quite firmly and at times the fingers are extended. When sitting, also, the arm and hands are often pretty much in this relative position but not infrequently the

hands are crossed in the lap; the fingers of the left, however, still more or less spread out. When placed in bed she lies very quietly and there is absolutely no movement anywhere except a little twitching of the erelids and a little raising of the brows. Most of the time her eyes are fixed on the ceiling in a vacant stare.

She always speaks slowly as if she had trouble in enunciation, and in so doing her mouth draws up more to the right than to the left. Her speech is indistinct and her words are not sharply cut off—are indeed, like those of a drunken man.

Mental Condition.—On superficial observation she would seem to be very much demented but when carefully studied this is found to be, to a certain degree, incorrect. Concerning many points her memory is good, for others it is fair. Thus she seems to remember perfectly well all her husband's visits, and tells in detail when he came and how long he remained each time. She says, however, her movements began a year ago last spring. As nearly as can be determined she now has no delusions concerning her husband. Says she had two children born dead aud had one miscarriage. Her living child was born before any of the others.

Her husband writes to her regularly twice per week. She is always greatly pleased to receive letters but when they come it requires considerable time for her to open them as her fingers seem to act very slowly. She always reads and writes slowly so that it usually requires an entire day of almost constant writing to complete a short letter to her husband. As she writes, there is seen a well-marked tremor in the hand which is writing but not of other parts of the body. Each character is formed very slowly and with much labor.

She eats very rapidly, takes large quantities of food and at times chokes. The attendants think this is due more to her rapid eating and insufficient chewing than to any actual incapacity to swallow. There is no loss of control over the sphincters and she is not absolutely filthy but she is very untidy.

June 20, 1904.—When questioned about the matter she admits that she is physically ill but does not think she shows any mental disturbance. Is usually cheerful and pleasant and thinks she is improving. She usually has a smile but her expression is somewhat drawn and mask-like. A few days ago told her physician that she was greatly worried because the nurse had broken a tube off in her. This doubtless referred to taking her temperature by rectum. Also told the nurse that someone had broken part of her womb off. Recently, not receiving a reply to one of her letters sufficiently quickly, she decided that a nurse had caused some trouble between herself and husband. She frequently asks to go home and when speaking of home usually weeps.

August 15, 1902.—Is growing more demented, writes frequent letters, and takes a long time to write each one. Says she cannot write when others are looking at her. All her muscles are held very rigid as she writes. Frequently cries because she cannot go home.

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September 25, 1902.—No improvement. Eats and sleeps well. Pupils equal and reaction normal. Tendon reflexes exaggerated. She stands, walks and works in a stiff strained manner. During sound sleep there is no tremor or jerking of any kind. She stands fairly well if her feet are wide apart, but after standing several minutes is more unsteady than at first. Walks almost as well with eyes closed as open. Requires two minutes in which to write her name.

Getty Shufelberger

(GETTY SHUFFELBERGER.)

This is much better than her usual signature. The longer she writes the more illegible her writing becomes.

September 16, 1903.—There has been no important change in her condition except a slow deterioration, both mentally and physically. Her choreiform movements do not seem worse but she has more difficulty in getting about and not infrequently falls. Often, however, asks if she is not getting better and evidently thinks she is. Is quite fond of good things to eat and continues well nourished. The attendant says she is always hungry. Last night induced another patient to wash her feet in a vessel of urine. To-day can see nothing improper in that act. Does not work except to make her own bed and this is a long and difficult task for her. Is usually cheerful in a childish kind of way.

November 19, 1903.—Is failing more rapidly of late. Walks with great difficulty, speaks very low and articulates with much difficulty. Still has an extraordinary appetite, and eats in a very offensive way, frequently choking. This latter is doubtless due as much to hurried eating of excessive quantities as to defective muscular control.

February 29, 1904.—Continues to fail, though slowly. Is more pale than she was and is less inclined to talk. Articulates very indistinctly and moves about the ward with great difficulty. The choreic movements and the reflexes continue much the same.

In April 1906, this patient was reported as still alive but very much demented and scarcely able to move about.

CASE No. XX.-Female, age 69, married, housework.

Family History.—The father and mother died in advanced life. It is not known that they were choreic. The patient had at least one sister who died at about 80 of chorea. She had had the trouble for years and had frequent periods when she would become angry and sulk for two or three days so that her family could do nothing with her. She has seven living children but none have the movements so far as known. The patient has

one daughter, 28 years old and married, and one son, 27 years old and single. Both are nervous but the daughter is not choreic. The son shows a frequent elevation of the brows and shrugging of the shoulders, probably choreic.

Personal History and Present Illness.—Nothing is known as to her early life. She is thought to have had good general health and has always worked hard. About ten years ago her son first noticed that she had peculiar movements which have gradually grown more marked since. At about the same time her mind became affected. She would become excessively angry for slight cause, tear her clothes and throw articles about the room. Was always suspicious and thought she was discriminated against in many ways. Her memory also grew gradually weaker. Her ordinary weight was about 130 pounds, but she has fallen off greatly in the last year.

Physical Examination.—She is a medium sized female, fairly well developed but very poorly nourished. Right side of head more prominent than left. Otherwise head and face normal. Ears normal in shape and hearing good. With the aid of glasses she reads fairly well. Her skin is dry and very dark—almost bronzed— in color. The patient and her son unite in saying that this discoloration of the skin has appeared in late years and has gradually grown worse. Muscles small.

Her heart and lungs are examined with difficulty on account of her excessive movements. The lungs appear to be normal. The heart sounds are sharp but the area is normal and there are no murmurs. The radial and temporal arteries are soft, considering her age. The abdominal organs appear to be healthy.

The pupils are equal and normal in size and react normally for light and distance. The eyeballs have slight jerky movements in irregular directions. At the time of the examination she is in bed with a fracture of the left thigh and the left patellar reflex cannot be determined. The right is slightly diminished. The biceps and triceps reflexes are moderately increased. The Babinski phenomenon is uncertain on account of the choreiform manifestations, but probably not present. She closes both eyes at the same time, normally, but cannot close either separately. Cannot raise the angles of her mouth. She protrudes her tongue straight to the front but it is almost immediately pushed to the left, and this happens constantly when the test is carried out several times. With eyes closed she touches the tip of her nose with either forefinger but only after her hands have gone through varied waving movements. She cannot or will not follow a finger with her eyes but the lids follow the eyeballs normally. Her grip is a little better in the left hand than in the right, but poor in both.

Choreiform movements are very marked throughout her body and seem about equal on the two sides, except in the case of the lower extremities. They are present in the face, head, neck, arms, chest, abdomen, and legs. The muscles are all in a slightly spastic condition, and there is slight equinovarus. The fingers and toes are generally hyper-extended, at times contracted. She can scarcely control her hands sufficiently to arrange the bed-clothes, and in doing so her movements become very marked. The movements are very much less in the broken limb than in the opposite, and strange to say, do not appear to have materially interfered with healing. There is some difficulty in articulation and, in particular, it seems as if only after a distinct effort can she overcome a certain inertia or spasticity of the muscles. She is able to control the movements to only a limited degree.

Mental Condition.-When first seen she is lying in bed. Her eyes are half closed and she has a sleepy expression. Her movements increase as soon as she begins to speak. She talks almost constantly during the course of the physical examination, and always about her wrongs. Tells how she was mistreated by her last caretaker and how her leg was broken in attempting to escape from the place. Says she was being starved, and that she would have been killed if she had remained much longer. She recognizes her surroundings and remembers the faces of those whom she sees only occasionally but she cannot tell the date or the street address of her son or daughter. Says that Grover Cleveland is the president and that McKinley preceded him. Gives the year as 1900 and something, and the month as June, but only after a long interval. Cannot tell the day of the month. She thinks her memory is good at times and at times somewhat impaired. When questions are asked she will often say "you just let me think," and will lie for a long time as if in deep thought, but rarely answers the question unless it is repeated. When given, her answers are fairly relevant. The nurses describe her as very difficult to get along with and say that she wants a great variety of things and always wants them without any delay. Even if her wants are supplied she still thinks she is being misused.

CASE No. XXI.—Female, age 40, married, housework.

Family History.—Her paternal grandfather, father, and one sister had chorea and died insane. A brother is living and so far as known is not choreic. The patient had eleven children, but two sons and four daughters are all that are now living. The cause of death of the others is not known. Of those living at least one son (Case No. XXIV), and two daughters (Case Nos. XXII and XXIII) are affected. The other three, I have not been able to see and the statements as to their condition are not reliable.

Clinical History.—The record obtainable is very meagre. The patient was born in Norway. Her trouble was first noticed when she was thirtythree years of age. Mental disturbances appeared at about the same time as the choreiform movements. She was not suicidal. When admitted at the State Hospital, September 3, 1879, she was much demented and could not speak although she appeared to understand something of what was said to her. She was anaemic and emaciated and had well marked chorei-

form movements of head and upper extremities. Two months after admission she died, the cause not being stated.

CASE No. XXII.-Female, age 42, married, housework.

Family History.—The family history is given in Case No. XXI, except that the father died from an accident at 64 and was not choreic.

Clinical History.—She is the third child of the patient described under Case No. XXI, and is married but has no children. Is now 42 years old. She is moderately well developed but is anaemic and not very well nourished. Her expression is fairly bright but there is some tendency to drooping of the eyelids, and she has a rather sleepy appearance. She is slow in answering questions and has slight choreiform movements over practically the entire body, but most marked in the thumbs and adjacent fingers. The movements increase with embarrassment. There is no disturbance of gait. She evidently has no idea that she is choreic, is quite sensitive when the matter is mentioned and declines an examination.

CASE No. XXIII.—Female, age 35, married, housework.

Family History.-Given in Cases No. XXI and XXII.

Personal History.—The patient is the fifth child of the patient described under Case No. XXI. She had ordinarily good health in childhood. Has never had any serious injury or ailment. Was married at twenty-four and has had three children. All her labors were easy. Her first child weighed only two pounds at birth and has been delicate ever since. Two weeks before the birth of the second child she was much frightened by an alarm of fire. A little after her labor, choreiform manifestations were noted, and have gradually grown worse since. A variety of treatment has been of no assistance to her. At one time her feet swelled considerably but this is not true at the time of the present examination. When in good health she weighed about 120 pounds.

Physical Examination.—The patient is a tall, anaemic female, very poorly nourished and only fairly well developed; weight, 96 pounds; hair very light and rather thin; eyes blue; moderate chronic conjunctivities. She says her vision has failed considerably of late. Her eyes follow the movement of a finger and the lids move normally with the eyeballs. The mucous membranes are pale. Her forehead is rather low and narrow. Face very narrow. Ears large at the top and small at the bottom; lobes adherent. There is a well-marked Darwinian tubercle in the right but none in the left. She says her hearing is poor but an examination with a watch reveals nothing abnormal.

Muscles small and flabby, grip poor but about equal in the two hands. Pupils equal and react normally to light and distance. Patellar, biceps,

triceps and Achilles reflexes all exaggerated. No Romberg or ankle clonus. Chest moderately well developed. Lung examination negative except that the respiratory movement is jerky and choreiform in character. Area of heart dulness slightly enlarged to left. Sounds weak. The radial and temporal arteries not thickened. Pulse regular but small and weak. Teeth not well formed, many absent. Tongue clean, very slightly tremulous.

As she sits in her chair, slight, constant movements are observed. They are somewhat jerky yet rather slow and affect the head, neck, trunk, and extremities. She can inhibit them to a limited degree.

Mental Condition.—She sits with eyes half closed and has a stupid, sleepy expression. Her dress is carelessly arranged. She is very slow in comprehension and when asked a question always says, "What?" but if the question is not repeated she eventually answers it more or less satisfactorily. She is disinclined to talk and says nothing unless spoken to. There is no disorientation as to place and surroundings, but she gives dates very incorrectly and intellect and memory are both much impaired. So far as can be seen she has no comprehension of her real situation, insists that she is "only nervous" and she is "better now." She does not seem to realize that she is in almost constant movement and apparently has no idea that she is afflicted with an incurable, hereditary disease. There are no hallucinations or delusions.

CASE NO.XXIV.-Male, age 39, single, farmer.

Family History.-Given in Cases No. XXI and XXII.

Personal History.—The patient is the fourth child of the patient described under Case No. XXI. He cannot recall having had any of the diseases of childhood. Has never had rheumatism. His present trouble began ten years ago after a severe attack of typhoid fever and a bad fright incident to the burning of his house. The disease came on very slowly, but is gradually progressing. He has lost some in weight. Has done no work for some time and is now at the County Poor Farm. A few months before I saw this man he had been under the care of a physician who assured him that his disease was not hereditary and was wholly the result of an elongated and adherent foreskin. An operation was performed, but of course without improvement.

Physical Examination.—The patient is a medium-sized male; moderately well-developed and fairly well nourished. Eyes blue, vision good. Complexion medium; hair light brown. Nothing unusual noted in the formation of head or face. His ears are large at the top and small at the bottom. They stand out prominently from the head and both have wellmarked Darwinian tubercles.

Skin healthy. Muscles rather small and not very firm. Grip in the hands is much impaired and is equal on the two sides.

The pupils are equal and react equally, but sluggishly, to light. The patellar, achilles, biceps, and triceps reflexes are all considerably increased. There is no ankle or patellar clonus. Chest well developed. Apex of right lung a little less resonant than left, but nothing else of importance noted except that the breath sounds are quite irregular. Heart normal in area, but the sounds are not quite regular. At frequent intervals they are accelerated, and these times seem to correspond with the

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greatest severity of the movements. Pulse fairly full and strong. Radia arteries distinctly leathery.

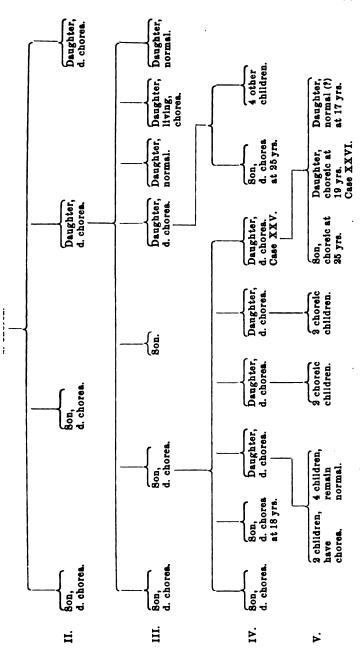
As he sits in a chair he is in constant motion. His head keeps m continuous slow nodding and, in addition, there is some tendency to circular movement. His eyelids participate slightly in the movement, l not the eyeballs or brow. He constantly opens and shuts his mouth and times protrudes the lower jaw and lip. He protrudes his tongue with little difficulty and jerks it back into the mouth several times within a sh period. Articulates poorly. Even the simplest words are spoken in tinctly. The shoulders are shrugged at frequent intervals, the left m often than the right. His fingers keep up a constant movement, const ing chiefly in approximation of the thumb and fingers, but at times in the tension or hyper-extension of the fingers. The movement is slight in feet and legs, but a little more in the right than in the left. The pets muscles take part to a limited degree in the movement, the abdomi muscles to a greater extent. He walks rather slowly and with a best ing, swaving movement. Rises on one foot, sways slightly and hest before taking another step. All his movements are increased as he tempts to walk. He buttons his clothes with some difficulty.

Mental Condition .- When first seen he is sitting in a chair, quiet est for his choreiform manifestations. He is slouchy in his dress, but not tidy. His face has a somewhat sleepy look, and he evidently does care much to enter into conversation though he answers questions they are asked him. He does not think there is anything wrong with mind except that his memory is impaired. When asked the date, be it at 1894 (in reality 1904) after a good deal of consideration. The mo he gives correctly, but cannot recall the day of the month. Names governor, but cannot name the president or the preceding president Is oriented as to place and surroundings. Says: 8×9 are 30, 4×6 28, 2 x 8 are 16; all with some hesitancy. When asked to say his alpha he does it in the same hesitating manner. It seems difficult to start. as soon as he gets control of one letter he rapidly pronounces four five others in proper sequence, but so closely that they can scard be differentiated. Then he will hesitate on another letter, hold it for moment and rush on to others just as before. There are no delusi of persecution or signs of undue irritability. He likes his position at County Poor Farm and thinks he is well treated. Eats excessively, does not complain of his food. Is less demented than he appears on sup ficial observation.

CASE No. XXV.-Female, age 38, married, housework.

Family History.—(See Chart II.) The family history is seen in the pended chart. The investigation was carried as far as possible, but several instances only a partial history could be obtained and there we doubtless some cases of chorea in the family which are not here records As far as is known, mental disturbance was present in all of those we

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developed the disease. The father of the patient burned his brother-inlaw's barn in revenge for some fancied wrong, was put in jail and hanged himself while there. The patient was the youngest of six children and the last to become choreic. One year after marriage she gave birth to a boy who is now twenty-five years old. His father thinks he shows the early mental symptoms of chorea as well as fairly well-marked twitching of the muscles. The next child, a girl, was born six years later. She is described under Case No. XXVI. The third child, a girl, now seventeen years old, is in good general health and I have never been able to make out any choreiform manifestations in her case, though her father insists that during the last two years she has grown much more restless and dissatisfied with her condition. He also thinks that at times she shows a faint twitching of the muscles.

Personal History.—So far as the husband knows, his wife was well in early life. She had no severe illness or injury and there is no history of rheumatism. She did well in school and later was always considered bright, truthful, modest, and unusually neat in her work. She was married at twenty-six.

Present Illness.-At the time of her marriage and for some time afterward the patient was generally considered perfectly well, but as her husband now looks back he thinks that even at that time there was some change in her mental condition. She was less neat in her work, less modest in her demeanor and conversation, and much more inclined to spend her time visiting and gossiping with the neighbors. Five years after marriage her husband first noticed a twitching in the muscles of the mouth. Next the arms and shoulders were affected and finally all parts of the body. At the time the movements were first observed there had developed a quite marked mental change. She grew more slovenly in dress and work, more coarse in speech and more untruthful. She never seemed to realize that she had any physical or mental ailment. Was always eager to work and tried to continue at it long after she could really accomplish anything. Her sensibility to pain was very greatly diminished and though in her awkward attempts at work she often injured herself she showed no sign of appreciating it. Thus in operating the sewing machine she often ran the needle through her finger, but never seemed to mind this.

On June 19, 1894, when 38 years of age, she was sent to the State hospital, at St. Peter, Minn., and for the record of her condition from that time on I am indebted to the superintendent, Dr. H. A. Tomlinson.

"When admitted the patient was in good physical condition, but very much depressed mentally. The motor disturbance showed itself in a series of involuntary spastic movements, involving the trunk, upper extremities, and facial muscles, with loss of co-ordination, most marked in the left arm and leg. She sways in walking, and there is marked spasm with rigidity when she starts to walk. When started the walk extends into a run, to be followed by a more or less abrupt stop, with swaying of the body and gyrations of the arms, until the spasm is again overcome. As long as the patient was in the hospital there was no other mental disturbance than the discomfort resulting from her morbid self-consciousness. However, on two occasions, when she was sent home, the outbreaks of violence toward her family began in a short time, and she had to be returned to the hospital. The extreme irritability showed itself in an incident which occurred at the time of her return from one of these visits home. As she was getting ready to go with the nurse a house cat got in her way, when she stopped quickly, grasped it by the head, and wrung its neck. Then throwing it violently away from her she walked on apparently unconscious of what she had done. The violence toward her children was manifested in the same way, although not so extremely, and was apparently as impersonal. None of these outbreaks ever took place in the presence of strangers, however, or towards adults; but, on the contrary, when crossed by her husband she always threatened suicide.

After her last return to the hospital she grew more demented; the motor disturbance became more and more marked, and she was constantly depressed. At times the movements were so violent as to throw her on the floor, or against objects in the room. In 1900 she began to be careless and untidy, and also lost in weight. The movements became more marked, and the disturbance also affected her speech, so that it was very difficult to understand what she said. In April, 1902, she began to complain of weakness, also of headache, and pain in the back. She soon became so feeble as to have to be put in bed, but the movements were so extreme that it was necessary to fasten her to keep her from throwing herself out of bed. She developed an abscess in a bruise on the left arm, and there followed general intoxication which involved the kidneys. She became progressively weaker; the bowels and bladder were emptied involuntarily; there was a very large amount of pus discharged from the abscess cavity, and the temperature varied from 101° to 104°. On April 22, she became stupid; the lungs filled up gradually, and she died on April 24, 1902."

CASE No. XXVI.—Female, age 19, single, housework.

Family History.—This patient is the second child of the woman described under Case XXV.

Personal History.—There was no special trouble at labor. She was a breast-fed, healthy infant. Had measles, whooping cough, and scarlatina, but was not seriously ill until two years ago when she had a severe attack of typhoid fever and after that appendicitis for which she had an operation. No rheumatism. No injury. Has had attacks of eczema each winter for several years. Began school at five or six and quit at fourteen. Did fairly well. Was quiet, truthful, cheerful, and neat. For the past four years has been doing housework at home and at first did it quite well.

Present Illness.—A little more than two years ago she began losing interest in her work at home. She was less neat, but this was more

noticeable in her work than in her dress and person. Often she would leave her work undone and go to the neighbors' to talk. Did not seem to have any sense of responsibility. Was continually putting things off. This condition of affairs has gradually grown more marked. Now she will sit in a chair for considerable periods as if lost in thought. She is much less careful about the accuracy of her statements than previously, though there seems to be no real intent to deceive.

Physical Examination.—She is a medium-sized young woman, weldeveloped and well-nourished. Eyes brown, complexion olive; hair dark Muscles fairly large and firm. Mucous membranes normally pink. No eruption or scars of any importance. No asymmetry of face or head Palate high. Ears normal except for a Darwinian tubercle in the left. Chest well-developed, and heart and lungs entirely normal. Radial and temporal arteries soft. Pulse full, strong and regular; rate 74. No varicosities. Teeth normal; tongue clean. Abdominal organs entirely normal no hæmorrhoids. Urine: clear, amber, acid, sp. g. 1024, no albumin of sugar. Microscopic examination negative. No vaginal examination made Menstruation began at fourteen, regular, painful during first day.

She complains of being easily tired and says that for one year she has never been free from a certain feeling of lassitude. There is no vertigo and no pain except at the menstrual period. Her expression is usually a little dull and her eyelids droop a little. No nystagmus, straismus or other abnormality of the eye. She sees well and does not an glasses. Hearing, smell, and taste normal. No disturbance of sensibility for touch, pain, heat, or cold. Vaso-motor condition normal. Patellars Achilles, biceps, triceps, plantar, abdominal, and corneal reflexes a normal. No Babinski or Romberg. The motor functions are all good except for an occasional slight, apparently involuntary, movement about the eyes, forehead, and shoulder. No disturbance of speech except that as times she is a little slow in starting her words.

Mental Condition.—When seen at the office and in her home on different occasions she is neatly dressed and there is nothing peculiar noted in her attitude, either at rest or in motion, except the movements mentioned above. She evidently is not much given to talking, but she speaks so telligently and her mental condition seems good. Her expression is so times rather sad and she is certainly less animated than one would expect in a girl of her age. Her father states that she always sleeps³ an

^a Since this article was placed in the hands of the printer, I have seen five more cases of chronic progressive chorea—three of them being patients of Dr. W. A. Jones and two my own. Two of these individuals presented themselves on account of insomnia, and one of the two declared that she had never noticed anything wrong except the insomnia, though her morements were quite marked. In again going over the cases here reported it has occurred to me that I have failed to call sufficient attention to this symptom. There is some reference to it in the notes on a few individual

unusual number of hours, as does also her sister, that she is very slow in accomplishing anything and is easily tired.

CASE No. XXVII.—Female, age 52, married, housework.

Family History.—Family record not complete. The father and mother are dead, but it is stated that neither had chorea. The patient has two brothers and three sisters living who also are said not to have chorea, but one of the sisters when seen is found to have distinct choreiform movements in the hands and shoulders.

Personal History.—Personal history also difficult to secure. She appears to have had good general health. No record of a severe illness at any time. Married life extremely unhappy. No children.

Present Illness.—She has had well-marked choreiform movements for many years. The duration of her mental trouble is quite uncertain, as her relatives do not yet recognize its existence.

Physical Examination.-She is a medium-sized woman, fairly well developed, but poorly nourished. The muscles are small and flabby and her skin is wrinkled and rough; mucous membranes pale. Temp. 98.4; pulse 78, regular and fairly strong. The chest examination is quite negative except that the respiratory movements are irregular and partake of the Radial and temporal arteries a little more choreiform manifestations. thickened than is normal at her age. No varicosities. It is not possible to make an examination of the blood or urine. Vision and hearing good. No arcus senilis, nystagmus, or strabismus. Her pupils are equal and normal in size and react normally for light and distance. She states that smell and taste are normal. Sensibility to pin prick is impaired. The patellar and Achilles reflexes and the deep reflexes of the upper extremity are increased. No ankle clonus or Babinski. The Romberg sign cannot be determined. Muscular power fair. There are well-marked choreiform movements involving all parts of the body, but a little worse in the upper than in the lower portion. No impairment of articulation.

Mental Condition.—She is carelessly dressed and has a slouchy attitude. Is deeply impressed with a sense of her own wrongs and talks continuously of her troubles. She is oriented as to time, place, and surroundings, but intellect and memory are both somewhat impaired. There is little insight, and, though she seems to recognize that she is not normal, she has no comprehension of her real condition. Is rather emotional and at times weeps in telling her wrongs.

cases, but I am able to recall several patients who suffered severely from insomnia and yet there is nothing in reference to it in their histories, as I have recorded them. Though some of the patients always had a sleepy expression, I cannot recall anyone, except the two young women referred to above, in whom there was an undue tendency to sleep. On the contrary, practically all suffered in greater or less degree from insomnia. Two of the five individuals referred to here were distinctly spastic.

Though there is, in these cases, some diversity in regard w hereditary predisposition, the period of life at which the disease appeared and the degree of mental impairment, I have ventured to group them all under the title of chronic progressive chorea. It was evidently the opinion of Huntington (I) as well as of the other American writers who preceded him in the description of hereditary chorea that it was an affection entirely distinct from senile chorea, but, though the distinction is still made by the majority of writers, a number of observers maintain that there is no essential difference, and the study of my cases leads me to the same conclusion. Several of these cases were originally diagnosed as senile chorea, but in every such instance where a later thorough investigation was possible it was found that there was a well-marked hereditary predisposition.

In view of the numerous clinical descriptions of the discase already available, and the excellent resumé of the literature contained in the articles of Good (2) and others, I shall refer in the discussion only to those points on which there still seems to be some difference of opinion or where it has seemed to me that my cases suggest something new.

In sixteen of the cases under consideration there is a dear history of chronic chorea in the ancestry, and in two (XIV, XVII), possibly in the ancestry and certainly in the immediate descendants. Six (IV, VIII, IX, XIV, XXVII) had brother and sisters with the disease, and in three of these (VIII, IX, XIV), there is good ground for thinking that the ancestors were also affected. In my own cases, therefore, there is a history of a similar disorder in the immediate relatives in twenty-four instances and, in the remaining three, the history is absolutely lacking. This is a considerably higher percentage of heredity than was found by Diller (3), and Phelps (4), whose material also was drawn from hospitals for the insane. Hay (5), however, found chorea present in the ancestry in each of eight cases reported from a similar source. In view of the prolonged search necessary to obtain the histories in my cases, and the uniformly favorable result when the search was carried far enough. I am of the opinion that further observation would have brought to light hereditary predisposition in many of the cases reported as senile chorea, as Phelps (4) pointed out in referring to his cases.

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In looking over my histories, one very striking feature is the relative absence of other forms of mental and nervous disorders. including children's chorea, among the relatives. This is in remarkable contrast to other forms of insanity. Several writers, notably Diller (3), Greppin (6), Hoffman (7), Ladame (8), Lepilli (9), Jolly (10), Remak (11), and Frank (12) have asserted that there is a more or less intimate relationship between chronic chorea, epilepsy and other nervous diseases, and Wollenberg (13), in this connection states that the choreic taint (heredity similaire) may be transformed into a more general nervous heredity (heredity of transformation), and show itself in epilepsy. special degenerative conditions, paranoia, etc., etc. Clark (14) reported in one family five cases of chorea and eight of insanity. The study of my cases, however, would lead me to think that the ordinary nervous and mental diseases are conspicuous by their absence in the families of these patients, especially, as I have said before, when they are compared with the other insane, and a careful resumé of literature dealing with the subject shows that the experience of the great majority of writers has been the same; and this absence of other forms of nervous disorder becomes all the more striking when one recalls with what care the family histories have been traced. Moreover, the mere statement of relatives that epilepsy has been present cannot always be relied upon, as it is quite possible for a well-developed case of chorea to be diagnosed as epilepsy, this having happened in case No. XII. Of all writers, Hoffman (7) has been most insistent on this relationship and, in the case which he reports with minutest detail in this connection, the lack of choreic heredity, either ascending or descending; the presence of epileptiform attacks in one of an undoubted epileptic family; the absence of mental failure after years of pronounced motor manifestations; the marked disturbance of reflexes; the irregularity of the pupils and, finally, the peculiar movements, all go to make a very doubtful case of progressive chorea. Moreover, to show any essential relationship between the two diseases it is necessary to demonstrate a more than occasional association, since both are largely dependent on a neuropathic heredity which probably may manifest itself in almost any of the neuropathic conditions, and the occasional association of any two of these therefore is not to be

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wondered at, and certainly cannot be accepted as demonstrating any essential relationship between thm.

In the twenty-seven cases here reported there were in the ancestry or descendants, eight individuals who were possibly insane or epileptic. Of these, two, the mother of patients XI and XIL and the father of patient XIX, were outside the line of choreform descent, and therefore, could have had nothing to do with the origin of the disease, whatever influence they may have had in perpetuating it. In a third instance (XV), a son is described as being an imbecile, but it is by no means certain that he is not developing chorea. In a fourth instance (VIII), the father wa "queer" and committed suicide, and chorea is certainly not excluded. The sister of one patient (XVII) died of "fits," the child of another (XVI) was defective, and in one case (X) both father and mother were insane, the father's mental failure coming on at eighty-five years of age. In addition, one or more relatives are described as being "nervous" in a few instances, but there is always good reason to wonder if these are not incipient cases of chorea, for, as is pointed out later, the relatives rarely recognize the disease until it is well developed. Huntington (1) says that a "nervous temperament" predominates in his families, but he mentions no actual cases of insanity outside of the choreiform manifestations. King (15) refers to an interesting case where Sydenham's chorea in childhood was followed at thirty-five by what seemed to be chronic chorea. In none of my cases could I elicit such a history nor do I recall meeting with any other in literature.

The disease affects males a little more frequently than females (Wollenberg 13). It may be transmitted through either side of the family, but Dana (16) reports a case where it descended exclusively through females though both sexes acquired it. In case XIX transmission was wholly through the female side, and in three generations only females acquired the disease, and they, with a single exception, only after marriage and pregnancy. Doubtless other conditions than heredity are concerned in the development of the disease, but my cases throw little positive light on this phase of the subject. Traumatism, mental or physical, has been given as a cause and it evidently played some part in a few of these cases. In one instance (XXIII) the attack came on shortly after a fright just preceding labor, and in a brother (XXIV), of this woman the disease appeared after fright, and an attack of typhoid fever. In two instances (VIII, XXVI) it came on after typhoid, twice (VI, XIII) after a "fever," once (X) two years after scarlet fever; and once (XII) two years after a head injury of uncertain character. In two cases there is a fair presumption that severe physical exertion was a causative factor, once in a young man (XVIII) in whom choreiform manifestations developed after several days of excessive labor, and again in a soldier (XIV) at the conclusion of a three days forced march. Two women (XIX, XXVII) were unhappily married, and one (IX) from girlhood, had worked very hard and lived much alone.

Syphilis and alcohol, whether in the patient or ancestry, would appear to be relatively unimportant. Syphilis is not mentioned in a single case. Five patients drank moderately or to excess, and in three cases there was an alcoholic ancestry. Rheumatism was present in but five cases, and certainly plays no such important rôle here as in the chorea of childhood. Occupation and civil condition are apparently without influence.

It has been stated by several writers that in this country, at least, most of the affected individuals are probably descended from the original Long Island families. Dana (17) says that the cases so far reported are chiefly from New York, Connecticut, New Jersey, and Pennsylvania. Of my patients, however, seven were born in Europe, and among the remaining twenty I have found no evidence of descent from the New York families, though I must confess that I have not given much attention to this matter. There is, it seems to me, no doubt that a careful search would reveal a certain proportion of these unfortunate people in every part of the country. In two years in Minneapolis I have casually observed four cases in addition to the four reported in this paper, and have learned of two others so that the disease seems to be by no means as rare as we have been led to believe. Phelps (4), in one of the early papers on the subject, stated his belief that the disease would one day be found in all parts of the country. His own records showed one case of chorea to 600 admissions at the State hospital at Rochester, Minn. Diller (3) found it present once in 425 insane cases. At the Independence State Hos-

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pital, as nearly as I can determine, there were twenty cases to 9000 admissions, a finding very close to Diller's. Robert Jones (18), however, in reporting a case from Claybury, England, says: "The disease, excluding senile chorea, does not occur in asylums more often than once in 3000 cases if as frequently." The ex-

clusion of senile chorea here, however, makes the comparison with conditions mentioned above very uncertain. Menzies (19) says the disease has been recognized as a distinct entity in England for 100 years.

Huntington (1), and Waters (20) evidently believed the disorder to be one occurring only in those well along in adult life, but Lyon (21) reported its occurrence in early childhood; Huet (22) and others have since shown that it may occur even in infancy, and Gray (23), Sinkler (24), and Stevens (25) report congenital cases. The youngest individual I have seen is a girl of nineteen (XXVI) who has already had the disease two years. I am convinced, however, that very few cases are recognized until from one to several years after the real onset. This is partly due to a very strong inclination on the part of both patient and relatives to ignore or deny the existence of the disease as long as possible.

In some families there is a tendency for the disease to appear at a progressively earlier age in succeeding generations. Heilbronner (26) pointed this out but when Lange (27) referred to the same subject he could find only one other case in literature (Westphal's 28) where the age of onset was stated in succeeding generations so that any light could be thrown on the matter. In attempting a search of literature with the same end in view I found the difficulties that Lange had pointed out so great as to render the results almost valueless, though the field is not quite so barren of suitable material as he indicates. Mackay (29) referred particularly to this tendency and confirmatory cases can be found in the articles of Hay (5), Reynolds (30), Suckling (31), King (32), Osler (33), and probably others. In a recent case reported by G. S. Mill (34), seven descendants became affected at almost the same age as the ancestor. This was true also in Dana's (16) case and others. In nine of my cases where the history is such that this point is covered, the disease appeared in the descendants at an earlier period than in the ancestors six

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times, once there was no difference and twice the ancestors were affected at an earlier age than the descendants. A careful study of several successive generations in a number of different families is necessary before this point can be settled.

Manifestations of ordinary physical disorders were not more frequent in most parts of the body than would be expected in a group of people many of whom were well along in life. Evidences of degeneracy such as Darwinian tubercles, low, narrow foreheads and asymmetrical heads were fairly common. Senile conditions such as general flabbiness of the tissues, arcus senilis, thickened arteries and anæmia were often seen. Four individuals had dilated or hypertrophied hearts and in one case (XVII) there was an aortic systolic murmur. Three individuals (VI, XVIII, XIX) showed cyanosis of the hands and feet on frequent occasions out of all proportion to any known heart-weakness present. In two of these cases this symptom was specially noticeable. Hoffman (7) mentions a similar condition in one of his cases. I regret that I did not give sufficient attention to this symptom in all the cases that came under my observation. Two patients (I, XIV) had albumin and casts, and one (XXVI) had attacks of eczema each winter. In two (XIII, XX) the skin had a peculiar brownish or bronzed color, not present before the chorea came on. The joints of the hands and feet and the lower jaw were very large in one man (XI). Muscular volume and power were greatly diminished in several, and in one instance (XVIII) the arms hung helplessly at the sides. Exertion quickly brought fatigue out of all proportion to the loss of muscle volume in some of those afflicted, and one young woman (XXVI), just developing the disease, complained of having tired easily from the date of the onset of the symptoms. On the other hand it is noteworthy that in some of the patients in whom the movements were violent, and continued not only during the day but also through a considerable portion of the night, there was no complaint of fatigue. This was particularly noticeable in case XI, and also in case I, where the physical strength had been remarkable and continued so for years after the disease appeared. This insensibility to fatigue has been remarked by both Good (2), and Sinkler (24). In case X there was some contracture of the fingers and toes. A peculiar sleepy expression with ptosis of the evelids was present

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several times (see Figs. V and VI), a similar appearance is noted by Mackay (29). Menzies (19) says that different families affect different clinical types, and this fact is fairly well illustrated by the ptosis in my cases. Eight of the patients presented this phenomenon. In four (XV, XIX, XX, XXVI) I did not see any of the relatives, and so could not determine if it were common to the family. Once it was present in the son (XVIII), and not in the father and, in another family, it was found in each member seen (XXII, XXIII, XXIV).

The part of the body first affected varied considerably. Sometimes the movements were first noted in the hands, sometimes in the lower extremities and sometimes in the face. The general belief appears to be that they are usually observed first in the face and hands but, in my cases it is said, they were noticed first in the feet and legs considerably more often than elsewhere Owing to the very insidious onset, however, this is a difficult question to decide. The movements have often invaded several parts of the body before they are recognized at all. In some instances the first motor disturbance noted was awkwardness of movement and an inability to hold things in the fingers. In the only two cases (XXVI and the son in case XX) in which I had the opportunity to observe the earliest movements, these consisted in an elevation of the brows and a shrugging of the shoulders with movements of the head. Ultimately, however, practically the whole body is involved in most instances, though even at the height of the disorder there is much variability in the severity of the movements in different cases and as to the part of the body most affected. Thus in one patient (XIX) the movements were so slight when lying quietly in bed that scarcely anything was observable save a slight lifting of the brows. In another (XI) they were so violent at all times that he could scarcely be kept in bed without mechanical restraint, and the movements were so strong at times as to overturn the heavy oak chair in which he was seated. In seventeen of the cases the movements were general though not necessarily involving all parts of the body to an equal degree. Nine times they were much more pronounced in the upper part of the body than the lower, but there was no instance where this condition was reversed. Five times they were worse in one side of the body than the other and in several in-

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stances they were more marked in one extremity than in the opposite. Once (I) they were almost limited to one side of the body. In four cases the chest and abdomen were most involved. and once, in a case (XXII) of recent development, the movements were almost confined to the hands. Respiration was frequently affected and in two instances there was irregularity of the heart (VIII, XIV), the action corresponding to some degree with the mildness or severity of the general movements. Once (XI) the bladder seemed to be involved and once possibly (XVIII), the stomach. Aside from Gower's (35) statement that "even the action of the bladder may be deranged," these are, so far as I know, the first instances reported in which the involuntary muscles were affected, though Frank (12) says his patient " urinated with more frequency and greater pressure" than normal. In some of the cases, the movements in the abdomen and scrotum were constant and severe but not infrequently these parts, especially the latter, remained entirely free. Speech defect appeared in most of the cases though, at times, only when the disease was far advanced. Five individuals were wholly unable to speak at the last and contented themselves with making more or less unmeaning noises. Some had a peculiar drawling speech. In all of the patients, save one, volition lessened the movements for a short time, though the interval was always followed by a more violent explosion. In one patient (XVIII) volition temporarily lessened the chorea in the part undertaking the movement but made it worse elsewhere. There are some cases recorded where volition either had no effect on or actually incrased the movements. Wollenberg (13) says it is only in incompletely developed cases that the movements are under the control of the will but. judging by my experience, this statement is incorrect. In all my patients the movements were absent during sound sleep but not always during light slumber. As there has been some dispute on this point, I spent considerable time in studying it and can speak with confidence. In a number of the cases, when first getting to sleep, or, toward the time of waking in the morning, or if slightly disturbed at any time during the night, the movements were present in greater or less degree, but in none were they found at any time during deep sleep. In a woman suffering from a fractured thigh (XX), contrary to what one might expect, the movements did not in any way interfere with healing though I was assured that they were present in this extremity as much as in the other up to the time of the injury.

Vaschide and Vurpes (36) state that the movements cease entirely before death, basing their conclusions on two cases. This certainly does not always hold true, for, in the eight cases whom I observed at the time of death, the movements in four were little. if any, changed up to the moment of dissolution. Once they were more violent on the day preceding death than on any previous occasion, once they disappeared from an infected arm some hours before death, once they were very slight for two days previous and once, in an individual who died in a comatose condition, they had been absent for two days. In Ladame's (8) case they were feeble during the last two weeks and entirely absent the last day. Menzies (19) reported a case of chorea complicated with tuberculosis in which the movements became almost imperceptible Kræpelin (37) says that the chorea may even subside until only slight traces are found. So far as I can determine this did not occur in any of my cases though, in some of the worst, the move ments were not by any means the most striking feature of the disease, and it is possible that in these individuals the motor manifestations at some previous time had been more pronounced.

In twelve of the fifteen cases where the reflexes were carefully studied the tendinous reflexes were found increased. Once the patellar reflexes were normal, once decreased and once absent. On the contrary, the pupillary reflexes were almost invariably normal or decreased. Ankle clonus was twice present along with marked increase of patellar reflex. It has been stated that there is a decided tendency for the quadriceps to go into and remain in spasm for a little time when the patellar tendon is tapped. In two cases I found this present but in several others where it was carefully sought it was not obtained. The Babinski sign was not found. It must be said, however, in reference to the tendinous, abdominal, cremasteric and Babinski reflexes that the presence of the choreiform movements and the spasticity, referred to later, rendered their study difficult and sometimes quite impossible. In Riesman's (38) case the patellar reflexes were gone, and in one of Hoisholt's (39) they were practically absent. Riggs (40),

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Menzies (19), Bondurant (41) and others have reported cases with ankle clonus.

A well-marked increase in muscular tonicity was found in nearly all of the well developed cases where it was sought, and in several (see XVIII and XIX) it was a very striking symptom. The only other references I have seen to this condition are Osler's (33) statement that he found some degree of stiffness in some of his patients, and Collins' (42) statement that there was slight rigidity in his case. Osler (33), however, evidently did not consider the symptom important, for later he speaks of spasticity of the muscles as a differential sign in diagnosing athetosis from chorea. In Tomlinson's notes on case XXV this condition is mentioned. In view of the prominence of this symptom in my patients I am surprised at not finding it described more frequently elsewhere.

Reaction to touch and temperature seemed almost or quite normal in all of the patients studied but to the persistent pricking of a pin there was slow response in several cases and very little evidence of pain, and I have repeatedly seen these patients undergo what, to the ordinary individual, would have been severe pain with little or no sign of annoyance. I was told by the husband of one woman (XXV), and this without questioning or suggestion on my part, that he had repeatedly seen his wife, in her awkward attempts to operate the sewing-machine, run the needle through her finger, with no sign whatever of pain. Marion and Putnam (43) reported a choreic woman who committed suicide by taking bichloride of mercury and during twelve hours of vomiting and purging, before she died, gave no evidence of pain. Osler (33), Sinkler (44), Hoffman (7), Frank (12), and others refer to this dulling of the sensibility to pain but Kræpelin (37) says that sensibility is normal and most authors agree with him or do not refer at all to the matter. In Rusk's (45) case general sensibility was abnormally acute.

Several writers have reported cases of chronic chorea without mental disturbance and there is no mention of mental deterioration in Waters' (20) or Lyon's (21) reports, though Huntington (I) attached great importance to it. In Riesman's (38) report of sixty-five cases of chronic chorea in adults, no case with a history of hereditary predisposition being admitted, mental im-

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pairment existed in 41 per cent. Most modern writers, however, insist strongly on the mental factor and Wollenberg (13) in his excellent article questions the possibility of a case in which it is totally absent. Ladame (8) thinks there may be mild cases in which there is not a termination in dementia though he thinks the matter needs further light. In all the cases reported here, mental impairment was present and it was present in all the cases I have seen with a single exception. For three years past I have had frequent opportunities to casually observe an old lady, now over seventy years of age, who shows very slight choreiform movements. Her daughter, however, at forty-five is a typical case of chronic progressive chorea, with marked motor involvement and considerable mental disturbance. At her advanced age the old lady is still noted for her bright mind and excellent disposition. So far as I can see she shows no mental disturbance of any sort, though I have not been able to make a careful examination. Diefendorf (46) mentions a case where a man after fifteen years of chronic choreiform movements was still able to attend to a large law practice.

There has been considerable discussion as to whether the mental or motor symptoms come first but the general opinion favors the earlier appearance of the motor disturbance. In my experience reliable information on this point has been very difficult to secure. Ordinarily one must rely on the relatives and they are very slow to recognize the motor signs and even slower to note the mental. So far as the record goes it would seem that in almost all of my cases the motor disturbance appeared first but in the only instance (XXVI) where I have had an opportunity to carefully study a case near its beginning, the mental symptoms came first and the excellent history given in this case would indicate that in the other members of this family the order of sequence was the same. Rossi (47) considers the disease a psychosis, and the motor symptoms as secondary. Wollenberg (13), on the other hand, says the physical symptoms usually come first. Though my own cases would seem not to confirm this view, I am convinced that, in many cases at least, the mental disturbance is the first to appear. Moreover, in those cases where heredity is pronounced, and the disease appears early in life the mental symptoms are usually prominent as compared with the motor. To this latter class Hallock's (48)

term, dementia choreica, well applies. Especially in those cases where the disorder appears late in life, it has seemed to me that the motor symptoms may antedate the mental and the latter, for a relatively long time, at least, be not at all prominent.

In a case with well developed mental disturbance there is present a gradually increasing dementia, marked irritability and, not infrequently, distinct delusions of persecution. There is great variability in the mental symptoms, however, just as in the motor, and, as already remarked, they are present in some to a much greater degree than in others. Moreover, the form which the mental disturbance takes varies considerably. Thus, in a case which appears early in life, there is a high degree of dementia, while in those coming on at a later age there is less loss of thought power but more irritability and a greater tendency to imagine intentional affronts. Owing to the lack of information as to the mental condition at the beginning of the attack it is difficult to say much of the early symptoms. In a large proportion of the cases, seen long after the disease appeared, the relatives referred to the bad temper and general irritability of the patient as the earliest sign, but in the few instances where I can learn anything definite and reliable as to the onset a weakness of judgment and initiative, absent-mindedness, general dissatifaction with surroundings, a growing selfishness and irritability are among the earliest symptoms observed. Wollenberg (13) says a decrease in thought-power is the first mental manifestation. Ladame (8) thinks loss of intellectual power is the fundamental and essential feature in every case of the disease and often the first symptom. The affected individuals are somewhat reserved in speech except in those instances where an overwhelming sense of injury leads them to tell of their condition and wrongs. They rarely become totally disoriented as to time, place or persons, and the degree of dementia, though very considerable in some, especially toward the last, is never nearly as great as in general paralysis or senile dementia. Moreover, I have often been struck with the thought that on close inspection almost all of the well-advanced cases are really much less demented than they seemed at a first glance. I cannot, however, subscribe to the statement of Kattwinkel (49) that the apparent dementia is merely the result of the patient's inability to concentrate himself or to the idea of Franscotti (50)

that the intellectual failure is dependent on the constant convulsive condition which clogs the patient's attention. The fact that in some cases, at least, the mental symptoms considerably antedate the motor forbids, such an idea even if there were no other argument against it. As in senile dementia the loss of memory for recent events is most conspicuous. As a rule the patients attend fairly well to what is said to them, comprehend the remarks and answer more or less relevantly but this was not always the case as was seen in XIII and XVII. Insight was almost invariably absent, a condition mentioned by several authors, and this was true at every period of the disease.

Many authors refer to the great mental depression present at a certain stage and particularly to the individual's feeling of horror when he recognizes that he is in the grip of the disease. Of this mental state I have seen little or nothing and on the contrary have often been struck with the lack of this feeling prevailing among them. Very few seem to have any conception whatever of the fact that they are under the control of so terrible a condition and many, even at the height of the disorder, do not appear to realize that anything serious is wrong, as happened in the case of Hoffman (7) and others. Some of my patients did not even recognize that they had a motor disturbance even when it was very striking to others. This lack of appreciation of the real meaning of the disorder is shared, to at least some degree, by the normal members of the affected families for, in taking the histories of all the foregoing cases, I cannot recall a single expression as to the impropriety of marriage in these families, except in one instance (XXV), and that was from a man who was the husband of one of the victims and therefore not really in the family. He explained this disregard of the inadvisability of marriage by saying that in the individuals he had known the earliest symptom of the trouble was a mental defect and on account of this the individual was unable to recognize his own condition by the time it had become so marked as to naturally awaken comment. Lyon (21), Sinkler (44), and Reynolds (30), mention instances where marriage has been prevented on account of chorea in a family. Lepilli (9) says that even those members of the family who remain free from the chorea are also frequently demented or at least bizarre and "nervous," and Huntington (1) in speaking

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of those not affected says the "nervous temperament greatly predominates," and "nervous excitement in a marked degree almost invariably attends upon every disease these people may suffer from."

Hallucinations and illusions were uncommon and are not often mentioned by other writers. One young man (XVIII) imagined he saw and heard wolves on several occasions and another man (XIII) thought he could talk with God and hear his voice. Berry's (51) patient had hallucinations of sight and hearing and Rusk's (45) patient had hallucinations of sight.

Delusions, on the contrary, were extremely common and a large proportion of my patients were victims of delusions of persecution. In several of the cases this condition was so pronounced as to render the victim's state of mind most pitiable. For example, nearly all imagined they were the victims of peculiar persecution by the nurses or other patients and many thought they were being starved; this latter doubtless arising from their enormous appetites as much as from their general sensitiveness. Nearly all ate gluttonously and with great rapidity and consumed enormous quantities of food, a condition mentioned by Ladame (8). Delusions of grandeur were occasionally present and these sometimes had a religious tinge. Thus one man (XIII) called himself the son of God and said he was under His special care. Another man (XIV) called himself the Christ, and one man (I) imagined he had the power to cure disease. Berry's (51) patient and four of Phelp's (4) patients had delusions of grandeur. Mackay (29) had a patient with peculiar religious ideas.

Irritability, often of a very high grade, was almost invariably present, and many patients would break out in acute paroxyms of rage on the slightest provocation. Attempts at injury and even murder occurred under these circumstances. It does not seem to me, in this connection, that Kræpelin (37) lays sufficient stress on the irritability. To say that "now and then persecutory ideas are detected which are related by the patient without special emphasis" is far from doing justice to the actual conditions as observed in my patients. Abnormal sexual ideas with jealousy were observed a few times.

Huntington (1), in his original paper, mentioned the marked tendency to suicide and nearly all authors since have referred to

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it but Ladame (8) writing in 1900 stated that after an exhaustive search of the literature he had not been able to find on record 2 single case of suicide or "serious attempt" at suicide. He denies that the threats of suicide are the result of the great mental depression of the individual on coming to realize his true condition, as stated by several, but says that, on the contrary, he has not observed this depression and that the threats of suicide are manifestations of irritability made more with the intention of worrying the relatives than with any real thought of carrying them out In my experience Ladame is correct in ascribing these threats of suicide to the attacks of violent passion into which the individual is frequently thrown by his irritability, though he scarcely dos justice to the fact that a tendency to suicide really exists. Threats of suicide are certainly exceedingly common and more or less pronounced attempts are often mentioned. In addition to the fact that there is good ground for argument as to whether several of the latter were not "serious attempts," Huntington (1) had stated that he "knew of several instances of suicide of people suffering from this form of chorea or who belonged to families in which the disease existed." In 1892 Phelps (4) reported a suicide and in 1903 Burr and McCarthy (52) reported another. In 1904 Marion and Putnam (43) reported a successful attempt from the use of bichloride of mercury. Wollenberg (13) in 1993 reported a suicide by drowning. In my series two patients (XIV. XVI)) made undoubted attempts at suicide. The father of the patients described under (XIII and IX) committed suicide and was probably choreic, and the father, certainly choreic, of the patient described under XXV, hanged himself.

One of my patients (IX), with symptoms considerably different from those of the others, probably began as a case of ordinary insanity and later developed chorea, though the lack of an exact record makes this uncertain.

As already pointed out I can see no means of diagnosing accurately between chronic progressive chorea with hereditary predisposition and chronic progressive chorea without predisposition. To me they seem to be the same disease except that when the heredity is marked the disease often appears earlier in life, and the tendency to dementia is greater. From children's chorea the diagnosis will usually be easy but in cases where chronic

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chorea begins very early in life or children's chorea comes on late in life there might be great difficulty. The inability to control the movements in Sydenham's chorea by means of the will has often been suggested as a diagnostic point but Mitchell and Rhein (53) pointed out several years ago that, not infrequently, there is some control over the movements in Sydenham's chorea by means of the will, and several cases can be found in literature where, in chronic progressive chorea, the movements were not under the control of the will. Considerable has been written as to the difference in the character of the movements in the two conditions, but I can see little dissimilarity except that the movements in chronic progressive chorea are a little slower than those of children's chorea, and even this distinction did not hold true in case X. It has been stated that the movements in children's chorea are more violent, but I have never seen choreiform manifestations any worse than in case XI.

Certain choreiform conditions due to organic lesion would probably be impossible to differentiate.

Several authors have referred to the similarity between paretic dementia and chronic progressive chorea, and Bondurant (41) goes so far as to say that they may be interchangeable. I have never seen a case where a differential diagnosis would be difficult. The history of the hereditary predisposition, the long duration of the disease, the presence of the peculiar choreiform movements and of irritability and the absence of expansiveness in chorea as opposed to the expansiveness and striking delusions of grandeur, the pupillary disturbances, the history of syphilis and the peculiar speech defect in paretic dementia would probably suffice to remove all doubt.

Huntington (1) stated that the disease can neither be cured nor ameliorated and this corresponds to the view of practically every other writer. Riesman (38) reported 20 per cent of cures, but it is certain that not all of his cases belong under the heading of chronic progressive chorea as that term is employed in this article. Herringham (54) reported eleven cases of chorea in the aged with recovery, but these were probably cases of chronic minor chorea. Fry (55) reported a case of chronic chorea, with cure at sixty-nine, but thought it was a simple chorea in an aged person. Gowers (35) quoted a case with recovery after the use

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of arsenic. Lange (27) thought there was some improvement in his patient following confinement in a hospital. Though the condition of a number of my patients varied from time to time no treatment had any permanent effect. While the prognosis is unfavorable, therefore, death is usually long delayed and is finally often due to some intercurrent disorder.

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TECHNICAL ASPECTS OF EXPERIMENTAL PSYCHOPATHOLOGY.

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The object of this article is to review, from as concrete a standpoint as may be, certain of the more immediate problems of experimental psychology with especial reference to their pathological applications. Into the merits of the experimental method there is no need to enter here: the foundation of the movement was laid in Kraepelin's opening contribution to the Arbeiten (1), and most other contributors, during the earlier years of that publication, deemed it wise to preface a pathological study with some sort of an apologia. Recently, the situation has been reviewed by Franz (2), and still later by Woodworth (3). In 1904, the principal work up to that time was critically summed up by Hoch (4), and later its general scope has been briefly outlined by Farrar (5). It will not be attempted to cover again the ground gone over in Dr. Hoch's article, save at one or two points where a criticism may be ventured. It need perhaps only be brought to mind here that no science can advance beyond its methods, and that sciences do advance as they introduce more precise and quantitative methods of measurement and analysis. From this viewpoint, the experimental method is justified in the history of all scientific progress.

The experimental method as found in present psychiatry is mainly included in the mental tests in ordinary clinical use. The function of the present clinical tests is to afford a measure of certain mental qualities, from which the clinician, through largely unanalyzed experience, may be able to draw certain conclusions of immediate diagnostic significance. It is indeed probable that a practiced examiner could know from ordinary observation most of what the conventional tests reveal; it is their function rather to afford an objective framework in which to present the clinical picture to others. The tests have been evolved from within psychiatry itself, and it is to be feared that the actual factors in the tests are often very insufficiently understood. We may give a clinical test to measure a memory defect, but to what extent it really does measure a memory defect, or what sort of memory defect it measures, or to what extent the individual measured falls outside the variability of normal performance, are questions with which the clinician is only beginning to greatly concern himself.

However, perhaps the most immediate reason why the psychological test has shed so little light upon mental pathology is that the clinical tests as at present applied are practically unworkable for comparative purposes. When they have given the most roughly quantitative conception of the clinical picture they have served their immediate use. Few will claim that the Kraepelinian system of diagnostic entities could have been built up upon any system of tests now or ever current in clinical practice. Yet every scientific classification must ultimately stand or fall by a system of measurements. A proper series of measurements should afford a statistical demonstration of the clinical varieties with which we are familiar far more accurate than is attainable through unanalyzed clinical experience, as well as render it possible to sketch in certain phases the life history of the psychoses from onset to the limit of co-operation.

Almost all psychological tests require the active compliance with certain experimental conditions, and this can be secured in only a relatively small percentage of cases. Only a very limited percentage of defectives could be included in Norsworthy's study of the feeble-minded, and considering the character of the tests employed, it is doubtful if the average insane hospitals could furnish so large a percentage as this, in whose results a careful experimenter would have any confidence. I question very much if 5 per cent of such a group could undergo the Freshman Tests of the psychological department at Columbia University. Only now and then one chances upon an individual who makes a patient, willing, and conscientious subject; hence the large proportion of studies involving a single case.

Another difficulty lies in the heterogeneous clinical groups over which the material is certain to be distributed. Like the feebleminded, the insane may, *a priori*, be considered either as a number of separate species, or as the extremes of the normal distribution

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in their various special traits. Even so, ten G. P.'s, manic-depressions, or dementia præcox cases would almost certainly differ from each other more' than ten normal individuals would so differ. From the statistical viewpoint of a normal psychology, therefore, the establishment of a group standard is a vastly more difficult task. The greatest barrier to progress in experimental psychology in the normal field is the fact of unequal practice; to this, pathological psychology adds another in equal degree; the smallness and heterogeneous constitution of the groups to be studied.

To sum up, a threefold aim may be set to the co-operation of psychiatry and experimental psychology. First, a better organization of the clinical tests with special reference to their comparability between individuals. Second, the exhaustive study of recognized clinical entities by methods more exact than are ordinarily available for clinical tests with a view to (a) developing methods for a more precise measurement of the effects of therapeutic agents, and (b) to ultimately determining quantitatively the groups into which the various psychoses separate. And, thirdly, the application of psychological experiment to a more intimate analysis of pathological mental processes with a view to gaining a clearer insight into the interpretations which clinical observation has suggested. Efforts in the first of these fields have been made by Somnier (6, 7), Toulouse (8), Piéron, Vaschide (0). Guicciardi (10), and Donaldson (11); examples of the second line of work are the studies of Franz and Hamilton (12). Loewald (13), and Haenel (14); in the third, one needs only to mention the name of Jung.

GENERAL TESTS.

There is little need to emphasize, from the standpoint of either a normal or a pathological psychology, the desirability of a standard and trustworthy series of general tests. In normal psychology we wish to obtain a certain knowledge about the subject in definite and objective terms, and our series is valuable in so far as it results in information about his general make-up which it is well for him or us to have. On the pathological side such obser-

¹ It may be noted that if they did not, it would argue the existence of separate species.

vations are valuable as a general analysis of the status prasens psychicus, and in studying improvement or deterioration under special conditions. All this, of course, presupposes that the analysis of this status prasens is experimentally possible. To what extent it may be so, we shall be in a better position to judge after we have examined some of the problems in which the need for such analysis has arisen, and the ways in which it has been met.

There are two points of view from which such a problem as this may be approached. Most investigators determine upon certain qualities that they wish to measure, and construct and interpret certain tests to measure these qualities. Auffassungsfähigkeit is measured by the reading of syllables on a rotating drum, Geistige Leistungsfähigkeit by the addition test. We start out with the qualities that we wish to measure and then (in theory) get the best test we can to measure them. But in view of the fact that we are so limited in our objective analyses of mental functions, it may in the majority of cases seem desirable that we should start out as much from the test as from the function. Upon occasion, a certain special function may acquire such a degree of definiteness and immediate importance, that we may well bend our energies to devising a special test for this and this only. But it must not be forgotten that external conditions, mechanical and otherwise, limit us in the sort of tests we can make, as well as in the accuracy with which we can make them. The fact that it may be possible to analyse out with some definiteness a certain mental function does not itself provide that there shall be an accurate and trustworthy measure for that function. It would doubtless be a very fortunate thing if we could measure, with any objective validity, sensibility to pain; but we cannot do it, and some of the best known instruments for this purpose are as good examples of precision running amuck as experimental psychology affords.

On the other hand, when we are in possession of a technically fairly good form of test, we are prone to interpret it in terms of a function whose very existence is doubtful, to say nothing of its being measured by the test in question. There is grave danger in starting out with a too fixed system of ideas about the qualities that are being measured. It is well to be very skeptical about a person's "voluntary motor ability," "rate of perception," or "Auffassungsfähigkeit," while the records of his performance in the tapping test, the A test, and the rotating drum test are matters of entirely legitimate interest, and frequent importance.

It is probably safer, therefore, to devote one's energies to the development of tests with as few technical sources of error as possible, and then to determine empirically what our tests measure.

The literature which we may consider on this point falls into three main divisions. In Germany the problem has been represented almost exclusively in the Kraepelinian school, and has had a large share of the attention of these workers. In America, the series of Columbia Freshman Tests (15) probably represents the most extensive single series of observations of this nature that we have. A small group of researches has grown up about this special problem, and may be considered with it. The remainder of the material is not very homogeneous, but contains many important single researches.

There is no space to enter into detailed criticism of the Kraepelinian attitude toward the general problem, in spite of its special importance in the pathological field. Nor is there need to enlarge here upon the fundamental advantages of its viewpoint toward experimental psychology, and the profound influence that it has had on its development; but these very conditions may perhaps justify calling brief attention to the reverse side of the picture. It is characterized by a certain narrowness of the experimental horizon, manifesting itself most strikingly in the relative neglect of the motor sphere beyond the ergograph. All save the most recent researches exhibit a great conservatism of method; there is very little change from the procedure of the original Beeinflussung (16). Indeed, it is to be feared that the Psychologischer Versuch in der Psychiatrie would serve quite as well for an epilogue to the first four volumes of the Arbeiten as for a prologue. As regards the introduction of new methods, it must be admitted that in such a problem as this one stands ever between the Scylla of too few and the Charybdis of too many experiments. The former means too narrow an outlook, the latter, a frequently distorted one, on account of the unreliability of the individual results. Still. it cannot be denied that for the subjects indicated in the titles, as well as for the general conclusions drawn, the scope of the experiments' is frequently too small. To speak of the addition test, for example, as a measure of *Geistige Leistungsfähigkeit* means the assumption of at least a certain degree of correlation between this and all other higher mental processes. This is unproved, and it has appeared in certain experiments reported by the writer that various forms of addition tests (Kraepelin's was not among them) were by no means well correlated with each other. Most of these investigators use other tests than the ergograph and the addition experiment, but the sensory and motor sides are always meagerly represented. The technique is often far from the best; witness such a procedure as the use of two lip-keys for the choice reaction (17).

If the series of tests described in the *Arbeiten* have perhaps been too narrow in their scope, the opposite extreme is illustrated in the above mentioned Columbia Freshman Tests. These include almost every function that is open to psychological experiment, with the inevitable result of too few observations in each test. Simple reaction time receives five observations, pitch discrimination two. While such a series of observations conducted on a large number of individuals might in some cases establish a norm of a certain validity, they are hardly of a character to determine an individual position within the group, nor, consequently, the distribution of ability in the various measures.

Of a more intensive character are the series of experiments used in the researches of Norsworthy (18), Thorndike (19), Marsh (20), and Jones (21). These have all dealt with problems which, from one point of view or another have required some quantitative determination of general mental activity. Thorndike's measurements on twins are confined to a number of association tests, and all but three of Norsworthy's tests are included among the higher mental processes. In investigations of their special character such tests have of course a great advantage in the simplicity of their apparatus. Marsh and Jones have laid more stress on the motor side, those of the latter investigator being the broader in scope. On the whole, it is probably the best of the series described, though it is applicable only under labora-

^a This does not mean number of observations, though certain investigations are also open to this rather hackeneyed objection. tory conditions. These researches are typical of the more recent experimental practice along these lines, the precise tests used in each case being as follows:

- Norsworthy, A test, a-t test, memory, logical memory, noun test, partwhole, genus-species, maze test, perception of form, perception of weight.
- Thorndike, A test, a-t test, e-r test, misspelled words, addition, multiplication, opposites.
- Marsh, dotted squares, tapping test, 3-hole test, force of movement, A test, addition, simple and choice reactions, visual and auditory memory, associative memory, and much other material from independent sources.

Jones, perception of pitch, areal sensitivity, tapping, finger and grip dynamometer, addition, visual and auditory memory, pulse, blood-pressure.

Mention may also be made of the tests used by Gilbert in his extensive study of school children (22), and by Gilbert and Patrick on the effects of loss of sleep (23). Gilbert's first research on school children includes tests for the perception of weight and color (brightness?), the size weight illusion, the tapping test, initially and after 40 seconds' fatigue, as well as simple and choice reaction time to light stimuli. The experimental methods are rather simple. In a later research determinations are made for pulse rate, pain threshold, judgment of distances by motor and visual estimation, and the tapping test. A much better series is that used in the loss of sleep experiments, which includes threshold of pain and vision, two dynamometer tests, the tapping test, simple and choice reaction to sound, an addition test, memory (through learning by heart), temperature and pulse, though several of these are admittedly imperfect from a technical standpoint.

On the pathological side, excluding the above mentioned work of Norsworthy, which is in a class by itself, the most extensive series of observations is that of Reis (24), concerned entirely with the higher mental processes. A considerable number of tests are used, including *Auffassungsversuche* by Cron and Kraepelin's method (25), simple addition tests, repetition of alphabet and counting to 50 as rapidly as possible, naming as works of one category (animals) as rapidly as possible. To these are added the time of naming colors, letters, words, adding two figures, and deciding whether the object presented is "animate" or "inanimate," "pleasant" or "unpleasant." Gross (26) applied the ad•

dition experiment, the Schriftwage, memory by Finzi's method (27), and a few simpler tests to a traumatic psychosis; Lefmann (28) used choice reactions, the Schriftwage and the ergograph in depressions. Ranschburg (29) contributes a study of the higher mental processes in senile dementia through the media of simple and choice reactions, naming words, additions, Urteilsreactionen as used by Reis, and uncontrolled associations, using the discrete method of measurement, with the chronoscope. W. G. Smith's experiments on epileptics (30) include on the motor side the tapping test, tremor, rhythm-sense, and the ergograph used for maximal contraction only. The higher mental processes are represented by tests of immediate memory for letters and recognition memory for pictures; also a continuous choice reaction test, sorting a pack of cards according to suits. A test of discrimination for length of lines was also added. Because the above series have been for the most part uncritically presented, it must not be thought that the writer wishes to present the results at their face

The most recent researches of this nature are those of Franz and Hamilton (12), and Franz (31). These are very similar in scope. The first consists of measurements of pressure and pain thresholds, accuracy of movement (muscular sense, visual memory?), the tapping test, simple and choice reaction times, speed of reading aloud, a form of the A test, and the distribution of colored cards. The comparative study of manic and depressed states omits the sensory experiments and includes a form of addition test. One may note the minor part uniformly played by sensation in the above lists. As an offset to this, the researches of Spearman (32) and Van Biervliet (33) have dealt entirely with sensory material, seeking to establish a correlation between general intelligence and sensory efficiency. Some of the difficulties of this procedure have already been pointed out, though positive results are claimed in each case. Spearman's searching review of this entire subject will perhaps absolve the writer from further detailing its history here.

value. In several cases the technique seems faulty, the interpre-

The above mentioned sources probably include all practicable mental tests hitherto used that have any significance, and of course a good many others. In discussing what tests may be most ap-

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plicable to our immediate field, one might at first think that we had two problems to deal with; whether as in the Columbia Freshman Tests we are concerned with a series of experiments to be made only once, on an unlimited number of individuals, or whether it is intended to study a specific phenomenon in a limited number of subjects, the tests being repeated as extensively as may be desirable, as in those of the Arbeiten. In the pathological field, we meet with the first requirement mainly in clinical examination, the second in the more detailed analyses of special research. It is difficult to see the value of this distinction, however, save as an excuse for the occasional employment of cruder methods. Under any circumstances each observation ought to be made as frequently and as accurately as is possible. The real distinction is whether we are able to work under laboratory conditions, or must get along without the aid of special apparatus. This, as we shall see, is of greatest importance in the motor field.

An exhaustive critique of the details of the subject is beyond the present scope, if not also beyond the capacity of a single individual; nevertheless, there are important factors in the problem which the clinician may not appreciate at their full value, and which may here justly claim a share of attention.

Some mention has already been made of sensory possibilities in this field. The problems, however, are mainly of a research character, and the clinical test must concern itself with threshold determinations in such special fields as may appear to have the most immediate clinical application. So great a diversity exists in the problems as well as in the methods of investigation that but little of general sensory significance is to be expected from inquiry of this character. Of the two methods which may be mentioned as applicable to clinical tests, average error and serial arrangement, the latter demands less co-operative effort. A very satisfactory series of subliminal differences in grays can be made with India ink, and the same method can be used for producing a series of subliminal differences in color tone. Gilbert describes a series of red wools used in the research above named, other methods for grays are described by Titchener (34). The sorting method, as developed by Henmon (35), is a convenient quantitative test of color sense, though as a technical point some sorting box as that described by Jastrow (36) should be used in all sorting experiments, and the cards not piled one on top of another in group In sound intensity no experiments of any precision can be ma quickly enough for clinical work, though the research techniq is well evolved (37). In the perception of pitch (37, 38), turi forks are preferable where they can be used. At present they scarcely applicable save in the method of right and wrong cas a convenient method for continuously varying the rate, as means of a rider whose retarding influence could be varied by micrometer screw, would much enlarge their scope. The sin pitch-pipe is altogether out of favor and the Appunn and St instruments are complex in operation. While a far from per experiment, the best method at present available would seen be the monochord, as used in the Columbia Freshman Tests. method is average error, the subject reproducing as nearly possible from memory a standard tone.

Tests of cutaneous sensibility have a special pathological ap cation in conditions of hysteria. The defects of the 1-2 point have already been established, and the exploration of touch sp requires more co-operative effort than the subject can usually relied upon to give. A more practicable method is that of Graham-Brown (39) æsthesiometer, which is intended to mas the ability to distinguish rough and smooth surfaces. Proba the best principle, however, is that of the familiar pin head point test, often also given with a pencil. The subject simply dicates whether he is touched with a sharp or blunt object, but test could easily be reduced to a quantitative form. Passive p ception of weight is also employed; in these cases the weight should be sufficiently large as not to introduce the question touch spots. It is interesting that Rivers' reports a consideration lack of correlation in the results of the different methods for f touch sense, as given in the experiments on the operated arm Dr. Head. In this field, especially, is there uncertainty as to the function measured, which argues strongly for the test with least mechanical sources of error. The muscular sense. as the tinct from the sense of movement, provides a convenient experiment in the perception of weight by serial arrangement. The

^a In an address before the American Psychological Association at Chicago, Dec. 31, 1907.

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weights, which should of course be similar in appearance, and with their centers of gravity at approximately the same point, may be conveniently and simply made with lead shot embedded in paraffin in wooden pill-boxes. The differences may vary from 2 per cent to 10 per cent; the writer has found 4 per cent very satisfactory. The graphic method is a refinement that is hardly applicable here. The test should prove of special clinical significance in the anomalies of muscle sense. The sense of movement, joint sense, or tendon sense, as one may prefer to call it, has a special clinical application in some of the motor disorders seen in tabes and general paralysis; the most elaborate technique is that of Goldscheider. Accurate tests sufficiently simple for clinical purposes are possible with the apparatus described by Fullerton and Cattell (40). An even simpler test is the drawing of a line, with the eyes shut, equal in length to a standard line, the length of which is limited. This is similar to the "perception of weight" experiment in the Columbia Freshman Tests, and would be quite sufficient to detect any coarse deficiencies in motor sense.

It is in the motor field that conditions are the most satisfactory from the technical side. As has been mentioned, however, the graphic method is required for nearly all accurate work, for which laboratory surroundings are necessary. On the voluntary side experiments are concerned mainly with force, speed, and accuracy. As a measure of motor power, the ergograph will subsequently be discussed at some length. The dynamometer, measuring the force of separate contractions, is a uniformly unsatisfactory instrument. The most patent objection is the different leverage allowed according to whether the hand is large or small. the fingers short or long. Some instruments are quite painful to use at maximum contraction, on account of the sharp edges with which they are provided. Nor is the calibration always trustworthy; I have seen records all the way from 30 to 70 kilograms made on different instruments by the same individual under similar external conditions. The relation between the right and left hands is the only determination which these instruments can make with even approximate validity.

Under speed, the tapping test should be included in all general series. It is certain, however, that very misleading conclusions

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may be drawn from taking simply the average time, as has hit erto been the almost universal practice, over a number of second The experiment must be made by the graphic method, and eval ated according to fatigue losses. It is one of the simplest expements to understand, and one of the easiest in which to obtain fair degree of co-operation. Where it is impossible to use spes apparatus, its best correlate is probably the m test, the subj making as many continuous zigzag marks as possible during. s five seconds. Of course this gives maximum rate only.

The speed of isolated movements has not, so far as I kn formed a part of any general series of experiments. And ve may have a certain significance in the present field, owing to disorders of this function that are occasionally present in the tardations. The bearing of the Schriftwage work upon this pe is sufficiently obvious. Simple reaction time is hardly a suit measure for a series of general tests. Everyone is aware of great susceptibility to practice, the slowness with which practice eliminated, and the great unreliability of the figures in its early stages. It is probable that at least 1000 observations are requi for its sufficient elimination, and traces of it have appeared a many more than this. Technically, it is a difficult experiment execute with the proper precautions, and on this ground much the work done with it is open to the gravest objections. The sa objections apply to discrete choice reactions, which have ad tional difficulties in the proper standardization of the stimuli.

The most satisfactory accuracy experiment is probably the known as the three-hole test, in which a subject plunges a style as rapidly as possible into three holes situated at the apices of a equilateral triangle, the stylus exactly fitting into each hole. is very doubtful if this is complicated to any considerable extenwith an independent function of speed. As with the tapping te the usual procedure has been to take the time required for a hundred adjustments of the stylus, but it probably ought also to be taken by the graphic method. Where it is necessary to perfore the test without special apparatus the subject may make dots with a pencil inside of circles printed on paper to correspond with the holes. The operator may take the time required for, say, 50 touches, of which he must, of course, keep count. There is no

way to allow for dots outside the circle; the subject must simply be forcibly instructed not to make them. Another form not open to this objection is to have the subject dot with a pencil inside the squares of finely graduated (sq. .I inch) cross-section paper, counting the dots which fall outside their proper squares. The speed of the dotting is governed by a metronome. The great difficulty is that different speeds of the metronome are required for different subjects. Many other tests are proposed, but they seem inferior to the above forms especially as regards ease of evaluation, the usual difficulty being insufficient control of the speed. The so-called "steadiness test," in which the subject endeavors to hold a stylus within a hole without touching the sides has little to do with motor accuracy, but is a rather crude measure of muscular tremor, registering the number of occurrences of a tremor of a certain extent.

If tremor is to be studied at all, and it is probably material for a research problem rather than for a standard test, some more precise means of recording should be employed. The usual instrument is of the myograph type; Peterson (41) speaks highly of the Edwards sphygmograph, but the high-water mark is probably reached in Sommer's tridimensional analyzer (6). Sommer reproduces some very interesting records made with this instrument, but we have yet to hear of a system of diagnostic entities based upon it, as Spearman seemed to forecast (42).

Among the higher mental processes the uncontrolled association experiment is one that has recently assumed a peculiar importance in the pathological field. Nevertheless, it is probable that the claims that have been put forward by Jung and the others of this group are of a character that should have been made on a basis of more careful experimentation. Technically, the method is very weak, and statistically it is by no means invulnerable. Still, the practical results have been far from negligible. Under the circumstances, it will probably be well to suspend judgment of the fundamental validity of the method until the observations are confirmed by some one with a little stricter conception of what constitutes experimental conditions, and meanwhile to heed the counsel of Gamaliel.

The first need is more precise measurement; the stop-watch is

out of the question for accurate work in this respect, just as the Hipp chronoscope perhaps errs too much on the other side. or is probably a sufficient unit of precision for association time The chronoscopes all require special registering apparatus in the form of the numerous voice-keys that have been devised ; Cattel form, as modified by Watt (43), seems to be the most approx apparatus, but the writer has his doubts. I have yet to a key operated by laryngeal action that can be depended up with voiceless spirants, or a breath-key that works properly wi the nasals or even the initial vowels. The lip-key and its mod cations interfere with the vocal organs and have other technic defects besides being unæsthetic. A good deal is to be said favor of the Bergström chin-key, though as far as I know it h not yet been extensively used. The graphic method is proba of greater accuracy than can be attained through chronoscop means, but also of greater than is worth while, when its cumbro ness is considered. The above remarks of course apply equa to associations taken by the discrete method, whether controlled or uncontrolled.

So far as the continuous method is concerned the uncontrolle association is scarcely open to experimental treatment at all, and it is perfectly possible to obtain one's material in another way. The scattering of the dementia, the rambling of the G. P., and the flight of the manic equally await the hand of the skillin stenographer. The very incoherence of the talk, as well as in frequent indistinctness, render the task a difficult one; it may be mentioned that the phonograph is unsuitable for this work. If normal individuals it is a well-known experiment to have the subject write down as many unconnected words as possible in a given period. The resemblance of such lists to the manic flight has already been noted.

The field of controlled association has perhaps been the most prolific in the number of tests that it has produced. But we do not reap the full benefit of the continuous method in its ability to register episodic changes in the efficiency of performance unless we take account of the individual processes. To measure merely the average speed for the entire test, or the work done during each half-minute or minute entails a great loss of experimental effi-

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ciency; the finer work-rhythms are lost as completely as in the discrete procedure. The reader may remember the ingenious electric pencil devised by von Voss (44) to meet this difficulty, but this adaptation of Wundt's D method of reaction has insufficient objectivity. The only satisfactory method is to make the direct response by some movement other than one of the vocal organs; this conclusion points to the chain reaction with choice as exemplified by the psychergograph, of which more subsequently.

The controlled association process can be cast into a convenient form for the ordinary clinical test, the time being read from a stop-watch at as frequent intervals as may seem desirable. Reading aloud is the simplest form, but the association is liable to go on more rapidly than the motor response is possible, as with the simpler arithmetical tests which have already been discussed. Other forms of the controlled association test are the synonyms, opposites, part-whole, genus-species, co-ordinate, sub-ordinate, and supra-ordinate objects and ideas, to name an attribute of the word exposed, or even to expose two words and have the subject state the relation between them. The tests just enumerated are a striking illustration of the point above made, that one could afford to pay less attention to the general function with which the test is related, and rather more to the details of its interpretation. None of them can be evaluated with any accuracy, because the control is only partial. More than one association is always possible, and the same association does not necessarily mean the same mental attitude in different individuals. As a measure of mental qualities, these tests are necessarily very inferior to the absolutely controlled associations such as the arithmetical tests. Among others to be recommended are the comparison between the ability to name and recognize colors or pictures, and the words naming the colors or pictures. It is usually found in literate persons that the word is named more easily, and retains its associations better than the color, picture, or object. Simple tests of this nature are frequent in mental examinations, especially for aphasic conditions, but they lack the standard character which alone permits of comparative study. Another good type of controlled association experiment for pathological work is that described by Packard (45). in which the subject sorted cards bearing nouns together with

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cards bearing the proper attribute, as fire-hot, ice-cold, etc. Many of the symptoms with which the clinician has to deal have been loosely described as "association disorders," and for light upon their precise nature we are practically dependent upon experimental methods.

In clinical memory experimentation one is limited to the socalled primary memory, the Merkfähigkeit of the Germans The tests in this type of memory fall into various classes, independently of the experimental technique. The simplest are those in which the subject is simply given visually or auditorily a seried of homogeneous stimuli, as nonsense syllables, words, or figures which he reproduces either immediately or after a given interval The so-called letter-square method is a complication of this type The tests are difficult to evaluate because there is no standard system of scoring the different types of errors, omissions, transpositions and substitutions. This lack of homogeneity in the errors is a difficulty in the scoring of all memory tests. Under associative memory might be classed those tests in which the stimuli are presented in pairs, and the problem is to later assign to one of each pair its proper mate. To this class belongs the Treffermethode of Müller and Pilzecker; the Reproduktionsterfahren of the association experiments is a special form of this procedure. Another class of tests deals with recognition memory; i. e., the ability to recognize certain objects previously presented among a miscellaneous group of homogeneous objects. This seems to be a fairly good form of clinical test, as evidenced by the amount of work done with it on the pathological side. The time, required to learn by heart compositions longer than the individual memory span is hardly to be recommended for clinical purposes. demanding a high degree of co-operation, and the conditions being more difficult to control. Some form of "logical memory" test, i. e., reading a short connected passage and having the subject reproduce as well as possible the gist of it, forms a part of most mental examinations. While it lacks all standard character, # must be admitted that any one experienced in giving it can get a good deal out of the way it is reacted to. To what extent performance in the above species of memory tests may be correlated, does not seem to have been satisfactorily determined; it is com-

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paratively certain that performance in the logical memory test is a very poor criterion of intellectual ability.

The special methods for associative and recognition memory devised by Ranschburg (46) and also described by Hoch (4) are the principal contributions from the pathological side. Ranschburg's additional prompting procedure as an index of the "certainty of memory" would seem to have a very real value, but the procedure is a delicate one and requires better control than Ranschburg uses. The wrong cases should not be the only ones in which accuracy is questioned. These methods, in a somewhat modified form, have been applied by Boldt (47), and Bernstein (48) describes a simpler recognition memory procedure, using geometrical forms. Brodmann (49) and also Krauss (50) have studied memory in polyneuritis, the former using the methods of Ebbinghaus, and of Müller and Schumann, and reporting an improvement keeping a general correspondence with the clinical recovery, though in many respects giving results that could not have been obtained by clinical observation. Neither is the influence of practice clearly brought out; in Krauss' case it seems to be absent. The pathology of memory has had a good share of attention in the recent work of Kraepelin's laboratory, other studies being those of Schneider (51) on senile dementia, and Wolfskehl (52) on manic cases. Both Krauss and Wolfkehl used Finzi's apparatus, which the more recent work of Kramer (53) on normal subjects abandons in favor of a pendulum tachistoscope. It may be mentioned that Kramer's results do not altogether confirm the normal data of Wolfskehl. Elsewhere the rotating drum seems to be the more approved apparatus. While the ordinary kymograph can be used, there are disadvantages in a constantly moving field and the inability to vary the time of presentation independently of the interval between presentations In the special instruments the movement of the drum is controlled by alternating escapements operated by electromagnets; a new stimulus is exposed when a fresh circuit is closed. The instruments of Wirth (54) and Ranschburg utilize this principle; in the latter the stimuli are affixed radially on a rotating disk, in the former they are on the surface and parallel to the axis of the drum. The most evolved form seems to be the recent apparatus described by Bergström

(55), which includes a special device for varying the intervals of the contacts. There are several simpler forms of visual memory

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apparatus, but it is doubtful if they add materially to the accuracy that is possible without special appliances. The great advantage of visual over auditory presentation is the more rigid control to which it is subject, and this advantage is in a large measure lost unless instruments of precision are used.

In sum, I would for present purposes rank the usefulness of the subjoined tests, as tests, about as follows, each in their several departments.

SENSATION.

- 1. Weights, by serial arrangement (size-weight illusion).
- 2. A quantitative form of the pin-point and pin-head æsthesiometer test.
- 3. Extent of movement, by average error.
- 4. Length of lines, by serial arrangement (vertical horizontal illusion).
- 5. Grays, by serial arrangement.
- 6. Pitch, by average error, with the monochord.
- 7. A simple test of color vision (as that used in the Columbia Freshman Tests).

MOVEMENT.

Speed.

- I. The tapping test.
- 2. M test.
- 3. "Isolated " movements.
- 4. Simple reaction time.

Accuracy.

- 1. The 3-hole test.
- 2. Same, with paper and pencil.
- 3. Dotted squares.
- 4. Hitting at series of dots. Timed by metronome.
- 5. Maze test.

Force.

- 1. Fatigue of force, with Cattell finger ergograph (both hands).
- 2. Ordinary dynamometer (at least 3 trials with each hand).

Involuntary.

I. Tremor, by the graphic method.

HIGHER MENTAL PROCESSES.

Association.

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I. 100-7 test.

2. A test.

- 3. Other arithmetical tests.
- 4. Naming colors.
- 5. Naming objects (pictures).
- 6. Reading aloud.

Memory.

- 1. Recognition memory, by Ranschburg's methods.
- 2. Immediate memory for simple presentations.
- 3. Associative memory (Trefferverfahren).
- 4. Logical memory.

So much is often left to be desired in the statistical presentation of results that a few words on this point may not be out of place. American practice has settled definitely on the average, with the m. v. as a measure of variability. A modicum of experience, however, suffices to show how entirely these figures may conceal the actual state of affairs. When the number of cases is, say, above 25, the distribution of all important averages or other statements of central tendency should be printed in detail, and in any case should be briefly described. Of course, any one who would print an average with the distribution of whose constituents he was unfamiliar, would be beyond the pale. The printing of a distribution seldom requires more than two lines, and ought to prove a healthy corrective for the ruthless throwing out of extreme cases which is responsible for so many small m. v.'s, particularly in reaction time work. We often tend to consider low variability as indicating careful experimentation, as it may in physical measurements, but in the present field it is much more likely to mean a rigid censorship of the results. There is no mathematical device that will make inaccurate measures serve for accurate ones, or few observations do duty for many.

Much of the importance of all experimental work lies in the study of correlations. For present purposes something may be sacrificed for a measure of relationship in a form intelligible to the unmathematical reader. This is hardly true of the standard r or the Spearman correction. Simpler measures are Thorndike's (56) median ratio, Spearman's "footrule" (57), and the method of per cent of like signs described by Whipple (58). Of these three, the writer can claim experience only with the last named, which is simple and accurate, but does not seem to work well with small arrays, for which the Woodworth per cent of displacement is far preferable (59, 60). Per contra, this latter is rather cumbersome in large arrays, but is perhaps the most simple and in-telligible in its rationale.

Organic Processes.

A few words must be said here regarding certain processes that may not be closely related psychologically, but whose similarity in experimental approach brings them together for present purposes. I refer to the study on the one hand of the emotions, on the other hand of the complex processes summed up under the name of attention. With both of these the plethysmograph has strong historical associations, and analogous instruments, such as the sphygmograph and the pneumograph, have found employment in both fields. It is very questionable, however, whether for the study of the emotions, at least, the plethysmograph has any scientific application in pathological territory. Not alone on technical grounds should such objections be maintained, for although these are very great, and have led to the questioning of the validity of the plethysmograph, from a purely instrumental standpoint, as a reliable index of emotional states, yet it is probable that in the latest developments these difficulties have been well met, and that the registration of a sufficiently accurate volumetric curve is a perfectly possible thing. But when we come to correlate these phenomena with emotional states we are face to face with an entirely different problem. It will be difficult to formulate a satisfactory answer to the objection of McDougall (61) against any vaso-motor criterion of mental states because the relation of these centers to the nerve supply of the vaso-motor system is too complex and ill-understood. Moreover, and what is perhaps more to the point, the plethysmograph has not shown itself in any sense of the word a "psychoscope." As a measure of emotions, the most recent opinion seems to regard it as practically bankrupt. There is no space here to point out the sources of error in the method to which this condition may be ascribed, for which the reader is referred to the special studies (62-66), but the present attitude of normal psychology, where go per cent of the work has been done, justifies considerable caution in accepting the clinical significance of contributions from the pathological side.

The most recent of the extended studies in this field, that of Alechsieff (67), discards the plethysmograph for the sphygmograph and pneumograph with a claim of some positive results. The galvanometer, also, has again come to the fore as an index

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of emotional states. In the work with this instrument on the clinical side with which the writer is familiar, the problem seems to have been approached from the last of empirical standpoints, with next to no control of the physiological factors immediately involved. It is, therefore, impracticable to make any technical criticism of the method, or estimate of its possibilities.

If we confine ourselves to an objective definition, the field of attention offers greater promise from a methodological standpoint. We have here at least definite phenomena like the Traube-Hering wave, in relation to which the efficiency of the various vital functions can be studied. On the motor side, Van Biervliet (68) has examined the relation of reaction time to pulse rate, Patrizi and also Wright (69) its relation to the Traube-Hering wave. Noyes (70) studied the relation of the patellar reflex to the Traube-Hering wave in a single case of terminal dementia. The results of the last three named can be brought into some degree of accordance; their relation to Van Biervliet's work is not altogether clear. Nor do the experiments of Slaughter (71) and also Bonser (72) on the sensory side correspond very well with these results. The researches named can hardly be regarded as other than Bahnbrechend for the problem; the technique has been vastly improved since they were made, and more conclusive results may be awaited with confidence.

FATIGUE.

When a bullet leaves a rifle barrel, its flight is determined by several forces, as the propulsive force of the powder exploded behind it, the resistance of the air, and gravity. When we set out to produce a work curve our performance is similarly acted upon by forces of infinitely more complex character. Such are the energy that continues the work, the various phenomena associated with the names of practice, fatigue, warming up, minor rhythms, and episodic heightenings of efficiency that are described as "impulse" or " effort of the will," though their relation to consciousness is far from clear. When we recollect how complex is the calculation of a bullet's flight, immediately dependent though it be upon measurable and well understood physical conditions, and then consider the infinity of variable, unmeasurable, unanalyzable

factors that influence the curve of work, it must be apparent that however faithfully we may describe them, the explanation of t phenomena is from the logical standpoint a nearly hopeless tas We observe an initial increase in efficiency, we call it "warming up." We observe a gradual decrease in efficiency; we call "fatigue." We observe a sudden rise in the curve with no trad able external cause; we call it Antrieb. "effort of the will But we must not ungualifiedly speak of these phenomena as d to fatigue, warming up, or impulse, or we are using as an explan tion of a fact what is only an inference from it. Many causes m be, individually or collectively, responsible for any of the phenot ena which we sum up under these names. Another theoretic point confronts us. The distinction between Ermüdung and E müdbarkeit, between condition of fatigue and susceptibility to is of great clinical importance, and is often drawn more sharply theory than in practice. The only criterion is the shape of the curve. Given the shape of the known normal curve, we may int conditions of fatigue from a relatively low performance of rel tively constant level, and susceptibility from an abnormally share descent of the curve. But chief among the causes of progressing loss in efficiency is often not an objective wearing out of the a paratus involved, but the reflex inhibition arising from sensation of fatigue. It has been noted that by removing related sensation as with bromide, efficiency may be actually increased over the normal. So that, to consider only the most superficial factors, high susceptibility to fatigue may be due either to a rapid wearing out of the machine, or a ready response to the reflex inhibitions.

We must not lose sight of the fact that are many sources of error in turning, from either the educational or clinical side, m any single test as a measure of fatigue. It is reasonably certain that different functions do not correspond in the character of their efficiency losses; the same state of fatigue that is indicated in the loss of efficiency in one function may be accompanied by a gain of efficiency in another, and of the complex and delicate interplay of these gains and losses but little is understood. At the same time, it is necessary from a practical standpoint to confine ourselves as far as possible to a single measure, assuming that the fatigability of equally practiced functions is equal, and that an accurate deter-

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mination in one function is of approximate general validity. So far, this assumption is unestablished empirically, but almost every worker in the field has made it, and must continue to make it until an accurate investigation of correlations in fatigue phenomena is at hand. It is from this point of view that we must consider the various methods of measuring fatigue that have from time to time been proposed. It is safe to say that none of them are shown to measure an abstract "fatigue," whatever the claims of their originators; to what extent they measure progressive changes in efficiency in the function to which they are supposed to be related, is another, and itself sufficiently difficult question.

The experimental study of fatigue falls into two main divisions. First, the study of the changes in efficiency in continuous work, as measured by actual performance in the work itself, and secondly the search of a convenient test to measure the loss of efficiency due to continuous work of a general character, as school work. With regard to this second problem it need only be noted that if any test, say the addition test, is a measure of a general fatigue, say fatigue of school work, the adding function must itself be affected by the general work, so that the surest criterion of the state of fatigue is the shape of the fatigue curve given by the test. If we know the course of the normal curve, the relation between it and the curve obtained in the test represents the condition at the time it is obtained. For present purposes, therefore, the second problem largely merges itself in the first.

In the usual classification, one may speak of measures of fatigue as sensory, motor, and intellectual. Marsh has reviewed these in some detail, and only the more important points need be mentioned here. The school problem gave the impetus to the researches that resulted in the formulation of the Griesbach method (73), based upon the 1 and 2 point dermal threshold, determined with the æsthesiometer. As with the plethysmograph, the most extravagant claims were made for it, and even more hopelessly, if possible, have they fallen to the ground. The method has been tried out thoroughly, with much greater fatigue conditions than Griesbach's, apparently also with more careful experimentation, by Leuba (74) and by Germann (75), failing to give positive results. More recently Bolton (76), as the result of a very careful and

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extended research, comes to the same negative conclusion. The retical considerations have also been adduced to show that this threshold has scant objective significance. The test is sometime used for clinical determinations of cutaneous sensibility, but cannot be too quickly discarded, in favor of some direct areal pressure test.

Measures of sensory fatigue would be very difficult to make pathological subjects, and their correlation with other fatigue p nomena is more than doubtful. On the motor side the work do with the ergograph overshadows all else, especially in the path logical field. But brief mention need be made of the methods it The experiments of Cattell disclosed the other functions. great susceptibility to fatigue in reaction time, and these result are to a certain extent confirmed by those of Bettmann (77) at However, these results were taken by the discret Patrizi. method, which might well allow sufficient interval for recover To obviate this difficulty, Scripture (78) used the graphic method with a very rapid succession of stimuli, finding a consideral fatigue effect. As Woodworth (79) remarks, however, Scriptur was unfortunate in his choice of stimuli, the light used being er tremely fatiguing to the eyes, and this would probably tend to lengthen the reactions irrespective of a specific reaction-time is tigue. The speed of repeated movements (tapping test), is quite subject to fatigue, so much so that it cannot be left out of account in any determination of performance over 5 seconds in length. The writer is at present engaged in an extensive study of the fatigue phenomena of this function, which indicates certain clinical posibilities. The accuracy of movement is not very subject to fatigue. and nothing of clinical importance has, to the writer's knowledge. been brought to light on this point; the fatigue of isolated more ments does not appear to have been studied, independently of its relation to the tapping test.

This brings us to the ergograph. Historically, this instrument appears in two forms, the weight apparatus originating with Mosso, and the types of spring ergograph introduced by Cattell and by Binet and Vaschide. The former instrument has been one of the most important instruments of Kraepelin's laboratory, and has also become familiar to American readers through the work

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of Hoch (80), who still further improved the technique. A most valuable improvement is the ratchet feature, which obviates the distressing back-pull against the finger, while facilitating the calculation of the total work. A good deal of this work, however, seems to have been done with very insufficient regard to the wellknown fact, that the Mosso principle in its usual application-lifting a weight until it can no longer be lifted-does not and cannot give anything in the nature of a true "exhaustion curve." At the end of a Mosso record, the muscle does not fail to contract for fatigue, but it simply does not contract with sufficient force to raise the attached weight; a lighter weight it will raise. With these facts in mind, it is difficult to see how such an interpretation as that of the relative independence of number and height of contractions (Hubzahl and Hubhöhe), the former related primarily to nervous and the latter to muscular fatigue, could ever be put forward with sufficient assurance to serve as a basis for clinical deductions. No single Mosso curve gives independently the number or force of innervations which may be transmitted to a muscle. It does indicate in a very striking and objective way the point at which a certain loss in efficiency is reached; but to separate, on the basis of the present evidence, two functions like Hubzahl and Hubhöhe—which must in the nature of things be largely functions of each other-and to speak of one as conditioned by muscular, the other by nervous states, is little less than dogmatism; a stratagème, as Woodworth's translator not ineptly put it (81).

It was to obviate some of these limitations of the Mosso instrument that the spring ergographs were devised. The detail of the advantages of the isometric over the isotonic method has been reviewed by Franz (82), and it may perhaps be emphasized that not the least mechanical advantage in having the curve as nearly isometric as possible lies in the fact that the leverage is more constant. This is not at all the case with the Mosso instrument, in which the first and last third of a full contraction are usually much harder than the middle. In the spring ergographs the fatigue curve shows the warming up, and gradual decrease, but does not diminish to zero, becoming asymptote to the baseline when a certain fraction of the original height is reached, and remaining thus indefinitely, save that one occasionally finds certain rhythmical rises and falls that remind one of the vasomotor waves. The records with these instruments are more difficult to standardize than those from the Mosso, as the work done must be read off from a special scale adapted to the spring employed. A small and

from a special scale adapted to the spring employed. A small and very convenient type of ergograph for clinical work is that used in the Columbia Freshman Tests. This instrument, however, makes no provision for the elimination of most of the muscles of the hand, and the subject must be constantly watched to prevent his bringing other fingers into play.

As an instrument of precision, there is probably no form of ergograph which approaches that described by Bergström (83). The principal features of this apparatus are (a) elimination of gross body movement through suspending the ergograph by a spring instead of having it clamped, (b) adaptability to the use of either spring or weight, (c) great flexibility in the number and character of muscular contractions to be measured, (d) superior control of actual muscles used, (e) separate devices, contained within the instrument itself, for recording and adding the fatigue curve and for giving immediately the height of the separate pulls. Technically this instrument is in a class by itself. To obtain an idea of the complexity of ergograph work, and the numerous sources of error that are encountered with the ordinary instrument, one can do little better than to consult Bergström's paper. Whether it is worth while to take ergograph records by simpler means, regardless of these errors, we must judge empirically. Trèves, Féré, Maggiora, and most Kraepelinian workers appear to place considerable confidence in them, Joteyko treats the Mosso curve almost like a micrometer scale; Franz, Bolton and Miller. and others, who have laid more stress on the methodological aspect of ergographic experiment, are apparently less convinced of the ultimate value of such measurements. The results are rather difficult to evaluate; Joteyko has been the most prominent in this field, but few will be able to understand the significance of the curve without presentation in its entirety.

On the whole, ergographic experiment is in a far from satisfactory stage theoretically, and as yet it has received no sufficient empirical justification. We do not even know to what extent nerve and muscle operate in the loss. This further impairs its

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value as a psychological experiment. It is probably too much to expect a measure of any general value from a partial determination of the work capacity of certain isolated muscles. In this connection will be remembered the searching criticism to which the entire subject of ergographic procedure has been subjected by Robert Müller (84), and it is a matter for note that a method with such scanty empirical support should have served an applied psychology in many of its most fundamental researches.

For much of the work on fatigue in the higher mental processes the educational problem is again responsible. The tests of the higher mental processes are much the most convenient for this purpose on account of their usual availability for group tests, though this factor is clinically of almost negligible importance. And Kraepelin (85) is doubtless justified in insisting that group experiments cannot be made sufficiently accurate for these purposes, and in favoring the use of standard and precise measures under the strictest experimental conditions. There is no space to dwell at length on the Kombinationsmethode of Ebbinghaus or the suggestions of Ritter, Friederichs, and Burgerstein, whose aim is the detection rather than the study of fatigue, and whose bearing is mainly educational. The pathological bearings of the Kombinationsmethode have been studied by Ziehen and further indicated by Wiersma (86); its main fault is its lack of precision. But as the ergograph has been supreme as a means of studying motor fatigue, so has the addition experiment as developed by Kraepelin, held practically the entire field in the higher mental processes. Some form of the arithmetical association is certainly the proper means of experiment in this direction, and while no one would claim technical perfection for Kracpelin's form, it is probably as good as any of the simpler tests, quite apart from its enormous historical advantages. A rather serious technical dilemma confronts us here. When the character of the individual processes is noted, as ought to be done in pathological work, we complicate the mental process of addition with the motor process of noting down the result, and in an easy test this motor factor is so much slower than the mental as to considerably retard it, thereby introducing a large error into the results; the subject adds faster than he can write or even speak the answers. On the

other hand, if we use more difficult tests, such as involve subtraction, multiplication or division, the mistakes are no longer the negligible factor that Kraepelin considers them in the addition test.

Accepting the addition test as a fair measure of the fluctuation of continued work, Kraepelin analyzes with great acuteness the various factors that influence it (87). Indeed, if a criticism may be ventured, it is that his viewpoint is, if anything, rather schematic, tending to interpret the curves too invariably in terms of a fixed system. By this is meant especially the recourse to such terms as *Antrieb*, *Willensspannung*, and others that assume a special influence of conscious activities on the curve. Of the significance of such terms as *Günstige Pause*, *Gleichgewichtspaus*, etc., there will of course be no question, but their determination is fraught with stupendous difficulties, and it may be doubted whether the experimental conditions have been or can be sufficiently controlled or refined as to afford a satisfactory empirical demonstration of the analyses here formulated.

In this connection must be mentioned the extensive clinical study of Specht (88). The data consist of normal determinations and experiments on traumatic neuroses. The experiment is a comparison of the curve of 10 minutes' continuous adding with the curves of two continuous additions of 5 minutes each, with an intervening 5 minutes' pause, the two types of curve being made on alternate days. Five of the six pathological subjects tested showed an excessively great fatigue loss, i. e., susceptibility to fatigue, the sixth practically none at all. The total efficiency is very low, sometimes barely a tenth of the normal, so that the curves present at first sight a rather deceptive appearance. There can be no question that the results of the normal and pathological cases show statistically two distinct species. The neuroses seem Both in also to be less benefited by the insertion of the pause. the method and results are many points of great interest, for which the reader may be referred to the paper itself. The concluding experiments on Absichtliche Verstellung, however, are perhaps a little premature. Motive is a difficult thing to prove, in psychological investigation as elsewhere, and experiments in this direction must be better controlled than those described in this connection.

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Moreover, the whole theory of the measurement of fatigue through the higher mental processes receives a serious check through the work of Thorndike (89), who succeeds in accounting for practically the entire body of fatigue phenomena as observed with the addition test upon conditions far other than an objective decrease in mental ability. Under the most rigid conditions of co-operation longer periods than used, say, in Specht's work, could be gone through without showing any fatigue at all. Equally negative are the results of various mental tests applied to detect the presence of fatigue during the course of school work. The results of Thorndike's papers justify a good deal of scepticism as to the value of experiments in the higher mental processes as a criterion of either condition or susceptibility to fatigue. Although it cannot be denied that significant results have been obtained with these methods it will probably be found desirable to return to some form of the motor measures, on account of their objectivity and above all their greater precision.

From this generalization must be excepted the too little recognized psychergograph of Seashore (90). The subject is given a stimulus to which he reacts in a prescribed way, his reaction movement serves to expose another stimulus to which he reacts in another prescribed way, this again exposes a third, etc. This experiment is probably the broadest in scope of all psychological tests, and when it is remembered that all life is essentially a series of chain reactions with choice, it becomes also one of the most intimate experiments that can be constructed. The standard instrument of the psychergograph type uses four visual stimuli with corresponding reaction movements, the time of the individual processes being measured on a ribbon kymograph to a precision of .01". The uses of such an instrument are too various to be entered into here, but its nearest pathological application would seem to lie in the field of psychomotor retardation. It is unapproached as an experimental measure of the process as a whole, though of course it does not analyse out the factors; separate experiments on the various functions are necessary to do this. There is no reason why such an instrument could not be constructed to register the force of the reaction movement, if this is of the significance that the Schriftwage experiments indicate it to be. Two

reaction movements (right and left hand) should probably suifice for ordinary use; the most advantageous form of stimulas could be determined only by experiment. It is striking that this general principle has been so little applied, in the presence of the inferior methods with which the literature is replete.

We have seen how essential it is that we take fatigue curve a no more than their face value, and how practically the entire result is given us immediately in the shape of the curve. This subjects all fatigue work to another special limitation. All fatigue experiment, indeed almost all psychological experiment itself. pends directly on the making by the subject of certain maximal efforts. Everyone with laboratory experience knows that the "maximal effort" is a form of words that is interpreted in different ways by different people. This is a most potent factor in determining the shape of a fatigue curve. To illustrate: we are measuring with an ergograph the strength and endurance of a subject's middle finger. The maximum initial effort of which the muscles are capable let us term F. Of course no matter how willing or conscientious our subject may be, we never get this F; we get only 60, 75, or 80 per cent of it, as the case may be From two subjects of absolutely equal strength and endurance we shall get very different looking fatigue curves, according as they put forward 60, 75, or 80 per cent of F. 80 per cent will do much less work than 60 per cent, just as the runner who runs at full speed will not run half as far before exhaustion as he who travels at half speed. Now we have no means of knowing whether the actual effort that we get as "maximal" is 60, 75, or 80 per cent of F. It is probably a grave mistake to regard this as entirely or even mainly dependent upon the conscious co-operativeness of the subject; equally conscientious subjects may put forward very different degrees of the physiological maximum, and their fatigue curves will be influenced accordingly. For this reason I am inclined to believe that it is possible and legitimate to weight fatigue curves to a certain extent. It may be presumed that where the initial efficiency is greater, we are getting a greater percentage of

⁴ It is even possible that in the case of a fatigue experiment we get less initial efficiency than in the case of a single effort; the subject instinctively "saves himself."

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F, and our ideal conditions are being more rigidly complied with, consequently such curves are the more comparable. I have in normal individuals almost invariably found the most typical fatigue phenomena associated with the greatest efficiency of performance and vice versa, and it is probably fair to apply the same criterion to pathological records.

CONCLUSION.

But more than all, pathological psychology must comprehend, equally with normal psychology, the advantages of dealing with data in the mass. Extended investigations with single subjects have their legitimate place in the development of methods, and must long play a useful part in the literature, but it should be borne in mind that their results have strict application solely to the individual from whom they were obtained, and can only with great caution be applied to the class to which the subject appears to belong. Such studies are valuable because of the clinical understanding of the individual cases that they give us; but the attempt to generalize from such observations to a clinical group is likely to lead to nothing but error and confusion. If in pathological psychology we should deal not with individuals, but with cases, we may look forward to the time when we may deal not with cases but with diseases.

At present, the necessary conditions for these investigations are scarcely to be obtained save in the research laboratories of the insane hospitals. At the same time, the special training requisite for carrying on such work is hardly to be had outside of the laboratories of the larger universities. Pessimistic opinion has been expressed as to the possibility of direct co-operation between these two, and there are indeed many conditions which tend largely to justify this standpoint. Much more essential is the constant cooperation of clinician and psychologist under the former conditions. The fields of psychiatry and experimental psychology are too rapidly growing, and the details of knowledge that they require are too minute that either clinician or psychologist should be more competent than his fellows in both. Without the clinician, the psychologist cannot have a proper understanding of clinical problems or interpretations, and without the psychologist, the clinician has hitherto been exposed to the gravest errors of experimental practice. Much of the previous failure of psychological methods to justify themselves in psychiatry can be accounted for upon purely technical grounds, which ought to disappear as the co-operation of the two sciences becomes more and more immediate. Lines of communication are becoming better and better established; but the vast *hinterland* that is common to both sciences remains as yet unpenetrated. To many, it is still the "never-never" country of which Kipling has written. Of course we shall not know what it contains until we explore it, but the equipment lies ready to hand, and upon the facilities for the work being commensurate with its opportunities, the future progress of both sciences may in no small measure depend.

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CYST OF DURA MATER OCCUPYING THE LEFT MID-DLE CRANIAL FOSSA, ASSOCIATED WITH ANOM-ALOUS DEVELOPMENT OF THE LEFT SUPERIOR TEMPORAL GYRUS.

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I. INTRODUCTION.

The present report deals with a peculiar lesion of the dura mater found at autopsy in an aged man. This lesion, unsuspected during the patient's life, was a cyst in the dura mater of the left middle fossa. Despite the absence of related symptoms during life, the condition is regarded by the writer as congenital. The paper deals, on the one hand, with the possible nature of the apparently unique cystic lesion and discusses, on the other hand, its peculiar effect upon adjacent nerve tissue. Wholly quiescent at the time of its discovery, the cyst had effected displacement of the tip of the left temporal lobe which was accompanied by a remarkable thinning of a part of the superior temporal convolution on the side of the lesion. This thinning of the superior temporal convolution is the more remarkable because the intervening convolutions (second and third) remain intact. Thus. if the thinned convolution is in any way due to pressure by the dural cyst, that pressure must have been exerted at some distance. This circumstance, if proved, would tend to show that convolutions differ in their capacity to resist pressure. Convolutional variations of this character have much to support them à priori; but little absolutely convincing evidence exists on the point.

II. CLINICAL HISTORY.

J. L. S., a man, aged 85, native of Massachusetts, single, was admitted to the Danvers Insane Hospital September 8, 1905.

There was obtained nothing of importance in his previous history or habits. One brother was insane for a number of years.

The Record at Entrance.—The patient had done little work for the past fifteen years. For the last four years before admission hearing had been poor, and for three years eyesight had failed. Always considered odd and stubborn, he had for the past three years developed a habit of running out onto the streets thinly clad and losing himself. He had a period of confusion for a long time when he was unable to find his way about the house. His speech was thick for a while, improved, but has had repetitions. Memory has become very poor; he is now untidy and indifferent. Has had several falls, after which he is found lying on the floor.

Examination shows a feeble old man, fairly developed and nourished. There are dulness and moist crepitant rales at bases of both lungs behind. Heart is slightly enlarged. Sounds are irregular, no murmurs. The tension of the radial arteries is increased, and all the palpable arteries are markedly sclerosed. There is edema of feet and ankles. Urine shows few hyaline casts with cells and granules adherent, but no albumin.

No paralyses noted. There is a gross tremor of hands and tongue. Patient unable to stand in Romberg's position. He is almost blind and deaf. Reflexes almost normal. Sensations not markedly disturbed. Four days after entrance he answered relevantly when questions were understood.

January 10, 1906. "Patient has been confined to bed since last note, and has shown practically no change in his mental condition. For the larger part of the time he has remained quietly in bed. He appeared as well as usual yesterday, and died suddenly during the night."

Diagnosis.—" Senile Arteriosclerosis."

Summary.—An old man, one of whose brothers is insane, gradually develops an inaptitude for work, failing in vision and hearing, and showing a loss of memory. He has had a period of confusion, occasional thickness of speech and, just before admission, several falls. Examination shows marked sclerosis of all palpable arteries and an affection of the bases of both lungs behind. Mentally dull.

III. AUTOPSY.

Anatomical Diagnoses .- Dr. E. E. Southard.

General arteriosclerosis.

Chronic fibrous myocarditis.

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Slight mitral sclerosis.

Calcification of aortic valve.

Emphysema and edema of lung.

Hypostatic pneumonia.

Lymphatic cysts of intestinal wall.

Congenital cysts of kidney.

Double hydrocele with chronic periorchitis.

Aneurysmal dilatation of common iliac arteries, and of right vertebral and basilar.

Absence of diploë.

Chronic adhesive pachymeningitis.

Cyst of dura mater.

Edema and pigmentation of cerebral cortex.

Chronic leptomeningitis.

Congenital hypoplasia (?) of left temporal lobe.

Lung shows streptococcus pyogenes in pure culture.

Examination of the Head.—" Scalp normal. Calvarium shows little diploë. Dura inseparably adherent to vault. Sinuses contain fluid blood. The floor of the middle fossa of the skull on the left side is occupied by a flat sac-like fibrous bag, formed by a cleft in the dura mater. The dura mater strips readily from the temporal bone and from the Gasserian ganglion beneath. There are no interadhesions of sac and overlying pia mater. The sac is lens-shaped, with walls a little thinner than the dura mater of the opposite middle fossa, used for comparison, and contains about 10 cc. of slightly opalescent liquid. The inner lining of the cyst is smooth, but shows a few smooth trabeculae near the periphery. The gross appearance of the inner lining recalls that of the venous sinuses of the skull after withdrawal of blood. There is no free communication between the cyst and surrounding cavities, and the cyst was readily dissected out intact. At one point in the outer wall is a focus of recent hemorrhages and laking of blood occupying an area 1.5 cm. square. Along the inner wall is a linear collection of glistening flakes of miliary or slightly larger size, occupying a space 2 x .5 cm. Dura elsewhere Arachnoidal villi moderately developed. normal. Pia mater thickened and hazy, particularly over upper and anterior surface. The left frontal pole shows the most extensive pial thickening. The pia of the mesial and inferior surface of the brain is almost normal in thickness and appearance. No thickening or other lesion can be noted over the tip of the left temporal lobe The left temporal lobe is shorter, flatter and more blunt than the right. The absence of material corresponds with the dimensions of the cyst of dura mater mentioned above. The sulcation of the region corresponds roughly with that of the other side. There is no tendency to microgyria. After removal of pieces for histological examination the brain was placed en masse in formalin.

Miscroscopic.—Cerebral cortex, right and left, frontal regime Increase of neuroglia cells in white matter. Pigmentation of nerve cells, neuroglia and adventitial cells is generally marked

Ascending frontal: In places a decrease of Betz cells, and generally an increase in neuroglia cells, especially along vessels where considerable pigmentation of glia and adventitial cells is noticeable.

Left calcarine: Pigmentation of glia cells, but not of nerve cells. Increased number of satellite cells and of cells in the outer layer.

Right calcarine: Relative increase in number of vessels in white matter.

Spinal cord shows a mild grade of stationary fibrillar gliosis of the posterior columns. The anterior spinal arteries in all levels examined show reduplication of the elastic membrane.

IV. EXAMINATION OF THE BRAIN.

It was perfectly evident at autopsy and in the hardened specimen that there was loss of brain substance, but just what part and how much was gone was not at first clear. A careful examination was therefore made to determine in what respect the left temporal lobe was smaller than the right.

On the left, the hippocampal gyrus extended anteriorly about 2 cm. less than on the right, and was somewhat depressed; but the breadth seemed increased. On section the convolutions of the cornu Ammonis appeared somewhat simplified and its anterior posterior length was markedly shortened, being 2.0 cm. on the left, and 2.8 cm. on the right.

The amygdala was nearly equal in size on the two sides, 10 cm. on left, 1.2 cm. on right, anterior-posterior diameter. On the

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left side, however, there was evidently a considerable dilatation of the ventricle, which separated the amygdala from the dentate lobe by 3 to 5 mm.

The third and second temporal convolutions, while of course not showing normal gyrations, seemed not to have lost much if any substance.

The first temporal convolution, curiously enough, because of its distance from the cyst, showed the greatest change. In the region of the supramarginal gyrus it is of normal appearance, but beginning about the level of the post-central convolution, some 5 cm. from the tip of the temporal lobe, it becomes gradually attenuated until it comes to an end I cm. posterior to the tip instead of normally rounding it and entering into its formation.

For microscopic comparison pieces were taken from the first, second, and third temporal gyri and the hippocampal gyrus of each side, and stained according to the following methods: With eosin and methylene blue, with methylene blue, Mallory's connective tissue stain, for elastic tissue, Marchi method for fat, Weigert's myelin sheath stain, for neuroglia with phosphotungstic-acid-haematein.¹

The hippocampal gyri differed much in gross arrangement of structure. A superficial microscopic examination suggested, however, that there was no great disparity in quantity of nerve cells or fibres, in fat content, or in neuroglia tissue, on the two sides. A thorough study was, however, not made.

Third and second temporal convolutions: Rough measurements showed the cortex on the right to be a very little deeper than the cortex on which the cyst rested. The cell and fibre content of the two sides appeared, however, little different. There was no excess of fat on the left either zonal or in deeper layers, and neuroglia tissue was not greater in amount.

The first temporal gyri, which showed such marked macroscopic differences, were made the subject of a more detailed study. Camera lucida drawings were made of the cortices after the manner of Campbell³ in methylene blue and Weigert preparations, the conclusions reached being that: (a) The tip (i. e., the present tip) of the first temporal gyrus showed a narrowed cortex with slight deficiency of nerve cells; (b) A short distance

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from the tip (approximately 2 cm.) the cortices were of equal depth and the nerve fibre content was equal on the two sides α possibly even a little greater on the left, the fibre arrangement being identical.* There was no excess of cortical neuroglia, but rather more fine droplets of fat along the whole circumference on the left. This perhaps is no more than one would expect, for in every place where two cortices came together in the sections studied there was found slight zonal deposits of fat, and it is seen here that the left first temporal gyrus is touched on all sides by cerebral cortex.

In most of the sections a greater or less amount of endarteritis was evident, and fat in small droplets was common in the walls of, and about, capillaries and small blood-vessels.

One small encapsulated point of hæmorrhage was found in the white matter of the superior right parietal region.

Description of Cyst.—Outer wall is old but thin fibrous tissue, showing no active cell process. The inner wall, however, ¹⁵ lined by large-celled connective tissue, the nuclei large and prominent, the fibrils deeply staining with eosin.

No echinococcal hooklets.

Chemical examination of the cyst contents showed a substance soluble in ether, probably either cholesterin or fat.

Summary of Findings.—A cyst of the dura mater, either congenital or of long standing, has caused distortion of growth 0^{i} the left temporal lobe and neighboring structures, with partial aplasia of the left first temporal convolution. Strangely enough the convolution most affected (T_1) does not at any point come in contact with the cyst, and the missing part of the lobe, if present, must have been separated from it by two other convolutions which appear to be structurally almost normal.

V. DISCUSSION OF FINDINGS.

Four interesting questions are brought out by the autopsy findings:

I. Is the cyst congenital or was it acquired during life?

* Unfortunately the difference in fixing for the two methods here employed made it impossible to obtain cell and fibre pictures from adjacent sections.

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2. Consequent on I, is the small size of the first temporal convolution accounted for by hypoplasia or atrophy?

3. Why is the first temporal convolution so unduly affected by "pressure at a distance"?

4. What are the bearings regarding cerebral localization?

1. Origin of Cyst.—I have been unable to find in the literature descriptions of cysts comparable with the above. Most of the cysts mentioned are not in the dura mater at all, and are generally readily recognized as due to blood extravasation or to echinococcus, in the second of which conditions multiplicity is likely; so that conclusions with regard to this cyst will have to be derived without analogous cases.

With regard to the origin of the cyst:

(a) In favor of its being congenital, we find that the cyst is nowhere strongly adherent but may be stripped out, that there is no external or internal pachymeningitis, that the cortex of the temporal lobe is either normal or shows evidence rather of hypoplasia than of atrophy.

(b) Against its being congenital, there is microscopic evidence of an active process on the internal wall, there is chemical evidence of a chronic process; no mention is made of indentation of the temporal fossa, which might be expected if congenital, and etiologically it would seem to be a more likely location for an encapsulated hæmorrhage than for a congenital cyst.

We are therefore unable to state definitely the origin of the cyst, but think the origin may well have been congenital, and that it was subsequently the seat of slight internal inflammation.

2. Is the First Temporal Gyrus Atrophic or Hypoplastic?— There is no evidence macroscopic or microscopic, existing at the time of death, to favor the theory that the cortex has atrophied because of pressure. On the contrary the portion of the cortex which would be expected to show the greatest change, i. e. the region underlying the cyst, appears nearly or quite normal, whereas 2 cm. distant from the cause of pressure brain tissue is missing. (Other possible causes explaining the condition of T_1 may be adduced, but seem altogether unlikely in the presence of such a definite cause as the cyst.)

Putting considerations Nos. 1 and 2 together, the evidence most favors a congenital cyst associated with cortical hypoplasia.

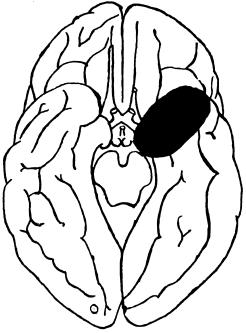
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CYST OF DURA MATER

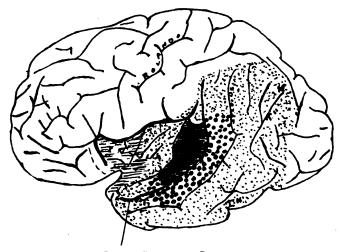
3. What is the Cause of "Pressure Hypoplasia at a Distance": —The answer would seem to be that the character of the first temporal convolution must be different from that of adjacent tissue: it would seem either that the circulation was defective (which does not appear to be the case), or that the chernical or aqueous composition of T_1 was more susceptible to pressure changes than that of T_2 or T_3 . It is hard to realize that pressure exerted through a mass, 80 per cent of which is water, should not be equally distributed and equally destructive to all brain tissue.

4. Problem of Cerebral Localization.-Campbell * found for cases """ where involvement of the left temporal lobe seemed associated with one or another form of deafness, but in these cases the lesions were invariably widespread and consequently no minute localization was possible. Whipham * also reports a similar case. After careful histological study, and assisted by these pathological data, as also by some experimental evidence. Campbell describes three types of temporal cortex: (a) auditosensory; (b) audito-psychic; (c) common temporal cortex. As is seen by the accompanying tracing the anterior third of the first temporal gyrus is designated under "common temporal cortex "; this being so, we should hardly expect its absence in this case to give much if any sensory disturbance. Turning w the history of our case we find that he had been deaf for four years previous to death; if then we could establish the fact that the cyst and consequently the hypoplasia of the first temporal convolution were congenital, it would be a point against the special Suppose. auditory function of the anterior third of this gyrus. on the other hand, the cyst and consequent atrophy of the first temporal gyrus appeared four years before death, we then my think of the "special function" of this part of the temporal lobe.

A case " in some ways resembling this one may here be recorded: A tumor of the dura which " seemed to be sarcomatous," about the size of a hen's egg, was found to have made a deep impression in the right temporal-sphenoidal lobe (i. e., the tumor was of the same size and pressed on the same area as in our case, but on the *right* side). The patient was epileptic for nine years; beyond that no motor or sensory symptoms could be detected.



THE SHADED AREA REPRESENTS THE APPROXIMATE POSITION OF THE CYST. (Tracing from Cunningham's Anatomy, p. 520.)



LOWER BORDER OF SYLVIUS.

- Adapted from Campbell s, p. 158.
 (a) Audito-sensory (densely shaded)—confined to two transverse temporal gyri and not extending onto insula.
 (b) Audito-psychic (large dots)—on free surface of post. 3/5 of T₁.
 (c) Common temporal cortex (small dots).



CONCLUSIONS.

I. A cyst of the dura mater, probably congenital, occupies a considerable part of the left middle cranial fossa.

2. Associated with the dural cyst is distortion of the greater part of the left temporal lobe. There is also considerable loss of substance of the anterior part of the superior temporal convolution, presumably from pressure exerted through intervening tissue.

3. Assuming the cyst to be congenital, this condition of the superior temporal convolution may be looked upon as due to hypoplasia.

4. The patient's history gave no ground for suspecting a focal lesion involving the left temporal lobe; nor can the peculiar distortion and hypoplasia of the temporal cortex here described reasonably be related with the clinical history of four years' deafness.

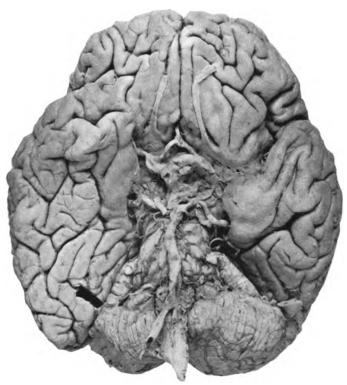
Note.—The above report is from the Pathological Laboratory of the Danvers (Mass.) Insane Hospital, in connection with a fourth year elective course at the Harvard Medical School, under Dr. E. E. Southard, for whose kindly assistance the author wishes to express his gratitude.

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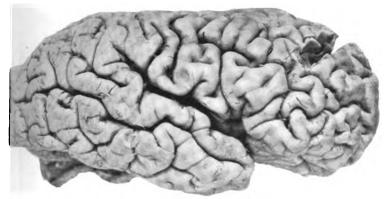




PHOTOGRAPH OF THE FORMALINE-HARDENED BRAIN. (Cyst occupied a position approximately as shown by diagram in text.)



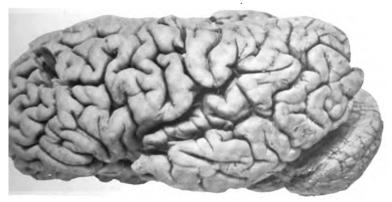
MERICAN JOURNAL OF INSANITY, Vol. LXIV, No. 3. PLATE IX.



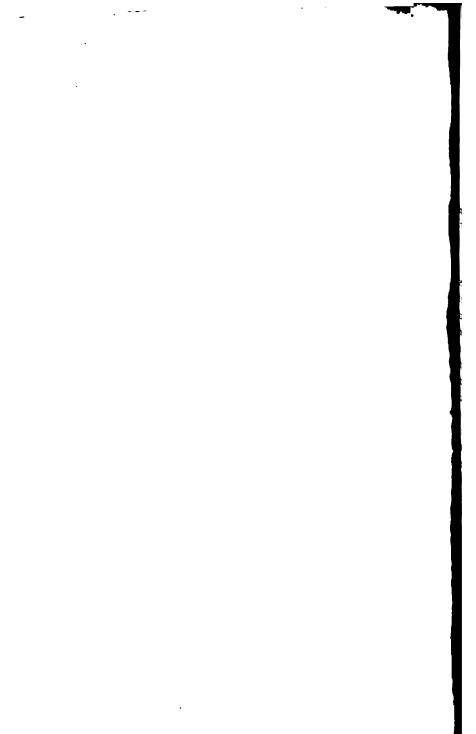
RIGHT SIDE, TT1 NORMAL.



EFT SIDE, TIP OF TT₁ Attenuated and Almost Hidden from Sight by Overlapping Gyrl.



Left Side, TT₁ Separated from Surrounding Convolutions by Artificial Means.



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SOME ORIGINS IN PSYCHIATRY.¹

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I.

There are two somewhat contrasting opinions which one often hears expressed concerning the state of current psychiatry, neither of which is distinctly new and neither of which gives an accurate representation of the facts.

The first of these opinions is that mental pathology is in a very backward stage of development as compared with the other branches of medicine, that it has always lagged hopelessly behind, and that only with a sort of apology can it take its place beside its sister sciences. The fallacy here is twofold. It is partly simple error and partly the result of comparing dissimilars. In the middle of the last century, FEUCHTERSLEBEN prefacing his textbook of Medical Psychology, expressed himself with some spirit and very much to the point with regard to this opinion which has been handed on in a stereotyped manner from generation to generation.

It has become the fashion, wrote FEUCHTERSLEBEN, when conversation turns to this subject, or when judgment is to be passed upon a work on psychiatry, to regret with genteel humility that this study has been, unfortunately, all too sadly neglected; that in this sphere, therefore, in comparison with others, we are still groping about too much in the dark, etc.! It has become the fashion to repeat this complaint so often, and yet again, that the fashion—like every other—must cease to be the fashion, for it is out of date and no longer true. Only ignorance of the solid accomplishments in this field which recent years have brought forth, or inability to estimate their worth, can be responsible for the repetition of this complaint. The difficulties which beset the way in the different sciences are various, but in *this one, relatively* as vigorous progress has been made as in others.^{*}

¹From lectures to the fourth year class, Johns Hopkins Medical School, 1907.

^aAerztliche Seelenkunde, p. IX.

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And this was written in 1844!

The second opinion is of a different tone, and in giving emphasis to the refinements of modern differentiation, would seem to imply that many, perhaps the greater portion of our clinical types in psychiatry have distinctly the stamp of newness, that we are the proud possessors, as it were, of proof copies of disease. In summing up our twentieth century attainments we feel perchance a patronising satisfaction,

> Zu schauen wie vor uns ein weiser Mann gedacht, Und wie wir's dann zuletzt so herrlich weit gebracht!

In how far this view is correct the following pages will sufficiently demonstrate.

To the two uncritical opinions mentioned, a third and more serious one may be added. The fashion has grown up in our day of discussing as a matter of fact an alleged alarming increase in the number of insane in all civilised countries during later years. The idea, unfortunately, has become popular, and is passed from mouth to mouth without the possibility of its verification being questioned. People note with a sad shake of the head the increasing number of hospitals for the insane, and ask each other, "What are we coming to at the present rate?" But, like Pilate in his inquiry about Truth, they do not stay for a reasonable answer.

The fact is that those who declare that insanity is on the up grade are reckoning with only a part of the figures, and that the circumstances which should be looked upon with gratification, namely that the number of cases *recognised and treated* is increasing, is misinterpreted as indicating an actual extension of the ravages of the disease. In every country there seems to be a fairly constant proportion of mentally defective and diseased in the population, (making allowance for certain biologic ebbs and flows to be mentioned later). This proportion has never been accurately determined, and in the past only a relatively small number of the insane received treatment. What statistics show is that the number of patients *admitted to hospitals* has been growing with succeeding years, both actually and in proportion to the increase in population, but certainly at the progressive expense of

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the indeterminate mass of hitherto unrecognised or unrecorded cases. And this is precisely the thing that has been desired. Under present conditions the hospitals are the best places in the majority of instances for the treatment of mental disease, and it has been a bitter struggle to overcome popular prejudice against The statistics indicate that this end is gradually being them. accomplished. They show further that in many cases which doubtless formerly would have escaped notice, diagnoses are now made; and what is infinitely more important not only for the good of the patient, but of the community as well, they show that diagnoses are made and treatment instituted much earlier in the disease than was previously the rule. In years gone by it was common enough for patients to be brought first to the hospital months or even years after conspicuous signs of mental disturbance had appeared, and when the possibilities of benefit by treatment had grown small indeed, the step being taken perhaps because the patient had become quite unmanageable at home or the relatives were weary of the burden. Now, on the contrary, cases are more and more often being received during the initial phase of their illness, and not infrequently within a day or two of the appearance of symptoms.

All these are welcome facts. What the statistics do not show, and probably never will show, beyond peradventure, is that the sum total of insanity *in the community*, both in and out of hospitals, is progressively increasing. In all the fields of inquiry nowhere are complete and accurate figures more difficult, more nearly impossible to obtain than in this one, but in the absence of such figures, we have no more right to beg the question one way than the other.

Beside the reasons already mentioned for the *apparent* increase, as revealed by statistical tables, must be remembered the fact of the so-called "accumulation" of patients in hospitals. It is one of the accomplishments of modern equipment and methods of caretaking that in many forms of incurable mental disease the death rate has been steadily reduced, with a corresponding advance of longevity and an increase from decade to decade in the number of the aged insane. Whether or not these circumstances in themselves are blessings is not to be argued here, but their existence

must be borne in mind as contributing factors to the lamented statistical increase of insanity.

It is significant to note that in Scotland where the attempt is made to take official account of the entire number of insane in the population, the figures show "a retardation of the increase of insanity in proportion to population during the last three years. During the past year (1906) no increase of the insane occurred in proportion to population."^a Thus in Scotland, the only country where statistics even approaching completeness are available, there is an admitted standstill in the previous apparent relative increase in the number of insane in the community.

There are many more reasons, remarks MACPHERSON,⁶ for believing that the variation of mental unsoundness is a fixed and constant one first, year to year than for believing that insanity is increasing . . . the theory of the absolute increase of insanity is founded on assertion, with nothing whatever to support it.

HUMPHREYS, in an authoritative investigation of conditions in England and Wales, comes to similar conclusions. He expresses the "decided opinion that there is no absolute proof of actual increase of occurring insanity in England and Wales," and that the "increase of the registered and certified insane is not really the result of increased prevalence of insanity."^{*}

These views were also supported by MACDONALD[•] in his Presidential Address before the Medico-Psychological Association of Great Britain and Ireland last year.

In Germany we find the same view-point expressed in reconliterature. E. MEYER,' speaking of the increasing admissions to hospitals, points out that this circumstance by no means indicates a total increase of insanity, and that in spite of a popular feeling of a progressive spread of mental unsoundness, there are no figures to justify such an assumption. HACKL and GRUNAU (circl

^a Forty-eighth Annual Report of the General Board of Commissioners in Lunacy for Scotland, 1906.

⁴ Morison Lectures, V, Journal of Mental Science, July, 1905.

"The Alleged Increase of Insanity." Journal of the Royal Statistical Society, June 29, 1907.

[•] Journal of Mental Science, October, 1907.

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by MEYER) further emphasise the failure of statistics to prove an actual increase of insanity within recent decades.

In our own country statistical returns are notoriously inadequate. It is admitted by the Census Bureau that enumerations previous to 1880 are "entirely worthless so far as the calculation of ratios of number of insane to population is concerned." In the three censuses since taken the methods and scope of inquiry have each time been so radically altered that their results are utterly incomparable.

It need hardly be suggested that the cumulative effect upon the popular mind of the alarmist outcry that insanity is constantly laying a heavier toll upon the nation, must be anything but salutary, and it is high time that a halt be made in its spreading currency.

While we have not, therefore, the figures to warrant our assuming a positive increment of mental unsoundness in successive decades or generations, we are nevertheless bound to recognise considerable variations in the prevalence of insanity, on comparing widely separated epochs in the history of human development. There is every reason to believe that in the infancy of the race, as in the infancy of the individual, and as among primitive peoples of the present so long as unmixed with foreign elements, cases of alienation were comparatively rare; and it is just as patent that the so-called higher states of civilisation, with their increased complexity and refinement of both social and personal organisation, and with their accompanying exaggerated possibilities of harmful indulgence, are directly associated with a plus of nervous instability and actual disease. We lay many ills to the charge of what we are pleased to call the stress of civilisation, or the high tension of modern life, and this is not altogether fair. There never was a time when life was not a struggle and stress is the medium of growth. It is only when the pressure of activity becomes one-sided and is associated with an imperfect or incomplete development and symmetry of the whole individual or with disharmonies in his varied natural functions, that we may look for disaster.

In general terms it may be set down that insanity, together with

*Report on the Insane, etc., Eleventh Census, 1890.

other possibilities for evil, increases in a given race in proportion to its progressive biologic differentiation; but the assumption that the process is steadily in one direction, presaging an advancing degeneracy of the human species, would be as ill-founded as would be the assertion that the process of civilisation is a teleologic one, the result of purposeful design and with constant upward tendencies—an assertion to which the records of antiquity would at once give the lie.

The proportion of mental aberration throughout the history of the rise and fall of nations may be represented, therefore, not by a steady upward curve, but by a wave-like one, in which the valleys stand for the formative and early periods of development, times in which the burden of stress is likely to be physical, while the high points of the curve represent in succeeding peoples the climax-periods of organisation and specialisation, during which the burden of stress may be assumed to be psychic.

In a casual comparison of our own time with other historic epochs we are struck by contrasting elements of gain and loss which must be set down in the account of our own mental health; and apart from the tendency to psychopathic degeneration in the individual as influenced by refinements of organisation, we note that the psychic integrity of a people in the broad sense is reflexly determined by the dissemination of certain controlling ideas which gradually become principles of national thought and action, and which slowly succeed each other in an unending series of harmonies and discords.

The ideas of the utility of the individual which prevailed in the states of Greece and Rome during their prime were directly effectual in cutting down the number of abnormal and undesirable members of the community, in materially reducing for a time the burden of morbid heredity, and in fostering a regime of national health and culture, before which the later world bows in respect and admiration. The Spartans exposed on the hilltops their imperfect progeny, while the Romans cast down theirs from the Tarpeian Rock, thus weeding out of society many congenitally defective and degenerate individuals that to-day are scrupulously saved and nursed through perhaps a long life of utter uselessness, an objectless burden to the State.

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If our modern civilisation is at a disadvantage in certain particulars by comparison with the past, there are others to be reckoned as compensation. There is, for example, one particular form of nervous disorder, or we should better say a large group of disorders, which were the scourge and disgrace of the fifteenth, sixteenth, seventeenth, and eighteenth centuries, but which are no longer a menace to society at large and have only occasionally to be reckoned with in circumscribed districts. I mean the terrible psychogenic epidemics, the stigmata of the Middle Ages, which were the first-fruits of that black fear-the spawn of ignorance and religious superstition which the so-called Christian church cast like a pestilential pall over all Europe. This sort of contagion is not possible to-day. To be sure, the fear of witches, ghosts, and spells is not yet dead among the lower elements of society, and we see, moreover, now and then, some tempest-in-ateacup demonstration by a group of fanatics who assume to have discovered the true religion; some self-elected prophet with a band of frail followers announces the day of judgment to be at hand; a group of impulsive, over-wrought individuals see visions or speak with tongues, under the influence of an evangelistic prodigy: a Dowie comes perchance to regenerate New York: but the minds of the people at large are not infected. The world glances up amusedly and moves on; but as soon as fanaticism transgresses the law of the land it pays the penalty, and the social body maintains its mental health.

That insanity, crime, and vice should ever overspread and possess the world would be as preposterous, although no more preposterous an assumption, than that these elements might one day by the favor of Providence be quite eliminated from our human tissue. Like the poor we have them always with us, and in this present tense we must include the entire past history of the species together with all its possible future. The germs of alienation, like other and definitely structural defects, are co-existent with life, and this element of morbid potential to which the name "Psychotic Moment" has been given, is present not only in all peoples and all times, but extends to include other animals than man, as comparative psychology abundantly proves.

⁹ FUHRMANN, Das psychotische Moment, Leipzig, 1903.

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To sum up, there are three conditions under which the prechotic moment increases in intensity. First, with the successive steps in biologic differentiation (phylogenesis) reaching its maximum potential in the refined organisation of human intelligence second, with the progressive development of individual races finally reaching its acme during the highest phase of civilisation; third, in the successive periods in the life of the individual, the analogy between ontogenetic and phylogenetic growth holding good in that during the early childhood of the individual, just a in the childhood of the race, the appearance of insanity except under the forms of congenital defect, is rare.

II.

It is our object now to pick out from the records of the pat certain elemental viewpoints concerning disease of the mind which have obtained in succeeding epochs, some of which have been long superseded and forgotten, some of which we hold to day, perhaps unconscious of their antiquity. In making such at excursion we shall at one turn be shocked by the horrors or ab surdities which meet our gaze, at the next we shall be filled with admiration for the wisdom and humanity of individual men, often far in advance of their age, who have instituted reforms in the manner of conceiving insanity and treating it, than which may greater or more memorable have been made in any department of science.

The history of insanity may be considered under four great periods. First, the primitive period proper, which extends backward over unnumbered centuries into the mythologic past and ends with the sixth century B. C. During this early period priestcraft enjoyed full authority and mental disturbances like other manifestations of disease were ascribed unquestioningly to supernatural influences.

The second period was born with the establishment of the Pythagorean school and the development during the following century of that of the Asclepiades and their most illustrious representative HIPPOCRATES. During this Golden Age of science the priest was cast down from the high places of authority in

medicine and men formed the habit of observing, inquiring, and proving, where previously they had only believed.

The Hippocratic era endured hardly 700 years and expired with GALEN in the second century A. D. Hereupon followed an age of darkness 1500 years long, a period longer by 300 years than that of the Middle Ages as commonly set down, and during which the priesthood and the church returned triumphant to their own, quenched in every way possible the light of reason in a night of superstition and fear, and re-established with magnified horror the demonology of aboriginal man.

We have thus a striking recurrence of two alternating and mutually exclusive periods. The Middle Ages represented the primitive period of antiquity, while the modern era dating from the seventeenth century, represents a revival of the Golden Age of Hippocrates.

It is a notorious fact that religious manifestations and mental aberration have ever stood in close relationship to each other. Therefore, in seeking to understand the attitude of primitive man toward the occasional cases of mental disease which it would be his lot to observe, it will be necessary to take into account the manner of origin of the idea of supernatural beings—gods and devils, among early mankind.

The human mind is prone, in the presence of the unknown, to seek short cuts. Surrounded by the elements and forces of nature which he could neither comprehend nor control, they became for prehistoric man awe-inspiring mysteries; and when it was brought home to him that they were capable of doing him harm, even of taking his life, they became for uncritical man superior animate beings whom he endowed with qualities like his own, whose favor was to be courted and whose wrath appeased. Thus did man create God in his own image.

Naturally every manifestation of energy not the immediate fruit of his own toil was ascribed by primitive man to supernatural agencies, and when, perchance, his own labors miscarried, this must needs likewise be due to their interference. The mysteries of birth and death and sudden illness and all unusual or unexpected occurrences were straightway assumed to have some special divine significance. So it came about that a person men-

tally disturbed was looked upon as being under the particular influence of some Deity, and such a state was at first considered blessed; and the unfortunate sufferers from fits, hysteric seizures, and other nervous disorders were believed to be enjoying the visitations of the Almighty and were often venerated as saints.

Just here we must take into consideration a second phase in the development of the idea of supernatural beings. It is well known that, as far back as human records extend, each tribe and each nation have established their own private set of gods, which partook of their own character and were the embodiment of their own peculiar form of life, under whose exclusive protection they believed themselves to live; and who stood ready to smite their enemies or to deliver their weaker neighbors into their hands, if for no other reason than that they coveted their lands, their wives, or their treasure. This state of society is constantly presented in the stories of the Old Testament. Thus the gods of the Egyptians and Assyrians and Babylonians became for the ancient Hebrews an abomination whose influences were not for good, but unmitigatedly evil.

Whether a supernatural being was a god or a devil became merely a question of view-point. The gods of subjugated races became devils in the theologic system of the conquerors, and the Good Spirits of one nation were the Evil Spirits of their neighbors, and vice versa. Among the early Hindoos, for example, the Devas were the spiritual incarnation of good, so to speak, while the Asuras were the embodiment of evil. Among the Persians, however, this order was reversed, and the Asuras were worshipped as gods and the Devas feared as devils. Moreover, as is well known, the Dämon of the Greeks was a guardian angel, while in the Middle Ages Dämonology refers exclusively to the works of the Devil.

In accordance with this remarkable metamorphosis in belief it is clear that the status of the insane among primitive peoples and in naïve minds in all ages has undergone startling changes. The epileptic or the maniac of early antiquity who was the object of divine influence, became during the later centuries of the Dark Ages the prey of diabolical agencies. He was no longer the inspired of God, but rather the possessed of the Devil, and the church meted out to him heroic treatment accordingly. Inasmuch, however, as the Old Testament scripture teaches that the Devil, after all, is allowed to exercise his malevolent functions only by the suffrage of Jehovah—and, indeed, we recollect one test-case in which he was expressly commissioned by the Almighty to visit one of the saints with all manner of pestilence, in order to try his integrity—it is easy to see how mental derangement came also to be looked upon as a form of divine punishment or vengeance. This doctrine is first clearly enunciated in the curse of Moses upon the Israelites, in which for failure to follow the statutes, he promises in a long array of horrors, that "The Lord shall smite thee with madness, and blindness, and astonishment of heart."*

In the earliest recorded case of lunacy, that of Saul (1097-1058 B. C.), king of Israel, similar views are expressed. According to the story, Saul failed in carrying out to the letter, a divine injunction to slay every living thing of a neighboring tribe, whereupon "the spirit of the Lord departed from Saul, and an evil spirit from the Lord troubled him." The madness of the king, ending in death by suicide, is frequently referred to from the sixteenth to the thirty-first chapters of I Samuel. It seems to have been a recurrent case, with contrasting phases-at one time depression, suspiciousness, indecision, even mutism; at another, excitement, ecstatic logorrhœa (prophesying), violent and impulsive anger, and homicidal tendencies. That the incoherent utterances of the madman were regarded as prophetic is distinctly stated,-" the evil spirit from God came upon Saul, and he prophesied in the midst of the house." The declaration repeatedly recurs that Saul's infirmity was due to an "evil spirit from God." How the theologic exegetists explain away the apparent contradiction of those words, would be an interesting speculation.

It is an important therapeutic observation in connection with this case, that the evil spirit was often dislodged by the music of David's harp. But when the king was in a phase of violence and anger, this form of exorcism was not always efficacious, and on two occasions the harpist narrowly escaped being transfixed by his master's javelin. Nevertheless, since the days of David, music has often figured in the treatment of mental disease.

^a Deuteronomy XXVIII, 28.

SOME ORIGINS IN PSYCHIATRY

The story of Saul may be taken as typifying the opinion concerning insanity which prevailed throughout the early period a antiquity. The records of Egypt, Persia, Assyria, and Greece, all supply evidence of the same sort. The only etiology was supernatural, the entrance into the sufferer's body of a spirit, good a bad, which thereupon controlled his words and actions. The symptomatology and course of the disease were therefore as a scure as the ways of Providence are inscrutable, and the sol therapy was magic, incantations, prayers, and sacrifices, or concisms, often of the most violent sort. Insanity being thus a mai festation of demoniac power, to study it was out of the questor the self-styled "scientific theology" of our day not having y been invented.

The salient facts are that insanity as a disease was practice unknown; that the first attempt to control the condition was means in which we recognise the prototype of our modern patch chotherapy; that this primitive psychotherapy lay exclusively the hands of the priests, the science of medicine not having y been divorced from theology. It is a curious phenomenon the 2500 years after the latter event had taken place, men still a found who strive to annul this ancient decree, and by such method as the recent campaign of WORCESTER, of Boston, carried en within the walls of this hospital,^u and later, by his imitator FA LOWS, in Chicago, to set up again the priestly authority in meticine, as it was before the emancipation days of PYTHAGORAS a HIPPOCRATES.

One of the most direct and startling results of the belief in supernatural origin of mental disorder was the facility of ment contagion, which is largely the product of fear and self-insufciency. Accordingly, even in the early period under consideration we find evidences of mental disease suggested from one to an other in a manner similar to that which in mediæval times results in the Crusades, and the unnumbered hysteriform endemics an panics which overspread Europe.

In the account of King Saul, we read that when in his and he sent messengers to take David to put him to death, fear is upon the messengers as they approached to do the King's bid-

" The Johns Hopkins Hospital.

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ding. In the scriptural text, the expression "Spirit of God" appears to be equivalent to the more intelligible phrase, "superstitious fear."

And when they saw the company of the prophets prophesying, and Samuel standing as appointed, over them, the Spirit of God was upon the messengers of Saul, and they also prophesied. And when it was told Saul, he sent other messengers and they prophesied likewise. And Saul sent messengers again the third time, and they prophesied also.

Finally, in desperation, the King set out himself to apprehend David, but

the Spirit of God was upon him also, and he went on, and prophesied, until he came to Naioth in Ramah. And he stripped off his clothes also, and prophesied before Samuel in like manner, and lay down naked all that day and all that night. Wherefore they say, "Is Saul also among the prophtts"¹³

Parts of this description might apply, with local variations, to some of our twentieth century revivals. The manner of mental contagion is clearly indicated, as well as the character, in this instance at least, of prophet and prophecy. Saul, so far as we know, prophesied only during his fits of maniacal rage.

In the days of Nebuchadnezzar (601-561 B. C.) whose reign stands as the most glorious in the history of the Babylonian Empire, the spirit of mystery and superstitious suggestibility was still rampant, as witness the direful consequences of the king's dream, and a little later of the slate-writing of Belshazzar. Many another besides Nebuchadnezzar has been terrified by an omnious dream in the initial period of a depressive psychosis, but the method of Daniel in substantiating the fears of the king, and declaring by a forced interpretation the immanence of his madness. is not now considered good prophylaxis.²⁶

Among the diseases of antiquity there was one, epilepsy, which by reason of the spectacular manner of its operation, was peculiarly calculated to support the prevalent belief in the supernatural source of mental affections. *Morbus Herculeus* was an early name bestowed upon the malady because of its illustrious victim, the demi-god Hercules. Juno, who had no love for the natural

¹² I Samuel, XIX, 20-24. ¹² Daniel IV. children of Jupiter, of whom Hercules was one, sent his infirmity upon him by the hand of Lyssa, the daughter of Night and the personification of madness. In his tragedy, "The Phrenzy of Hercules," Euripides gives a vivid picture of the sudden violent seizures to which the hero was subject from his youth. Coming without warning, perhaps in the midst of some active exploit, or again following over-exposure to the sun's heat, these seizures were accompanied by rolling of the eyes, foaming at the lips, clouding of consciousness, and wild impulsive fury, which usually meant death to whatever creature might be near. In one of his attacks, Hercules' own wife and children fell under his hand. The crisis was reached when the victim fell writhing on the ground, struck in the breast, according to the poetical narrative, by a rock hurled by Pallas who appeared just too late on the scene. Hereupon he is bound with strong cords to prevent further danger and sinks into profound sleep. On awakening, there is the characteristic amnesia for the acts of violence which initiated the attack, and the hero is filled with astonishment and

On account of its assumed divine origin, epilepsy came to be known as the "Sacred Disease," (*Morbus sacer*) and under this name it is described by HIPPOCRATES.

chagrin when acquainted with the effects of his fury.

III.

But HIPPOCRATES (460-377 B. C.), to whose age we must now turn, overstepped the previously current notions of disease. In his concise language we see for the first time clearly suggested the great *lex parsimonia* which is the *sine qua non* of all true scientific inquiry. "It is thus with regard to the disease called Sacred: it appears to me to be nowise more divine nor more sacred than other diseases, but has a natural cause from which it originates like other affections. Men regard its nature and cause as divine from ignorance and wonder, because it is not at all like to other diseases.... But if it is reckoned divine because it is wonderful, instead of one there are many diseases which would be sacred.... The quotidian, tertian, and quartan fevers seem to me no less sacred and divine in their origin than this disease, although they are not reckoned so wonderful..., there is no

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necessity for making a distinction, and holding this disease to be more divine than the others, but all are divine, and all human."

With the progress of Greek culture, the new era began really a century before the birth of HIPPOCRATES, and may be dated from the work of PYTHAGORAS (582-504 B. C.), the philosopher-physician of Samos. PYTHAGORAS was well acquainted with the philosophy and priestly therapeutics of ancient Egypt and had traveled extensively through the then civilised world, and he it was who first let the light of practical truth into the hollow mysteries of the temple. The principle of the Pythagorean school was less to cure disease than to remain healthy, and to that end was drawn up a careful programme for the daily life, which is not falsely named, "The Diet of the Soul." Let me give in condensed form the day's programme of the disciples of Pythagoreas.

The day began with a quiet walk in some secluded place, a grove or temple, not only to refresh the body and the senses, but also to compose the spirit in anticipation of the business of the day. This morning stroll was accompanied by the music of the lyre in order to dissipate the last remaining mists of sleep, and tune the soul to harmonious activity. It was deemed unwise to plunge at once into commerce with others before taking time to hold communion with oneself. The early walk ended, the Pythagoreans met together in temple, or other congenial place. where they devoted their freshest energies and the best hours of the day to the gentle occupation of teaching or learning. Whereupon succeeded games, dances, and athletic contests to lend strength and suppleness to the body. Then came the frugal mid-day meal, after which we may guess the modern continental breakfast was planned. It consisted simply of bread and honey taken not to satisfaction, but only in quantities sufficient to still the pangs of appetite. Neither wine nor meat was tasted. The afternoon was devoted to various public engagements and affairs, and the day closed as it had begun, with a leisurely walk, though not solitary as in the morning, but in twos and threes; and this evening walk was the occasion for reviewing and discussing the subjects of the morning's study or observation. After the walk, a cold bath,

¹⁴ The Sacred Disease. The genuine Works of Hippocrates. Sydenham Society Publications.

then dinner, which, although always finished before sundown, was of a more generous and festive character than the luncheon at mid-day. Meat and wine were, however, taken only in small quantities. Dinner was the social occasion of the day. Small groups of congenial spirits met together at table, and the evening passed in conversation and reading, one of the party usually reaing aloud. On leave taking they recalled to each other the essential principles and obligations of their common manner of life, and finally, when once more alone, each one passed in mental review, the matters of the day, assorting, collecting, unifying, taking really an inventory of mental and spiritual stock at the end of every twenty-four hours; which done, they were ushered by the gentlest harmonies of the lyre into a refreshing and dreamless sleep."

From this somewhat austere but pre-eminently salutary regmen, there resulted the *mens sana in corpore sano* for which the Pythagorean school is renowned. Music, which held so important a place in the daily programme, was also brought into service in treating affective forms of insanity.

It was the service of the Grecian school that they brought the etiology of disease from the skies to earth, and thus made its study and rational treatment possible; but the master-stroke by in including mental affections with the other diseases of mankind in denying their ultimate mystery and their assumed divine significance.

"I am of opinion," wrote HIPPOCRATES, "that the brain exercises the greatest power in the man. This is the interpreter to us of those things which emanate from the air, when it happens to be in a sound state. But the air supplies sense to it. And the eyes, the ears, the tongue, and the feet administer such things as the brain cogitates. . . . And by the same organ we become mad and delirious, and fears and terrors assail us, some by night and some by day, and dreams and untimely wanderings, and cares that are not suitable, and ignorance of present circumstances. desuetude and unskilfulness. All these things we endure from the brain when it is not healthy, but is more hot, more cold, more

¹⁹ From Meiner's description (Geschichte der Wissenschaft in Griechenland und Rom); Vide Feuchtersleben, op. cit., p. 31. 1908] CLA

moist, or more dry than natural, or when it suffers from any other preternatural or unusual affection."¹⁰

The doctrine that madness is the expression of disease of the brain strikes true to-day; but the Hippocratic humoral pathology was abandoned with the Renaissance. According to this theory, man was a miniature embodiment of the universe, the four elements of the latter—earth, water, fire, and air—being represented by the four humours, yellow bile, black bile, blood, and mucus, respectively, and these four humours contributing to the body the respective qualities of dryness, moisture, heat, and cold. The various manifestations of insanity were merely the effects, therefore, of an excess of one or the other of these elements, the expression of too much heat or cold, or of too much or too little moisture in the brain.

Our word "melancholia," a term now without a meaning etymologically, is the last surviving witness of this ancient doctrine.

Looking as he did upon all diseases as the result of definite organic derangement, it was natural that HIPPOCRATES should give particular attention to the accompanying mental symptoms in the various somatic diseases, such as the delirium or transitory psychoses associated with febrile states, which, however, he did not sufficiently distinguish clinically from the so-called afebrile psychoses. It is easy to understand that the psychiatry of HIPPOC-RATES should have been purely symptomatic, that is, that an undue importance should have been attached to isolated but conspicuous phenomena in a given disease-picture; in other words, that the disease should have been described in terms of its cross-section. Such a result was inevitable in the infancy of the science. The clinical method of diagnosis in the modern sense, which requires the careful observation of cases throughout the entire course of the disease. often a period of many years, and which in turn, necessitates hospitals devoted to the segregation of mental cases-in other words the study of the longitudinal section of insanity, was obviously impossible in the early days of Greek and Roman medicine.

We nevertheless owe to the Hippocratic school the distinction and naming of two diseases, *mania* and *melancholia*, the former a state of excitement and violence, the latter a condition of anx-

" Loco citato.

iety, fear and seclusiveness; and these two diseases, together with *dementia*, also a Hippocratic derivative, have constituted the groundwork of psychiatry for 2500 years. Inasmuch, however, as the symptoms of affect depression and exaltation have in themselves no particular pathognomonic significance, and inasmuch, further, as patients assumed to be in an advanced state of mental deterioration have sometimes made the most surprising recoveries, to the discomfiture of the alienist who had given an unqualifiedly bad prognosis, it is self-evident that the early symptomatic descriptions would not always be as clear and convincing as might be desired, at least in so far as the delimitation of individual disease types was concerned.

A form of insanity which is very popular just now, the *maniaco-depressive-psychosis*, we are inclined to look upon as peculiarly the property of our own century. It represents the fusion of the ancient types, mania, and melancholia, as set forth by FALRET, BAILLARGER, and later by KRAEPELIN. And yet the possibility of this intimate relationship between two morbid states, on the surface so opposite, was clearly suggested by ARETAEUS, of Cappadocia, who lived toward the close of the Hippocratic epoch.

ARETAEUS (80 A. D.) excelled his predecessors in his brief and lucid characterisations of various types of alienation, and he contributed not a little to existing knowledge regarding symptomatology, differential diagnosis, and therapy. He dwelt at some length upon the nature and consequences of *apoplexy*, detailed the symptoms and the mental state of the *epileptic*, and various manifestations of *hysteria*, which he attributed altogether to vagaries of the uterus. We may take ARETAEUS' account of the causation of "hysterical suffocation" as typifying prevalent concepts of pathogenesis.

"In the middle of the flanks of women lies the womb, a female viscus, closely resembling an animal; for it is moved of itself hither and thither in the flanks, also upwards in a direct line to below the cartilage of the thorax, and also obliquely to the right or to the left, either to the liver or spleen; and it likewise is subject to prolapsus downwards, and, in a word, it is altogether erratic. It delights, also, in fragrant smells, and advances towards

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them; and it has an aversion to fetid smells and flees from them; and, on the whole, the womb is like an animal within an animal.

When, therefore, it is suddenly carried upwards, and remains above for a considerable time, and violently compresses the intestines, the woman experiences a choking, after the form of epilepsy, but without convulsions. For the liver, diaphragm, lungs, and heart, are quickly squeezed within a narrow space; and, therefore, loss of breathing and of speech seems to be present. And, moreover, the carotids are compressed from sympathy with the heart, and hence there is heaviness of head, loss of sensibility, and deep sleep."¹¹

But it is principally the ideas expressed by ARETAEUS concerning the primary affect states which interest us here. He adhered to the current symptomatic distinction between mania and melancholia, but his definitions are more precise, and he added new elements to them. Of melancholia he says, "It is a lowness of spirits from a fixed and single phantasy, without fever; and it appears to me that melancholy is the commencement and a part of mania. For in those who are mad, the understanding is turned sometimes to anger and sometimes to joy, but in the melancholics to sorrow and despondency only."¹⁰

In these few words is embodied a viewpoint which has been of great influence upon subsequent observers. Mania is conceived as the severer affection, representing the acme of the pathologic process and involving all the intellectual faculties—a so-called general or universal delirium; while melancholia is of more restricted operation—a partial delirium. This distinction is appreciable when we compare the roaming ideation of the maniac with the introspective brooding of the melancholiac, so well characterised by ARETAEUS—" their depression of spirits is fixed and inherent in a single phantasy." (Animi angor in una cogitatione defixus atque inhaerens.) Herefrom arose the conception of melancholia as the insanity of fixed ideas, a view exploited further by later writers.

Not only did ARETAEUS see a close relationship between states

¹⁷ "On the Causes and Symptoms of Acute Diseases," Book II, chap. XI.

²⁶ Loco citato, Book I, chap. V.

of exaltation and depression, but he actually described the transtion from a condition of anguish, fear, suspiciousness, and selfcentered seclusiveness, to one of euphoria and excessive merriment, culminating even in maniacal fury. This early appreciation we must bear in mind in the later consideration of the modern period.

That the question of differential diagnosis was not neglected, the following bears witness:

The modes of mania are infinite in species, but one alone in genus. It consists in a continued disorder of the mind, without fever; for if xcompanied by fever, it is to be known by some other name and is due wother causes. Wine may disturb the reason and inflame to delirium, and certain other substances may produce the same effect; but these affections are not mania, for springing from a temporary cause, they quickly subside, but madness has something confirmed in it. To this mania there is also no resemblance in the mental wanderings which are the calamity of advanced age; for this is a torpor of the senses and a stupefaction of the intellectual faculties. Moreover the delirium of old age never intermits and cannot be cured, while mania, on the contrary, is intermittent, and with care may disappear altogether.

The recurrent character of melancholia also finds mention.

It cannot be doubted that by these means (chiefly evacuants) the disease has either been entirely removed or had intervals of several years. For generally melancholy is again engendered.

In mild maniacal excitement, the sharpened senses, the trenchant wit, the phenomenal memory, the unexpected mental qualities which suddenly develop,—" untaught astronomy, spontaneous philosophy, poetry truly from the muses "—all are duly recorded by ARETAEUS.

Moreover, the primary affect states he distinguished. chiefly by the absence of fallacious sensory perceptions, from *phrenitis* (febrile and delirious conditions). In patients with the latter affection, "the senses are perverted, so that they see things not present, as if they were present, and objects which do not appear to others, manifest themselves to them; whereas persons who are mad see only as others see, but do not form a correct judgment on what they have seen.""

Finally it was noted by ARETAEUS that cases beginning as melancholia not infrequently ended in complete mental reduction.

¹⁰ L. c., Bk. I, ch. VI.



To quote again, "It is not rare that one sees the sensibility and intelligence of these patients sink into such a state of degradation, that, forgetful even of themselves in their complete fatuousness, they pass the remainder of their lives like brutish beasts." Is it not possible that included in this account are cases of our cherished modern disease, *dementia pracox?* It seems most likely; and if so, then are the two most conspicuous disease-concepts in current classifications, maniaco-depressive insanity and dementia præcox, the offspring not of the nineteenth, but of the first century, A. D.

In May, 1849, Dr. LUTHER V. BELL, physician-in-chief to McClean Hospital, read a paper, "On a Form of Disease resembling some advanced Stages of Mania and Fever."³⁰ Two years later, WILLIAMS,³¹ assuming a specific etiology, suggested the name *typhomania* for this condition. The description of BELL being the first of modern authors, the disease is in this country rightly known by his name. In Europe, however, it is usually referred to as *delirium acutum*, following a later account of CALMEIL.³⁰ This disorder, as we have seen, was well known to the Grecian school under the name *phrenitis*, and was sufficiently characterised by SORANUS, a contemporary of ARETAEUS, and one of the most illustrious representatives of the school of "methodists" founded by ASCLEPIADES.

In phrenitis, said SORANUS, writing about the close of the first century, A. D., there is always fever. The patient laughs quietly or in sudden bursts, sings, mumbles, utters cries like a child, or speaks only in whispers; or with increased and continued excitement, the patient is restrained with difficulty, irritably resists every attention, beats himself, rends his garments, or perchance tries to hide himself on account of fright, weeping, making no reply to those who address him, but holding conversation with imaginary beings as if they were visible, often indeed with persons who are dead. He falls upon his food and drink and devours it precipitately, or rejects his nourishment after having held it for some time in his mouth. The eyes are widely opened, brilliant, staring; the lids may long remain motionless, or be constantly fluttering. Frequently the patient advances his hand in front of his eyes as if to seize or brush aside some object floating before him. The cheeks are sometimes flushed, sometimes pale;

^{an} American Journal of Insanity, October, 1849.

²¹ American Journal of Insanity, October, 1851.

^a Maladies inflammatoires, Paris, 1859.

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occasionally blood issues from the nose; there may be grinding of the teeth. The patient may suddenly give attention as if to some engaging sound; he is utterly regardless of decency, and exposes himself indifferently. The neck may appear swollen, the hands become tremulous, the pulse grows rapid, faint, and irregular, wavering like a lamp which is gradually using up its oil. Diarrhœa supervenes; the patient hiccoughs; the tongue is no longer under control; articulation becomes unintelligible; and eventually convulsions or coma closes the scene.

Significant also are the differential points which SORANUS pushes to some length in distinguishing phrenitis from other mental affections.

The absence of fever (in the latter) constitutes the essential difference. It must be admitted, however, that fever sometimes occurs in mania, so that this distinction may not always hold. But in phrenitis, fever precedes the delirium, while in other conditions the disorder of the intellectual faculties precedes the fever. As it may not always be possible to determine this succession, there is another sign which should not be neglected. In phrenitis the pulse is small and rapid, in mania the pulse is full. Finally, should it occur, as is certainly very rare, that the pulse is similar in the two conditions, one at least never sees in a case of mania, either crodicism (movements in which the patient seems trying to pull out threads from the bed-covers), or carphologia (disordered movements of the fingers, as if to seize bodies floating in the air, or to move them about in the hands). These symptoms are characteristic of phrenitis, and if they should be observed in cases supposedly maniacal, one should not hesitate in diagnosing a supervening phrenitis.^{**}

In stuporous and lethargic states, SORANUS notes the extreme delay or absence of all response, the difficulty in influencing patients to protrude the tongue or to return it when once prctruded, the immobility with which they maintain postures in which they are placed, the neglect of the calls of nature, retention, etc.; in short, many of the symptoms which we recognise in katatonic and other stuporous states.

The last of the great ones of the Grecian epoch was GALEN (b. 131; d. early 3d century, A. D.), an ardent disciple of HIPPOC-RATES, the author by his own count of more than a hundred books and one of the chief agents for the transmission to modern times of the knowledge of the ancients. GALEN was a worthy vivisector and his experiments on animals opened an entirely new field in

^a From Caelius Aurelianus, the Latin translator of Soranus; cited by Trelat.

the study of diseases of the mind. During the time of his activity the early Christians were making considerable noise in the Roman world, disputing about the relative prerogatives of soul and body, and above the turmoil we hear the calm voice of GALEN describing his experiments and his conclusions concerning the nature of the mind.

There is much contention, he wrote, as to whether the faculty of thought is merely resident in us as in a temporary domicile, or is to be regarded as a material portion of the body. Whatever be the difficulty of resolving this question, it is at least permissible to state as the result of experience that in using the trephine, if the brain be compressed, all sensation and all movement are instantly abolished. If inflammation develops in this organ, the same accidents are sometimes observed, and there is uniformly a disturbance of the thought processes. Burns on the head may lead to delirium, and blows on this part may be succeeded by a state of somnolence or stupor. Any active morbid process in the neighborhood of the brain may produce a disorder in the function of thought. It would be very desirable to know first of all in what part of this organ is the seat of the intelligence. If we were well acquainted with the physiology of the brain, we should assuredly find in its pathologic condition, both the place and the nature of the malady. As for myself, I believe that the brain is at once the seat of the voluntary movements, of the intelligence, of feeling, and of memory.

Upon the basis of his observations and experiments GALEN drew the important distinction, already suggested by ASCLEPIADES (Ist century, B. C.), between primary and secondary mental affections.

It is of the greatest moment, he said, to discriminate clearly between primary disturbances and those by consensus, for herein lie the indications for treatment. When the brain is sympathetically affected, if the seat of the primary trouble is cured before the organ of thought has had time to undergo definite changes, the mental symptoms will speedily subside; but if on the contrary, as a result of some consensus, these changes become established, the remedial agents must be directed at the same time toward both the primary and secondary lesions. When a patient, after a period of wakefulness and delirium accompanying an attack of fever, recovers his sleep and reason with the fall in temperature, we may conclude that the brain has not been the seat of any special morbid process. A disorder is to be looked upon as established in an organ in proportion as its manifestations are enduring. If in a case of thoracic disease a persistent delirium supervenes, one must assume that the head has become the seat of an affection in so far specific that it may continue after the cure of the original thoracic trouble. This method of looking for the place chiefly affected is of great importance for all the organs, but particularly in diseases of the brain.²⁰

With the foundation which GALEN had established for a rational psychopathology, he lacked but a single step to free himseli entirely from the prevailing errors concerning the morbid processes underlying disease; but the humoral theory had become a grounded tradition, and he accepted it in common with nearly all his predecessors in the Hippocratic school.

In the brief mention which has been made of four of the greatest names of the Grecian period, it is apparent that the science of psychiatry had already attained a very high plane of development, truly comparable with the state of contemporary civilisation. The alienists of the epoch were the foremost masters of the whole art of medicine, and mind-disease and body-disease formed together the subject of one indivisible healing art.

In the causation of insanity practically all of the factors which are discussed in current text-books were set down by the writers of antiquity. Physical and mental causes were distinguished, and the effects of moral shock and of organic disease of the brain. or of remote organs, were recognised; likewise the modifying infuence of climate and season, of age and critical times of life. The predilection of certain psychoses for the period of adolescence, and the frequent association of menstrual disorders with mental disease were noted, although, as is still often the case, the suppression of the menses was looked upon as a cause rather than as a symptom of the malady. The results of alcoholic excesses and the prolonged use of other drugs, of excessive indulgence or repression of the appetites, of protracted watching and fatigue, of exposure to extremes of temperature, of injuries to the head, of reverses of fortune, of disappointment in love, of the subjection of the mind to fear and superstition, of the sustained tension of sinew and nerve in the race for fame and fortune-all these things found place in the etiology of insanity as set forth by the Grecian school.

What was true, however, then is unfortunately still too often true, and the assigned causes of a mental attack may be only the associated circumstances, or at most contributing factors, the real root of the malady eluding our observation. Of peculiar import-

²⁴ Galen's Commentaries, from the French of Trelat.

ance, therefore, was the way which was opened by HIPPOCRATES himself for the later study of inheritance and predisposition. In the account of epilepsy he declared that "its origin is hereditary," and herein he gave form and currency to a teaching already present in the Pythagorean school. "Our tendencies toward virtue and vice, as well as toward health and disease, come rather from our parents and from the principles of which we are composed, than from ourselves." Two and a half centuries later, the element of congenital predisposition is still the factor most emphasised both in the determination of individual mental traits, and in the causation not only of epilepsy but of morbid mentality in general.

In comparison with the prevailing opinions concerning etiology and symptomatology, the ideas of *pathology* which obtained throughout the Hippocratic era, were as we have seen, strikingly ill-developed. The belief in the doctrine of the four humours and of their noxious potency in excess in determining various mental disorders, held sway from ANAXAGORAS the Pythagorean, to GALEN, and were transmitted by him through the succeeding ages. Among the great teachers of the period, only ASCLEPIADES, and his adherents, SORANUS and CAELIUS AURELIANUS, deviated from the common way of thinking, by setting up in place of the bilious diathesis, the theory of *vital force*, to a surplus or poverty of which disease was to be ascribed.

The fact, however, which was the crowning glory of the Grecian epoch, was the recognition once for all that whatever the determining or contributing factors or their manner of operation, madness is not a manifestation of supernatural power but a disease; and not only a disease, but a disease of the brain; and that physical symptoms commonly accompany the mental ones, both being alike traceable to natural human causes.

Finally, when the gods were stripped of the power of producing disease, they likewise ceased to be called upon to cure it; and while inevitably the empirical methods of the early physicians in many instances may have been hardly more fruitful of immediate results than the religious exercises previously relied upon, nevertheless with the transfer of authority there was created for the first time the possibility of a gradual building up of a *rational therapy* for diseases of the mind.

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Among material measures, bleeding ^a and evacuants found perhaps widest application, and of the latter, white hellibore enjoyed great favor among the Greeks, having been borrowed by them doubtless from Egypt. Baths and mineral waters, exposure to sunlight, massage, frictions and applications to the head, modification of diet, rest in bed, isolation, music, diversion, exercise, work —such are some of the modern methods which were employed two thousand years ago.

The best chapter on treatment to be found in the writings of antiquity is probably that of CAELIUS AURELIANUS, wherein he presents the teachings of his master, SORANUS. So remarkable is this chapter, and so well does it show forth the sum of all that was best of experience, observation, and judgment in the whole era, that we pause over it with profound admiration.

Excited patients should be placed in a somewhat subdued light, in a room with a mild temperature, and where there are no disturbing noises. There should be no pictures on the walls," and the air should enter by elevated openings. . . . The beds should be of solid construction and so placed that the patients cannot see the door, and are not amoved by what is passing. . . . Frequent visits, particularly on the part of strangers, are to be forbidden, and the attendants should be rigorously enjoined to repress the outbreaks of the patients in such a manner as never to irritate them by showing too much spirit, and on the other hand not by too much laxness, to allow them to increase their extravagances. Their faults should not, therefore, be allowed to pass unnoticed, and one should use as occasion requires, a calculating indulgence, or a mild reproof, setting forth the advantages of amendment in conduct.

If the patients become violent and are controlled with difficulty, ... several attendants should be at hand to subdue them as it were, without their knowledge and without provoking them, by approaching as if to give them massage. If they are irritated by the presence of other persons, and then only in very rare instances, may restraint-ligatures be used, but with the greatest precautions, ... employing only bands of soft texture; for methods of repression, if injudiciously applied, give rise to or augment excitement instead of relieving it.... One should

*Asclepiades was practically the only one of the ancients who condemned bleeding.

"" Persons in phrensy are sharp of hearing, are sensitive to noise, and easily become delirious." (ARETAEUS, Therapeutics of Acute Diseases, L.I.

" "The walls should be smooth, level, without projections, not adorned with frieze or paintings; for painting on a wall is an excitant (ARETAEUS.) The provoking of hallucination is also referred to.

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begin giving nourishment very cautiously, and at first only the lightest and most easily digested food.²⁰ . . . If the evacuations are not regular, enemata must not be neglected. . . . One should carefully observe the character of the delirium, and have recourse to the salutary influence of moral impressions, diverting thoughts, or welcome news. . . .

If there be persistent wakefulness, a swing-bed may be tried, or one may resort to the continued sound of falling water, the monotone of which often produces sleep. Warm sponges applied to the lids relieve the feeling of heaviness due to prolonged watching....

When the excitement declines, consciousness becomes clearer and sleep returns, nourishment should be increased and more varied; and as the patients recover their strength they should be taken for walks and given other physical exercise. . . . When the symptoms have subsided and the mind is no longer dangerously impressionable, a change of scene may be counselled. Trips by land and water, varied distractions and mental diversions, agreeable conversations and affection, may do excellent service. Ennui and the spirit of gloom are only too ready to fasten upon those who have already been their victims; and if healthy, sane men can fall suddenly into a morbid state under the influence of grief, how much more is this result to be feared in those who are convalescent or just recovered, and who are still living, as it were, in the atmosphere of their disease.

Certain harsh methods of treatment which had been suggested, for example, enforced fasting, and the régime of intimidation, mechanical restraint and even corporal punishment, indicated by CELSUS (1st century A. D.), were vigorously denounced by SORANUS. Continuing the account in CAELIUS we read:

They themselves seem to rave rather than to be disposed to cure their patients, when they compare them with wild beasts which must be softened by the deprivation of food and the torments of thirst. Misled, doubtless, by the same error, they recommend that patients be cruelly chained, forgetting that their limbs may be bruised or broken, and that it is more expedient to restrain them by the hand of man than by the weight of iron. (*Ministrantium manibus quam inertibus vinculis.*) They go so far as to advise physical violence, the whip,²⁰ as if by such means to force a return of reason. This deplorable treatment can only aggravate the condition, and supply unwelcome memories to salute the return of their intelligence.²⁰

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^a "Abstinence from food should not be prolonged; food should be rather liquid, scanty, and frequently administered, for food sooths the soul." (ARETAEUS.)

[&]quot;Sunt quidam fustigandi. (Celsus.)

²⁰Caelius Aurelianus, De Morbis Acutis et Chronicis; Latin version of the work of SORANUS, not extant.

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In general it must be said that during the Grecian era, enlightened and humanitarian motives prevailed in the treatment of insanity; and in the consistent attempt to make right and proportionate use of the three great therapeutic agents, drugs, mechanical measures and psychic influence, the writers of antiquity have left a standard and a pattern which must be followed through all subsequent ages.

It remains but to say a word on the psychic element of treatment, the earliest means used to combat disease. At first confined to the hands of the priests, who were the only healers, mental therapy was the only logically possible form of treatment, and it was exhausted in conjurations, invocations and other rites of the temple. By these means certain cases were doubtless suggested back to health. Next, with increasing enlightenment, came that remarkable school of priest-physicians, the sons of Aesculapius, and from our present standpoint this group constituted a sort of missing link out of which developed those great leaders in medicine whose names and achievements have been the subject of this The Asclepiadæ maintained the efficacy of the discussion. temple-element, but their god had taken on somewhat definite form; he was a divine specialist, his function was the curing of disease, and in the temple-sleep there were revealed to the patient the material means he must use to drive out his complaint. The Asclepiadæ represented a necessary step in the evolution of the physician. That step taken, however, their race died out, and the priest-physician to-day would be an anomalous atavistic phenomenon.

Through the early Greek philosophers and physicians, mental therapy came to be translated out of divine mysticism into human rationalism. The soul-diet of PYTHAGORAS served as foundation for the new system. The Pythagorean maxim, *mens sana in corpore sano*, found full confirmation in the precepts laid down by PLATO for the maintainance of health. "The health of body and soul consists in the perfect equilibrium of their forces . . . To preserve the health of these two parts, both must receive equal exercise. He who devotes himself to study, should not neglect the exercise of the body; and he whose chief concern is physical development, should also have time for meditation and study 1908]

We should imitate nature, whose course is always uniform, without repetitions and without shocks It follows that the best remedy as well as the best purgative, is exercise." Drugs were relegated by PLATO to the last place in the physician's equipment.

The close bonds which existed between Grecian philosophy and medicine, gave to the mental therapy of the period a peculiar and efficient quality which has not always since been maintained. All patients were regarded as accessible, in some degree, to reason; they were not merely irresponsible creatures to be cared for and controlled; and on this basis a constant mental influence was exercised, by way of engaging conversation, philosophic discourses, graduated mental tasks, varied diversions, music and other artistic enjoyments, together with a sympathetic interest in the personal conditions and concerns of patients, so as to adapt explanations, exercises and requirements to individual needs and capabilities.

Love, as a psychotherapeutic agent, has been, like wine in the treatment of madness, both warmly advocated and strictly condemned. One of the most celebrated cures by this means was that of ERASISTRATUS, who relieved the melancholy of Antiochos, son of Seleucos Nicator, on discovering its cause in an unhappy love of the patient for his step-mother, the beautiful Stratonica; whereupon his father relinquished her, she became the wife of Antiochos and his malady was healed.

A story is told, wrote ARETAEUS, that a certain person, incurably affected, fell in love with a girl; and when the physicians could bring him no relief, love cured him. . . . And when he imparted the love to the girl, he ceased from his dejection, and dispelled his passion and sorrow; and with joy he awoke from his lowness of spirits, and he became restored to understanding, love being his physician.

Less sanguine is SORANUS.

It has been recommended, he wrote, to try to render insane patients accessible to love; but this passion is often enough the cause of their malady. It is absurd to think that love, which is one fury, can drive out another

And so it is that the mal sacré of Eros has continued through succeeding centuries to play a conspicuous rôle, now in the etiology, again in the symptomatology, and even in the therapy of mental afflictions.

In the Golden Age of Greece, with all the varied and excellent

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measures to which the physician had recourse, notwithstanding its lofty supremacy over the primitive priestly period, men nevertheless realised, as they do to-day, that many of the diseases of the mind are hopeless, that organic processes in the brain cannot be altogether repaired, that the burden of morbid potential which in varying degree is ever a part of our common human dower, cannot utterly be cast aside.

"It is impossible, indeed," declared ARETAEUS, "to make well all who are ill; for then would a physician be superior to a god."

(Continued in the April number.)

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ARTERIO-SCLEROSIS IN RELATION TO MENTAL DISEASE.⁴

By C. MACFIE CAMPBELL, M. B., Pathological Institute, Ward's Island, New York City.

The presence of arterio-sclerosis in cases of mental disease, especially in advanced life, is comparatively common and often appears to be of little importance.

In some disorders, however, the mental and physical impairment is intimately related to arterio-sclerotic changes of the cerebral vessels, and it is this group of cases to which attention will be directed. The rôle which arterio-sclerosis plays in the involution, presenile, and senile psychoses involves too many general questions to be more than referred to.

Cerebral arterio-sclerosis may be part of a general arterio-sclerosis, or it may exist without other vascular systems being implicated, at least to the same degree. The absence of the signs of general arterio-sclerosis does not, therefore, exclude the possibility of cerebral arterio-sclerosis. The cardinal symptoms of arterio-sclerosis are increased blood-pressure, thickened peripheral arteries, hypertrophy of the left ventricle with accentuated second sound. When in addition the patient complains of headache and dizziness, marked fatiguability and exhaustion, and failure of memory, cerebral arterio-sclerosis is distinctly indicated.

Ophthalmoscopic examination gives still more direct evidence of the condition of the cerebral vessels. In some cases one can even see the indentation of veins by the stiffened arteries, but numerous other changes are important diagnostic aids.

Cases of mental disorder based on cerebral arterio-sclerosis fall into two main groups. In the first the symptoms are less severe and more stationary, and Alzheimer calls this the nervous form of cerebral arterio-sclerosis. In the second group are included the more severe and progressive cases with a varied neurological

¹ Read at the sixty-third annual meeting of the American Medico-Psychological Association, Washington, D. C., May 7-10, 1907.

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picture and extreme reduction of mental activity. This second group has been further subdivided, but chiefly upon anatomical grounds, and the clinical differentiation of the various subgroups is still incomplete. It includes among other forms Binswanger's chronic progressive subcortical encephalitis.

The nervous form of cerebral arterio-sclerosis is not uncommon and many patients are cared for at home or in almshouses. They are frequently described as cases of melancholia, neurasthenia, hypochondria, etc. The onset of symptoms usually occurs between 50 and 60, but sometimes earlier. The most characteristic symptoms are headache and attacks of dizziness, marked fatiguability. and memory defect. The headache is frequent and persistent, and may be influenced by change of blood-pressure, as during straining at stool; attacks of dizziness are common, especially in relation to change of position. Various subjective feelings are complained of-pressure on the head, flickering before the eyes, buzing in the ears; alcohol is not tolerated so well. The patient be gins to find difficulty with his work, especially in anything that goes beyond the usual routine: his store of memories is not so completely at his disposal as previously, he finds especial difficulty in imprinting new facts on his mind. He is easily fatigued and exhausted, is irritable and depressed, broods over his failing er ergy and exaggerates his symptoms. The condition shows little tendency to progression, and death is usually due to an apoplectic attack, cardiac disease, or some intercurrent affection such as broncho-pneumonia. Such cases may show no definite focal symptoms, or they may have transitory attacks of weakness or apoplectiform attacks leaving a permanent hemiplegia with or without additional symptoms, such as aphasia.

Post-mortem the brain may show little diminution in weight. the striking feature is the marked arterio-sclerosis of the cerebral vessels, both in cortex, white matter and basal ganglia; focal le sions may be absent. Histological examinations show certain changes in the cortex, but no marked disappearance of nervous tissue.

To illustrate this form of mental disorder based on arteriosclerosis, a brief summary of one case may be given.

The patient was a man of good education, not alcoholic, but

with a history of syphilis in early life. About the age of 46 he became very irritable, felt played out, gave up his work; he was sleepless and restless at night, complained of numerous aches and pains, was depressed, suspicious of his wife, obstinate; he worried a great deal over his health, thought that he would become insane, dreaded commitment, talked of suicide. He was committed at the age of 55. The cardinal symptoms of general arteriosclerosis were present, also albuminuria ; in addition he complained of occasional dizziness and faintness, of ringing in his ears and intense headache. The face was smoothed out, the mouth somewhat pouting; he stated that he had occasional difficulty in swallowing liquids, but none was observed. Innervation of the left facial was defective, otherwise there was no circumscribed weakness. His gait was rather shuffling. Speech was careless and slurring, but without the tremor or sticking of the general paralytic. The writing was somewhat tremulous; he wrote "bridiade" for "brigade." On the slightest provocation, or even with none, he would develop a lachrymose facies, but was easily persuaded to smile.

Mentally he was depressed over his condition, complained of terrible nervousness and weakness, was very easily fatigued by mental operations; his memory was poor, but retention fair.

He described the onset as a gradual breaking down; "I was just like an old man—gradually gave out. I feel like 75, am only 55." He showed keen appreciation of his general impairment, tended to exaggerate physical ailments.

After five months in hospital, during which period his condition was stationary, patient had a general convulsion, which was followed by stupor, coma, and death.

Such cases as this have been described symptomatologically as neurasthenic melancholia or hypochondria, but its close relation to cerebral arterio-sclerosis is clear. In addition to the general symptoms—headache, dizziness, attacks of fainting, buzzing in the ears—emphasis must be laid on the slurring articulation, the difficulty in swallowing, the lability of emotional expression. These features at once suggest a similarity to those cases of brain disease where a picture resembling bulbar paralysis is produced by a bilateral interference with the cortical innervation of the bul-

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bar nuclei for movements of the lips, tongue, and pharynx, *i. e.*, cases of pseudo-bulbar paralysis. One of the most frequent causes of this syndrome is arterio-sclerosis of the cerebral vessels. It is impossible to do more than touch the topic of explosive laughter and crying in such patients as the one just reported. Typical unmotived explosive laughter may occur; facile tearfulness with little affect is also found. In some cases, however, the affect itself is somewhat explosive, and not merely the facial expression, and the amount of discrepancy between real affect and emotional expression is variable.

To discuss this question adequately would involve an examination of the mood in the various depressions in advanced life, and this cannot be done here.

The points already referred to show that the group of cases described above has relations on the one hand with the various depressions in advanced life, and on the other, with organic brain disease of vascular origin. In emphasizing the arterio-sclerotic element in the picture one ought not to fail to do justice to the other element-that element which has received prominence in the older symptomatological grouping of the cases as melancholia and hypochondria. This must be kept in mind in view of various unsolved problems. Why is cerebral arterio-sclerosis in some cases compatible with good mental and physical health, while in other arterio-sclerotics strength and initiative and the power of assimilation undergo marked impairment and the patient develops an abnormal mood and morbid ideas? In these latter cases what determines the onset of the impairment? The arterio-sclerosis is not acute, but the symptoms may develop rapidly. The exact part played by circulatory variations and renal insufficiency in this disorder is well worth further investigation; the literature does not contain many cases which have been fully studied from this point of view.

In the nervous form of cerebral arterio-sclerosis the mental level of the patient may remain practically stationary for years, although slow progressive decline, varied by little episodes which may necessitate commitment, is common; in some cases of cerebral arterio-sclerosis the patient may go down-hill with surprising rapidity presenting a picture of extreme general feebleness and confusion. Such was the course in the case of a man of 51, with slight cardiac hypertrophy and mitral incompetence with no albuminuria, whose brain presented a very definite arterio-sclerosis. No adequate cause could be found for the extremely rapid decline in this case. The cases of still more pronounced mental impairment based on arterio-sclerosis are grouped by Alzheimer under the title—Severe Progressive Arterio-sclerotic Brain Degeneration. The disorder may here begin with the same symptoms as in the nervous form, but instead of remaining at the same level the patient, if he does not succumb to one of a series of attacks, may be reduced step by step to a state of the most profound dementia, in which vegetative condition he may exist a considerable time with occasional unexpected flickers of intelligence.

In the early stage, as in the nervous form, there is restlessness, irritability, a depressed and tearful mood, considerable mental sluggishness, difficulty of recalling and using the store of memories, impaired ability to receive and retain new impressions. As the disease progresses the mental processes become still more sluggish, the patient's store of ideas becomes more and more impoverished, elaboration of new material ceases, life becomes almost vegetative. From the first one notices that the mental possibilities of the patient show considerable variation from time to time; and even in the advanced stages there are brighter moments when he gives evidence of transitory grasp of environment or may utter fragmentary references to past incidents; the persistence, even in the latest stages, of insight into his unfortunate condition is very striking.

The dementia reaches a degree comparable to that of the general paralytic; but it is rather an extreme reduction than a total disintegration; the elements left are fragmentary, but not distorted nor grotesque.

Such is the general scheme of the mental decline, but this is diversified by various morbid ideas usually of a depressive or persecutory nature; from time to time there are delirious incidents, episodes of bewilderment or uneasiness, attacks of excitement with delusions and hallucinations. The history of the physical decline may be very complicated and include attacks of different kinds, with a great variety of residual defect symptoms; in

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these cases one has the opportunity of studying hemiplegic attacks, transitory or permanent hemianopias with the phenomena of conjugate deviation, aphasias, asymbolias, and a great variety of irritative phenomena. The neurological episodes include attacks of dizziness, general epileptiform attacks, apoplectiform attacks, attacks confined to localized twitching. During these latter attacks the patient may be quite conscious and converse with the physician, or he may only make fragmentary delirious utterances, or consciousness may be lost altogether.

The resulting defect symptoms give rise to a very complicated neurological status. In addition the pupils may be sluggish or quite rigid. The speech is usually slurring. A moderate lymphocytosis of the cerebro-spinal fluid is sometimes found.

The brain shows a more severe degeneration than in the nervous form of cerebral arterio-sclerosis. The weight is usually diminished, and the white substance shows very pronounced changes, while numerous focal softenings may be present.

Clinically it may be very difficult to diagnose such a picture from dementia paralytica with focal symptoms, and from senile dementia with focal symptoms. In general, as Alzheimer says, the paralytic and senile dement strike one as insane; while with the arterio-sclerotic dement the "crazy element" in the picture is less striking. The physical signs of general paralysis with the crazy ideas and general mental disintegration usually enable the diagnosis to be made; while the typical senile dement with focal symptoms shows a distinctive mental picture in which disorientation, a tendency to confabulation and crazy ideas are prominent features.

These general diagnostic points are, however, insufficient, and the relation of the senile psychoses to arterio-sclerotic dementia is complicated. Even patients presenting the less severe form of cerebral arterio-sclerosis may have episodes which are indistinguishable from those of the ordinary senile dement. We know little about the ætiology of senile dementia, and of its various forms. It is possible that in certain cases of arterio-sclerosis there is a combination of phenomena due to the vascular changes with others of so-called senile origin.

The term arterio-sclerotic dementia is justified by the promi-

nence both clinically and anatomically of certain changes of vascular origin, but it must be emphasized that the whole picture is very complex, and that the complication of arterio-sclerosis with senile or other changes is not to be excluded.

Correlation of definite focal lesions with certain neurological symptoms is possible, but any detailed correlation of mental defects with anatomical changes is premature.

A patient at present under observation illustrates well the limits of our knowledge with regard to the organic dementias. He is a man of 60, profoundly demented, who now only shows signs of mental activity by uttering occasionally an almost inarticulate remark.

At the age of 45 he began to fail mentally; at the age of 58 he had a general convulsion, and was admitted to hospital. During the two years of hospital residence he has shown progressive decline, such as one meets in severe progressive cerebral arteriosclerosis; he has manifested no delusions, and has even in the late stages shown remarkable persistence of insight into his general impairment. The neurological history has been varied; attacks of different kinds have been frequent. Right-sided hemianopia and right-sided sign of Babinski are permanent residuals from attacks in hospital. Numerous attacks consisted in transitory left-sided hemianopia, irritative and paralytic phenomena in the left face and arm, and anæsthesia of the same region. The knee-jerks have been absent since admission to the hospital; the cerebro-spinal fluid shows a well-marked lymphocytosis; the sign of Romberg has been observed. Since admission the pupils have become more and more sluggish and somewhat irregular; the speech is extremely slurring, but not suggestive of general paralysis.

Peripheral arterio-sclerosis is well marked with high bloodpressure and cardiac hypertrophy; there is no evidence of renal insufficiency.

The general nature of the mental reduction is similar to that in severe progressive cerebral arterio-sclerosis. The irritative and paralytic phenomena are compatible with cerebral arterio-sclerosis, but our present knowledge of such attacks has too little definition for them to give much aid in the diagnosis.

The absence of knee-jerks, sign of Romberg, marked lymphocy-

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tosis in the cerebro-spinal fluid, sluggish irregular pupils, force one to reserve the diagnosis; for it is not as yet sufficiently established what weight is to be laid on these signs, individually and collectively, in the clinical differentiation of the organic dementias.

The presence of epileptiform convulsions in cerebral arteriosclerosis has already been mentioned; in some cases these convulsions are the most prominent feature of the disease. The patient may show no mental impairment, or the convulsions may occur along with other characteristic physical and mental symptoms. That the circulatory system has an important relation to the convulsions is shown in some cases by the results of treatment of the cardio-vascular disorder. The fact that in certain arterio-sclerotic epileptics compression of the carotids may bring on convulsions points in the same direction.

In young epileptics with valvular lesions the occurrence of fits in positions which embarrass the circulation, and the reduction of the number of fits under cardiac stimulants, confirm this point of view.

That renal incompetency may be in some cases an important element is possible, but well-marked cases of senile epilepsy may show no evidence of kidney trouble. Even though the cardio-vascular disorder may explain the occasion for the occurrence of the fit, it does not explain why only certain individuals should give this reaction to the disease. This question is quite obscure, and one must admit that the ætiology of senile epilepsy is in the same condition as that of epilepsy in young life. As to the general symptomatology of those cases of senile epilepsy with pronounced arterio-sclerosis, in the intervals between the fits the patient may show little defect, or he may show, in more or less pronounced degree, the symptoms characteristic of the nervous form of arterio-sclerosis. The attacks may not be limited to general convulsions.

A patient 63 years of age, at present under observation has, in addition to typical epileptic fits, shown a variety of attacks without any motor implication. The attacks have been of the nature of a transitory loss of consciousness of a few moments' duration, or of transitory confusion, or of a "Dämmerzustand," or delirious episodes, or of episodes of exaggerated irritability, suspicion, and indignation with ideas of reference, and possibly hallucinations. 1908]

This patient has excellent insight between the attacks and is keenly aware of his poor memory and retention; he has a permanent tendency towards ideas of reference. Of late he has developed certain ideas of greatness, a rather unusual feature.

SUMMARY.

I. While arterio-sclerosis of some degree is a commonplace finding in cases of mental disorders, especially in advanced life, there are cases where the cardio-vascular disorder seems to be the central element in the clinical and anatomical picture.

II. Certain cases symptomatologically described as melancholia, hypochondria, neurasthenia, etc., may be better grouped on etiological grounds as cases of arterio-sclerotic brain disorder; while the arterio-sclerosis is an important factor, the factors which led to the symptomatological grouping are not to be neglected. This necessitates the analysis of the depressions in advanced life.

III. In certain cases of organic dementia the arterio-sclerotic changes are obviously the most important element in the process and the term arterio-sclerotic dementia is justifiable; but the relation of certain mental symptoms to similar ones in the presenile and senile psychoses must be kept in mind. This necessitates the analysis of the presenile and senile psychoses.

It is premature to correlate the whole symptomatology with the arterio-sclerotic part of the anatomical findings.

IV. The neurological picture in advanced cerebral arterio-sclerosis is still ill-defined; and for the differential diagnosis of the various organic dementias further clinical material is required.

V. In certain cases of epilepsy with onset in late life, the convulsions and general symptomatology are closely related to arteriosclerosis.

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Proceedings of Societies.

NEW YORK PSYCHIATRICAL SOCIETY.

STATED MEETING, NOVEMBER 6, 1907.

Dr. Adolf Meyer, President, in the chair.

Preliminary Report on the Significance of the Ocular Signs and Symptoms of Dementia Præcox as Observed in a Series of 115 Consecutive Cases.

BY DR. H. H. TYSON AND DR. L. PIERCE CLARK.

The cases were from private practice, clinics, and the metropolitan asylums. Definite changes were invariably found. The fundus changes, as seen clinically, are divided into three stages, in the order of their occurrence. First stage, congestion of the discs, hyperæmia and ædema, dilated veins, contracted arteries, and blurring of the edges of the discs, of varying degrees, constituting a low grade perineuritis of the optic nerve. Second stage, congestion of the nasal side with temporal pallor of discs, dilated veins, and contracted arteries. Third stage, pallor of discs, dilated veins, and contracted arteries, constituting partial or complete atrophy of the optic nerve.

All forms of dementia præcox were under study. The more rapidly deteriorating forms show the most marked changes. The cases embraced both users of alcohol and tobacco, and abstainers. Theoretically, the changes are probably due to a vascular toxin from liver or intestinal auto-infective origin. A vascular alteration with œdema takes place, resulting in disturbances of nutrition and slow degeneration of the nerve fibers. Cases in the first stage have shown fundus improvement under the usual treatment for intestinal auto-infective toxæmias.

Other eye symptoms found uniformly were: Enlarged pupils, negative sensory reflex, negative psychic reflex, negative Piltz reflex, diminished corneal sensibility, and concentrically contracted visual fields. No other psychosis presents similar conditions. The findings should be found useful in differential diagnosis, to a certain extent in prognosis, and possibly in the study of the pathogenesis and pathology of dementia przecox. Cases illustrative of the three stages were demonstrated to those members who used the ophthalmoscope.

Discussion.

Dr. C. E. Atwood, of New York City, had followed the investigations of Dr. Clark and Dr. Tyson, having seen nearly all the cases examined by them, and now looks for the changes in the optic disc and the other eve symptoms in every case of dementia przecox which comes under his observation. In no case so in had he found the symptom-complex wanting. Recently, at the suggestion of Dr. Clark, he had been studying cases of infection, e. g., lead poisoning, quinine poisoning, and cases of typhoid fere and pneumonia, etc., in the hope of finding some similar changes in these conditions which might be of similar origin. Dr. Atwood read the findings in a number of cases examined. In five men with typhoid infection, averaging about 26 days' duration, for of whom smoked and drank, all showed haziness of the disc with some blurring of the edges and fullness of the veins. In one (the non-drinker and non-smoker) there was limitation of the felds to about 30 degrees. In one only (of six weeks' duration) there was an appearance of central fullness (cedema?), the cup not showing. In four women with typhoid, averaging 26 days' duration, the discs in two cases were normal and in the other two. anæmic, the vessels being less full and the surface pale. In three men with pneumonia, all of whom smoked and drank moderately, the fundus in one was normal, and in the other two there was haziness of the edges of the disc with fullness of the veins, but no cedema. In twe post-operative septic cases, one a gangrenous appendicitis, the other an intestinal perforation, both exhibited haziness and venous enlargement, but no cedema. Both of these cases used alcohol and tobacco. A man with partial amblyopia from quinine poisoning (case of Dr. Tyson's) who neither drank nor smoked, showed haziness, congestion and ædema of the nasal

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side, with fullness of the veins and pallor on the temporal side. Central scotoma was also present. The vision was 2/200 right, 20/100 left. The last case reported was one of infection from *lead*. A man, aged 44, born in Germany, drank beer, had slight **arterio**-sclerosis, and had the occupation of making white lead in a factory. For seven months he had had double wrist-drop, and been under treatment in a neighboring town for this and lead colic, etc. Both discs exhibited central œdema, pallor, and enlarged veins. The fields were contracted to 15 degrees for red, 10 degrees for green. There was central scotoma principally for red. V = 20/30. The examination of seriously ill patients, *e. g.*, with typhoid, etc., at Roosevelt Hospital, was facilitated through the kindness of Professor James, and made possible by the use of the electric ophthalmoscope.

Dr. William Mabon, of New York City, read the report of the findings in examinations of the fundi of 25 patients with dementia præcox and 25 with manic-depressive insanity at the Manhattan These examinations had been made by Dr. State Hospital. Holden, whose report was as follows: "Blin has reported in a series of observations of dementia præcox patients, a persistent congestion of the optic disc in 10 per cent, a persistent anæmia in 8 per cent, and an alternating congestion and anæmia in 6 per cent, with intermittent congestion or anæmia in 45 per cent more. However, I wish to say that the color of the optic disc varies within wide physiological limits and many of us do not like to speak of congestion or anæmia of the disc unless the condition is pronounced and palpably abnormal. In none of these 100 eves examined did I find a congestion or an anæmia that seemed to me significantly abnormal. The color of the disc may be said to depend largely upon the personal equation of the examiner. In the 25 patients with dementia præcox, the outlines of the discs were blurred more than in the average normal eye in 11 patients. In 6 of these 11 the large veins of the disc and retina were appreciably dilated. In the 25 patients with manic-depressive insanity, on the contrary, there was a blurred outline of the discs in but four patients, and in but two of these were the large veins appreciably dilated. This blurring of the outline of the discs is in many cases of dementia præcox too pronounced to be considered physiological and must be regarded as pathological. It is due to cloudiness of the nerve-fiber layer of the retina and optic nerve, which in some cases seems to be caused by a cloudy swelling of the nerve fibers which can be individually made out, and in other cases perhaps to an œdema of this layer without swelling of the fibers, or in other cases perhaps to both of these causes combined. In half of the cases in which the outline of the discs was blurred the veins of the retina were, as compared with the arteries, abnormally dilated. The condition may be analogous to the circulatory changes and cedema found in other parts of the body in dementia præcox. In some cases it is so pronounced as to give rise to a characteristic picture, and from the examination of these 25 patients and of about an equal number previously examined, of which complete statistics were not kept, I should judge that the condition was to be found in about half the cases of dementia præcox and rather exceptionally, and in a less pronounced degree, in manic-depressive insanity." In view of Dr. Holden's statement that the condition was to be found in about half of the cases of dementia præcox and exceptionally in manic-depressive insanity, it would seem advisable to make further investigations before

it would seem advisable to make further investigations before reaching the conclusion that these conditions are of diagnostic significance.

Dr. P. C. Knapp, of Boston, called attention to the importance in these cases of refraction errors. In a considerable number of cases of brain disease, especially in cases of headache, he had found such a congestion of the optic disc as had been described, with blurring of its outline so great as to suggest beginning neuritis, but due, as further investigation showed, to a considerable degree of hypermetropia. It would be well to eliminate the possibility of refraction error before assuming changes in the optic disc. Dementia præcox was not the only mental disease, as suggested by Dr. Tyson, in which these changes are noted. They occur in general paralysis in a number of cases, although they are less frequently seen than conditions of optic atrophy. He had seen a number of cases where there was congestion of the disc and haziness of outline in which the changes were indubitably those of low-grade neuritis.

Dr. Adolf Meyer, of New York City, remarked that in order to

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prove that we are dealing with an inflammation and subsequent atrophy of the optic nerve, it would be very desirable to have sufficiently strong evidence of functional disorders of vision. In the absence of visual defect in cases of remission, etc., it remains to be shown that the appearance of the disc is not merely an incidental phenomenon of a general vasomotor difficulty.

Dr. Clark, in closing the discussion, said that in a number of cases at the Vanderbilt Clinic followed independently by Dr. Holden and by Dr. Tyson and himself, the results tallied exactly so far as the disc changes were concerned. In the report just presented Dr. Holden seemed to take it for granted that the only changes were congestion and haziness, whereas these formed only a part of a series of changes. These changes would not be noted unless the entire series were followed. Careful analyses in other types of mental disease had failed to reveal changes which could be confounded with those described. The different phases of the changes described, ranging from the congestive stage to the terminal one of general diffused atrophy of perineuritis, should be borne in mind, otherwise it is impossible to arrive at statistics. Of course there were optic changes in paresis, but this was not often to be differentiated from dementia præcox. He had made it a point to look for the physiological cupping of the disc, and if this could not be noted to look for other features that go with dementia præcox. One hundred and fifteen cases, the number studied, would not establish any of these changes for diagnostic purposes. The work, as stated, was but a preliminary communication and must be verified by more exhaustive studies by many different observers before this eye syndrome could be finally considered as definitely established. The significance of these clinical features was tentative, and might undergo modification, but after two and a half years of investigation he was convinced that there is a characteristic toxic change going on in dementia præcox which must be recognized as a feature of the disease, possibly rendering it a somatic disorder with a mental accompaniment.

Dr. Tyson, in closing the discussion, said, with reference to errors of refraction, that it was only in high degrees that congestion of the disc was found, and that high hypermetropia was found in only one per cent. In atrophy it was only by contraction of the field and diminution of visual acuity, with cupping and pallor of the discs and contracted arteries, that the diagnosis was made; and finally that in using the ocular signs and symptoms to aid in making a diagnosis, the entire eye symptom-complex should be used and not only the appearance of the fundus oculi.

THE ANXIETY PSYCHOSES.

Dr. George H. Kirby, of New York City, read this paper. The affect of anxiety is of wide occurrence and appears in a variety of psychoses, vet our clinical experience teaches that there is a group of cases in which the anxiety appears to stand out more or less 25 a fundamental symptom and not in association with additional features that would stamp the disorder as belonging with any other well recognized symptom-complex. These anxious depressions occur mainly in the climacteric period or later in life, yet similar symptom pictures occasionally develop in earlier years Kraepelin's recent proposal to merge the anxious depressions into the manic-depressive group as "mixed forms" was argued against by the author, who showed that Kraepelin was led to this change of position chiefly because he found that nearly all of the surviving cases of involution depression had terminated in recorerv even after a prolonged course. This generalization exemply fies to what an extreme degree the Kraepelinian statistical method may be pushed. The author's material afforded many reasons for keeping the anxious depressions apart from the manic-depressive psychoses-they appear to arise out of a different etiology, show important symptomatological differences, run a different course from the manic-depressive cases and are especially dangerous to the life of the patient. Various factors were mentioned which seem to prepare the ground for the origin of the anxious affect. e. g., intoxications, organic insufficiency, advanced age, etc., and attention was drawn particularly to the great frequency with which the anxious mood arises out of prolonged worries and chronic emotional strains of various kinds. Cases were reported to demonstrate the importance of these psychogenetic elements in the development of the psychoses with anxiety. The cases studied fall into several groups each of which seems to have some prognostic significance. (1) Cases showing a simple form of anxiety

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or general uneasiness, apprehensive anticipations with or without (2) A severer form showing anxiety, with fear, ideas of sin. perplexity, and allo-psychic concepts. (3) Cases presenting the sensory-somatic complex, hypochondriacal trends and feelings of unreality. (4) Cases developing with arterio-sclerosis. The anxious depressions here described are not regarded as a special form of disease, but are considered rather as a type of reaction of fairly characteristic form in the evolution of which a number of factors participate; the psychogenetic features appear to be particularly important. There seems to be a difficulty in adjustment to a situation which would naturally put the patient into an anxious frame of mind. In a smaller group of cases the physical causes seem to be most important and arterio-sclerosis is especially apt to be accompanied by an anxious depression.

DISCUSSION.

Dr. William Mabon, of New York City, was of the opinion that the anxieties should be kept separate from the manic-depressive group.

Dr. August Hoch, of Bloomingdale, said: "Dreyfus tries to show that melancholia is merely a phase of manic-depressive insanity. Kraepelin agrees with him, as he states in the introduction which he wrote to Drevfus's book. But to do Kraepelin justice, we must remember that he specially mentions the fact of the differences in duration in the two groups of cases. While Dreyfus has made a valuable contribution in having shown that what most of us, with Kraepelin, regarded as permanent mental dilapidation, is in reality a recoverable condition; there is little gained by merely identifying the two groups of cases. There is no doubt as to a certain relationship, but there is also no doubt as to the differences, and we would have to say that these cases of melancholia are manic-depressive depressions under special conditions with special features and with certain peculiarities in course. It seems to me that we may regard the development of the anxiety and the unreality complex in depression, in other words, those features which characterize the involution melancholias, somewhat in the light of complications, very much as we regard complications in other diseases. By this we emphasize on the one hand

the relationship and on the other hand the differences. I, therefore, quite agree with Dr. Kirby that it is more profitable to keep the two groups separate. I am also very glad that Dr. Kirby emphasizes the psycho-genetic factors in the development of these cases, and I am quite sure that the work of Dr. Meyer and of Dr. Kirby in this direction is of great value, as it calls attention to many facts which are clear enough when one looks for them, but which have often been singularly disregarded."

Dr. A. R. Diefendorf, of Middletown, Conn., was inclined to agree with Dr. Kirby in his contention for the maintenance of the anxiety psychoses. In his own experience the melancholia of involution was not as prevalent as he had formerly believed. There were cases developing in the involutional period which show anxiety, but are also accompanied by considerable psychometer retardation. These cases which tend to recur should not be confounded with the anxiety psychosis, as they rightfully belong to the manic-depressive group. He had failed to note psychogenetic factors in the origin of his cases as being particularly prominent. In view of the fact that there is often a long prodromal period during which the patient is introspective, symptoms of the disease may be mistaken for psychogenic factors, that is, the patient fails to exhibit anxiety over troubles that have long existed in their life, until they show the first signs of the disease. With reference to the group designated by Dr. Kirby as the arterio-sclerotic group, he saw no reason why they should not be considered as cases of arterio-sclerotic insanity.

Dr. Charles L. Dana, of New York City, said that in private practice one sees many of the anxiety psychoses, though not of so severe a type as those described by Dr. Kirby. It undoubtedly made a clean-cut clinical picture, and to recognize it as a distinct form of melancholia was helpful in the prognosis and in the treatment. At the same time, the more he saw of melancholia the more it seemed to him that the "anxiety complex" occurs not only in the involutional period, but in early life. It was his experience that nearly one-half of the cases of involutional melancholia coming on after 50 or 40 give a history of one or two attacks of "neurasthenia" years before, these often being mild psycho-neuroses calling for no special attention from the psychiatrist. With refer-

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ence to the psychogenetic factor, he believed that the patients who develop these involutional psychoses are generally men and women of rather inferior mental caliber or persons who have worked in an environment which was too strenuous for them, and which, consciously or unconsciously, pulls them down. He could not recall any really brilliant mind that has suffered from involutional insanity. The women belonged to the type of women who have been worriers all their lives, who have had " precisions " and constant anxiety over details, and who were not fitted to carry on easily the work they are appointed to do. Melancholia in all its phases was the same thing, but occurring in different individuals it produced the differences noted. The same definite lesion occurring in one individual would produce melancholia with anxiety, in another retardation and apathy, and in still another, in addition to anxiety there may be self-accusation, or hypochondria. The differences in the clinical picture were due to the original differences in the make-up of the individual. He would represent melancholia by the term X which meant a definite unknown lesion of the psychical apparatus, some break in association-paths, perhaps, the special characters, of self-reproach, depression, anxiety, retardation, would depend on the physique and character of the individual patient.

Dr. Adolf Meyer, of New York City, pointed out how, after all, a new standpoint, such as that of Kraepelin, of dividing all mental diseases into non-dementing and dementing processes is apt to tend to become a sort of all-embracing system with very few subdivisions. The welcome awaking of interest in the outcome of the disease has finally been pushed to the position of a logical decision which naturally must either fit or not fit; but such division of all mental disorders would ignore many other matters which have long been thought of and cannot be neglected. The fact that the outcome issue had been neglected for such a long time was no reason for making it an all-embracing issue for all decisions. To argue merely about the outcome would again lead to a great deal of guessing, and from a didactic point of view it would be better to fix the attention upon what is seen in the patient at the time of examination. It would be a much better working principle to try to recognize the concrete difficulties under which the patient la-

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bors, to examine the factors which led up to these difficulties, and to estimate the balance of the forces of the individual to meet the situation. This, in practically all cases of manic-depressive insanity, would naturally lead to the recognition of a non-dementing disorder in harmony with Kraepelin's nosology. Drevfus's claim that the anxiety depressions are mixed conditions of manic-depressive insanity is another overstretching of a fruitful principle. As soon as one constructs mixed conditions of manic-depressive insanity, practically everything, even normal mental activity, can be included in this category. We already hear that hysteria should be included in the depressive psychoses. With regard to the psycho-genetic nature of the process, he was inclined to consider Dr. Dana's remarks very well to the point. Dr. Diefendorf's exception to the issue might hold for some cases, but it was absolutely undeniable that there is a larger percentage of palpable causes for a depression than in the ordinary manic-depressive insanities. Many manic-depressive depressions in the involutional period begin to show anxieties. As soon as manifestations of manic-depressive features were noted one had symptoms which were of prognostic value. But the fact remains that the pure anxiety states for etiological and practical reasons form a group worth differentiation.

Dr. Kirby, in closing the discussion, referred to Dr. Gregory's suggestion that anxiety is largely a general symptom which occurs in a number of psychoses and recalled the fact that he had emphasized this point in his paper. Anxiety is a prominent feature in a variety of disorders, associated, however, with additional symptoms sufficient to mark the psychosis as belonging with some one of the better known types, thus the anxious alcoholic cases mentioned by Dr. Gregory usually presented distinctive features, particularly in their evolution. He would agree with Dr. Diefendorf's suggestion concerning the grouping of the arterio-sclerotic cases, but in many agitated depressions the arterio-sclerotic basis is apt to be under-estimated or even over-looked for a considerable time, perhaps until some definite cerebral attack occurs. When the arterio-sclerotic nature of the disorder is clear, the proper group would be, of course, the organic brain diseases. He could not subscribe to Dr. Dana's conception of melancholia as a general

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disorder or a single disease, no matter whether it belonged to the manic-depressive or involution type of depression. The cases studied show that the two forms of reactions, certainly when they are are pure, are symptomatically and prognostically different and above all they seem to develop on a different foundation. Provision must be made for a small number of cases which seem to show admixtures or appear to be transitional forms. Many cases of manic-depressive insanity show anxiety, but here it is usually found in a fairly characteristic setting. These cases have nearly always a feeling of insufficiency or show clearly some difficulty of thought or constraint in activity which does not appear in the anxiety psychoses described.

NEW ENGLAND SOCIETY OF PSYCHIATRY.

Dr. Chas. W. Page, presiding.

The regular semi-annual meeting of the society was held with Dr. E. V. Scribner, at the Grafton Colony of the Worcester Insane Asylum, North Grafton, Thursday, September 19, 1907. In the absence of the president, Dr. Philip C. Knapp, the vicepresident, Dr. Charles W. Page, presided. The paper, "The Cytological Study of the Cerebro-spinal Fluid, by Alzheimer's Method, and its Diagnostic Value in Phychiatry," by Drs. Henry A. Cotton and J. B. Ayer, was read by Dr. Cotton. Dr. Ayer arranged the microscopical demonstration. The following is an abstract of the paper:

The method of Alzheimer for treating the cerebro-spinal fluid, published in the Centralblatt für Nervenheilkunde und Psychiatrie, June 15, 1907, forms the basis for this investigation.

In the opinion of the authors, this method is by far the best devised for studying the cells of the cerebro-spinal fluid as an aid to diagnosis in mental diseases.

Alzheimer makes use of the precipitation of proteid matter in the fluid by alcohol, and combining with this centrifugalization of the mixture. The cells are caught in the coagulum formed, and the coagulum is then treated as tissue, and the usual stains used in studying the histopathology of the cortex can be used. In detail the method is as follows:

1. Lumbar puncture in the usual manner.

2. Ninety per cent alcohol, to twice the amount of cerbro-spinal fluid, is added drop by drop and well mixed.

3. Centrifugalize the mixture for one hour at high speed in a glass tube with conical end (an ordinary electric urinary centre fuge can be employed). The tube should be closed to preven evaporation.

4. The supernatant fluid is poured off, leaving a small coage lum in the bottom of the tube.

5. Add absolute alcohol, alcohol and ether, and ether, and ether, and separately for one hour to dehydrate and harden the coagulum.

6. The coagulum can now be gently loosened from the botto of the tube with a long needle. The tube is then inverted at the coagulum allowed to fall into the palm of the hand. (Usual a quick tap with the tube is alone necessary.) Care must be take not to squeeze or handle the coagulum. The hand is placed on a small homeopathic vial, containing thin celloidon, and the coagulum allowed to drop into the celloidon. Keep in thin celloidon over night (12 hours).

7. Coagulum placed in thick celloidon which is allowed a harden slowly.

8. Mount coagulum on blocks and cut sections at 14 micra.

9. Staining. Before staining, the celloidon should be removed by allowing the section to remain a few minutes in absolute alcohol and ether. The stains best adapted for these sections are Unna's polychrome methylene blue and Pappenheim's pyroninmethyl green. The latter was found to be the most satisfactory routine stain, as it gives excellent nuclear pictures, and is specific for plasma cells, staining the protoplasm a deep red or pink.

The pyronin stain is made as follows:

Methyl Green 0	.30
Pyronin 0	25
Alcohol, 96% 2	.50
Glycerine	.00
5% Aqueous solution carbolic acid 1	.00

1. Procedure.

1. Remove celloidin by absolute alcohol and ether.

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2. 80 per cent alcohol.

3. Water.

4. Sections are carried on glass or platinum needle into dish of stain which is kept in a water bath at 40° C., 5-7 min.

5. Quickly cool dish in running water.

6. Wash out all superfluous stain in plain water.

7. Absolute alcohol to differentiate, until no more stains come away from section.

8. Clear in bergamot oil.

9. Mount in balsam.

Toluidin blue can be used in the usual manner. Instead of celloidon imbedding, paraffin can be used with alcohol or Zenker fixation. The only advantage of the paraffin imbedding is that sections can be cut thinner. Alzheimer's method has a distinct advantage over other methods, because by it the cerebro-spinal fluid can be treated and stained as tissue, and thus allow comparison of the cells of the fluid with cells of the cortex and pia stained by the same methods.

The cells found in the fluid are (1) lymphocytes characterized by a small round nucleus, sometimes slightly oval. The chromatophilic elements are arranged in "clock face" form around the periphery and stain dark blue (pyronin). There is very little protoplasm, usually only a thin line around the periphery of the nucleus, and stained a faint pink. They are present in cerebrospinal fluid from all cases, but in very small numbers except in fluid from general paralysis. Here they form the principal increase in the number of cells seen. They vary from 33 per cent to 94 per cent in general paralysis, averaging 73 per cent of the total count. Their total count averages 450 to 100 fields (No. 4 ocular, 1/12 oil immersion). In other mental diseases they never reach more than 50 to 100 fields, so that a count of 100 to 100 fields is indicative of general paralysis.

2. Endothelial cells. These are a constant finding in all fluids examined (except one case of neurasthenia). They vary considerably in size and shape, and often they are the largest cells found in the fluid. The nucleus is eccentrically placed and is oval or "horse shoe" shaped. The nucleus is large, stains a faint blue, and very few chromatophilic granules are present. The proto-

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plasm varies in amount, and takes a faint pink with pyronin stain. These cells are easily distinguished from lymphocytes because of the lack of chromatophilic granules in the nuclei, and the diffeence in shape of the nuclei. They become phagocytic for lymphocytes under certain pathological conditions, and the average count of these cells in general paralysis is 23 per cent. In other conditions they are usually in excess of lymphocytes.

3. Phagocytes. Under certain morbid conditions, endothelial cells become phagocytic, especially for lymphocytes, although they may take up cells of their own type. While they have been described as occurring in the tissue, they have not been observed before in the cerebro-spinal fluid. The nucleus is pushed toward the periphery, somewhat elongated and flattened, and the protoplasm is swollen to enormous proportions. The lymphocyte is centrally placed, and is surrounded by a light area or court. The outline of protoplasm of the endothelial cells is only seen as a faint line outside of the lighter court. The lymphocytic inclusive is often undergoing digestion or regeneration, and may present various shapes and types.

Phagocytes are rare in living fluids in four out of sixteen fluids of general paralysis ante mortem, but they were found in eight out of twelve cases post mortem, and the percentage was larger. Their significance at present is doubtful. They were only found post mortem in general paralysis and organic dementia, except for one cell found in a case of manic depressive insanity.

4. Plasma cells. These cells from a diagnostic standpoint are the most important cells found in cerebro-spinal fluid and can be considered as pathognomonic of general paralysis, and are of equal value with a lymphocytosis. They differ but little from the same cells found in the adventitial sheaths of blood vessels in the cortex. The nucleus is similar to that of the lymphocytes, the "clock face" arrangement of the chromatophilic granules is more pronounced than in the lymphocytes, and the nucleus is larger and stained a deeper blue. This is eccentrically placed. The protoplasm stains a deep red or pink by pyronin. The amount of protoplasm is usually large, but varies according to the stage of cell growth. Occasionally two or more nuclei are seen in the cell, and these cells are probably degenerated forms.

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They occur in small numbers, varying from I per cent to 6 per cent, averaging 2 per cent in 19 cases, but take part in the general cell increase post mortem. Usually they are easy to identify when stained with pyronin, as no other cells take so deep a red, and the nucleus is quite characteristic.

5. "Körnchen" cells, or compound granular cells are another type of phagocytic cells, but differ from the first type, in the fact that they are loaded with fat droplets. They were found only in insane with cerebral softening, post mortem. Their value when found in the living would be to show the presence of an area of softening breaking into the ventricle. They are very large cells with small nucleus placed on the periphery, and by pyronin, the fat droplets do not stain, but have a dark brown appearance. By Scharlach R., they stain a deep red, characteristic of fatty pigment.

6. Polymorphonuclear leucocytes. These cells occurred in the fluids of cell cases of general paralysis, varying from I per cent to 39 per cent, even in clear fluids, also in other conditions (also clear fluids), where they are found, however, in large numbers. With few exceptions, their presence is accounted for by contamination while making the puncture. Their presence could not be correlated with any clinical manifestations, but they are more constant in general paralysis than in other conditions. At present their significance is not clear. Cornell found them increased after epileptiform seizures. But the difficulty of excluding contamination, even when the fluids are apparently clear, has to be considered before too much weight can be given to them.

.7. Undifferentiated cells. To this class belong cells that do not conform to the types above described. In some instances they may be degenerated or altered forms. Some cells resemble fibroblasts, and others ependymal cells, but they occurred in small numbers usually, and are of little significance.

Diagnostic features. The unit of 100 fields has been adopted because of the low cell counts in other conditions than general paralysis.

The total cell count in general paralysis varied from 110 to 1500 per 100 fields, the average for 19 cases being 450. The average differential count given in these cases were:

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Lymphocytes	55
Endothelial cells	13%
Plasma cells	z%
Phagocytes (9 in 4 cases)	ı≰
Polymorphonuclear leucocytes	
Unclassified	2%

The large increase of cells in general paralysis is due to a lymphocytosis, which with the presence of plasma cells is positive for general paralysis.

A high total cell count may not be due to a lymphocytosis, but to the presence of polymorphonuclears. A count of 100 cells to 100 fields, with the largest percentage lymphocytes is significant of general paralysis.

These conclusions are based upon the examination of the fluids in 82 cases of all types of psychoses, especially those that would be confused with general paralysis. The difference in the total cell count, also the differential count in general paralysis and other psychoses is striking, and can be seen by consulting the following chart. Post mortems were obtained in 18 cases, and the clinical diagnosis was confirmed by the study of the cortex. but of this series 10 cases were general paretics. The findings in the fluid were correlated with those in the cortex and pia, and all cells found in the fluid were identified in the pia. Fluids taken post mortem showed a considerable increase in the number of cells. This was especially marked in general paralysis and organic dementia.

SUMMARY.

1. We cannot but regard Alzheimer's as the best method yet devised for the cytological study of the cerebro-spinal fluid, the good results depending upon rapid fixation of the cells and the subsequent treatment of them as if they were tissue.

2. A good differential count and a fair quantitative count are possible by this method.

3. The cells regarded by us as of greatest diagnostic importance are the plasma cell, the phagocytic endothelial cell, the fatty granule cell, and the lymphocyte if in excess.

4. In psychiatry the cell picture in general paralysis stands out distinctly from that of the other forms of insanity, the latter being considered by us as nearly normal fluids.

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Nors: It will be seen that there is a large increase in the total count of cells post-mortem in the majority of psychoses.

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A high cell count, with excess of lymphocytes, over 100 to 100 fields, the presence of plasma cells and perhaps phagocytes in a case of suspected general paralysis is the strongest evidence in favor of this diagnosis.

5. It is possible that other organic cerebral conditions may show a cell picture of diagnostic importance, as indicated by the finding of fatty-granule cells in these conditions post mortem.

6. The origin of the cells in the fluid is without doubt in large measure if not entirely traced to the pia mater.

DISCUSSION.

Dr. Fuller said he felt that the very interesting paper which had been presented before the society at this meeting was a distinct contribution to our knowledge of the cytology of the cerebro-spinal fluid. He had not seen any illustrations which so clearly demonstrated the differences in the cellular elements of the fluid as those which Drs. Cotton and Aver had exhibited, and the accompanying chart was also illuminating. Continuing, he said, any one who has followed the literature of cyto-diagnosis up to this time could not easily escape the conviction that, perhaps, after all, a mere lymphocytosis of the cerebro-spinal fluid was not a very important diagnostic sign of general paralysis. For, aside from syphilitic conditions in which an increase of lymphocytes can generally be demonstrated, cases presenting all of the clinical symptoms of general paralysis have been reported and yet after repeated puncture gave negative results, so far as lymphocytes were concerned. Then, too, E. Meyer, in a paper published not long since (Archiv. f. Psych., Bd. XLII, H. 3), reports a case of recent syphilis and other cases in which the syphilitic infection had taken place some years previously, but which showed no lymphocytosis. Moreover, lymphocytosis has been reported in the cerebro-spinal fluid of persons suffering from mental disturbances other than those cited, even as this study of Drs. Cotton and Aver has shown.

The explanation previously advanced that a lymphocytosis of the cerebro-spinal fluid was to be looked upon as an expression of meningeal involvement does not seem tenable in the light of the results reported to-day. Alzheimer had already objected to

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the meningitic theory in his discussion of Fischer's paper at the 1906 meeting of the Deutscher Verein f. Psych., on the ground even that without any psychosis, as for example in simple arteriosclerosis, an increase of lymphocytes was often demonstrable. If, as appears from the report of the work to which we have just listened, the plasma cell is a constant constituent of the cellular elements of the cerebro-spinal fluid in general paralysis and is absent with equal constancy in the other psychoses, then indeed we have a valuable diagnostic sign. Of the importance of the plasma cell in the anatomical diagnosis of general paralysis we are all aware and to be able to obtain clinical evidence of its presence would seem a distinct gain. A greater number of cases with syphilitic brain disease studied with reference to the presence or absence of plasma cells would have greatly enhanced the value of the paper on this point, but we can all readily understand that the small number of cases reported in this group is no fault of the observers.

As regards the cells which have been described as phagocytic might it not be possible that they are identical with those cells, heavily laden with coarse yellow granules of a fat-like nature and also phagocytic in character, which are found not infrequently in the adventitia of cortical and pial vessels in general paralysis and other psychoses, but which in consequence of the method of fixation—alcohol and subsequent alcohol-ether, and celloidin imbedding—have had their fat content dissolved? To be sure, a figure of a Körnchen cell with fat granules stained by the Scharlach method is also shown, but in the drawing before us fat granules are not so numerous as one sees them in the Körnchen cells of tissues which have been cut without previous imbedding and without alcohol fixation.

Dr. C. W. Page thought the writers of the paper were entitled to the thanks of the society. This method of diagnosis, while comparatively simple, is a very important one and is destined to supersede other methods. We should try to devise a technique so clear that the results obtained by different observers could be compared. Dr. Page mentioned the case of a patient in Danvers Insane Hospital which emphasized the practical usefulness of this means of diagnosis. This case was first diagnosed as general paresis, but the patient's condition improved so much that it was thought a mistake in the diagnosis had been made. Had it not been for a positive evidence obtained by lumbar puncture, this man would have been discharged from the hospital to the care of his brothers and against the wishes of his wife, who had had a great amount of trouble with him and recognized his mental condition.

Dr. I. H. Coriat said that the authors of the paper had demonstrated the great value of the cytological examination of the cere bro-spinal fluid in organic diseases of the central nervous system, an examination which is of equal value with the chemical andyses, especially the test for cholin. The changes in the fluid after death, as compared with the fluids in living subjects, is in harmony with his investigations. He found that lactic acid was liable to appear in the fluid shortly after death, even when there were no convulsions, whereas the reaction of the normal fluid is allow line. The fat found in the cells is probably derived from the lecithin decomposition, the stearic acid of the lecithin combining will glyceryl to form neutral fat.

The albumens of the cerebro-spinal fluid are of great importance, and, contrary to the opinion of a great many, are presen in small amounts in all fluids. But the nucleo-proteid is absen in normal fluids, and present in degenerated conditions of the ner vous systems, particularly in general paralysis, and is probab derived from the disintegration of the Nissl bodies which and composed of nucleo-proteid.

Dr. Cotton, in closing, stated that tests for albumin had been made in all fluids, according to the methods described, *i. e.*, precipitating serum globulin with either magnesium sulphate, ammonium sulphate, and boiling the filtrate. But it was so evident that albumen was not limited to general paralysis, be occurred in the majority of other psychoses, so that the present of albumen could not be relied upon as a diagnostic factor. was found that albumen was much increased in some cases general paralysis, but not in all. The conclusion reached we that either more accurate tests should be used, or that we modify our ideas as to the presence of albumen in general paralysis alone. He was inclined to believe Dr. Coriat, that the nuclear proteid was of more diagnostic value.

[Jan.

Correspondence.

THYROIDECTOMY AND INSANITY.

THE SHEPPARD AND ENOCH PRATT HOSPITAL, January 15, 1908.

DR. HENRY J. BERKLEY, Baltimore.

My dear Doctor.—Some seven or eight months ago, I had a conversation with you concerning a surgical procedure you were contemplating in certain cases of dementia præcox, particularly of the catatonic type. Again, on Thursday afternoon, December 19, 1907, we had some further conversation on the subject, and you narrated to me briefly the histories of four or five patients upon whom operations had been done at the City Detention Hospital, Baltimore, the operation being a removal of a part of the thyroid gland.

I was much interested in what you had outlined in our first conversation, and particularly interested in the results which had apparently followed the operations already undertaken. I asked you at our last conversation, as you will recall, for a report of the cases when you were ready to publish your conclusions, and the theory upon which the operations were based, for the AMERICAN JOURNAL OF INSANITY.

I understood at the time that you were not ready to make any public announcement, believing that the cases operated upon were too few, and the time which had elapsed since the operation was too short, to warrant such publication. You may, therefore, imagine my surprise to read in the *Baltimore News*, issued on the day of our last conversation, December 19, 1907, what was purported to be an interview with the Resident Physician at the City Detention Hospital, which, without other evidence, would lead one to infer that this physician had, after study and observation at home and abroad, devised and made the operations performed at the Dentention Hospital, of which you had told me, and which were all made, you informed me, by Dr. Follis.

CORRESPONDENCE

The interview in the Baltimore News was, in substance, sent out by the agent of the Associated Press, and has appeared in many newspapers, both in this country and abroad. Worded as it was, it was calculated to awaken wide interest among those who had insane relatives, and to attract more or less attention from those interested in the treatment of insanity. I have had several letters from physicians, asking about the "new operation for insanity," and numerous inquiries have been made by anxions friends as to its real value. All of the letters from medical men have shown a degree of skepticism concerning the matter, as the writers doubted the reliability of newspaper articles upon medical topics. The friends of the patients, however, cannot distinguish between the false and the genuine, and when some one cries b here, lo there is the remedy you seek for your unfortunate relative, are prone, and naturally so, to follow any suggestion, no matter from what source, and especially one which bears the evidence of personally expressed views upon the part of a physician who was presumed to speak with authority, and who has not seen fit since. so far as I can learn, to make any modification of the statements contained in the alleged interview.

I think, therefore, that you owe it to yourself (although I know you are not one who is jealous of his claims to priority), to the surgeon, who, at your request, made the operations, to your professional brethren who wish to know the real status of the case. but are willing to await your own time for detailed information. and to the public, which is anxiously seeking for whatever gimmer of hope there may be, and which should not be misled into expectations which may be doomed to disappointment, to publish a brief statement of what has been done at the City Detention Hospital, with what purpose, and by whom. Such a statement accompanied with the injunction to the profession and to the public. to await further experience and observation, and mature judgment. will serve to prevent rash undertakings, and possibly, bitter disappointment.

In case you agree with my view, I shall be glad to publish this letter and your reply in the AMERICAN JOURNAL OF INSANITY.

I am, very sincerely your friend,

EDWARD N. BRUSH.

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CORRESPONDENCE

DR. EDWARD N. BRUSH, Sheppard and Enoch Pratt Hospital.

Dear Doctor Brush.—I am in receipt of your letter of the 15th instant, and in reply think it is best to make a plain statement of the entire matter, so that not only the profession may be informed as to what has actually been done, but also the laity may know that a panacea for all forms of adolescent mental trouble is not offered, in fact, that good results may be expected from only a few well chosen cases.

The writer for more than eighteen months has been seeking a remedy for the distressing malady, catatonia, one of the forms of dementia præcox. The number of cures were so few, and the mental fatalities so numerous, that anything that could be done or devised would be an improvement on present conditions. The work was at first only carried on with private patients, and very numerous drugs and animal extracts were tried in vain. At last I found that the feeding of the desiccated thyroid gland in minute doses, alternated with an alcoholic solution of lecithin did give results in early catatonia, and there followed cures in three successive cases, and great improvement in a fourth one.

This treatment, however, did not seem to be of much avail when the patients had advanced far into the stage of mutism, and further investigation had to be made.

In catatonia a number of the motor symptoms are similar to those in Graves' disease, and this fact has undoubtedly suggested the further course of the procedure.

The Resident Physician at the City Detention Hospital, was, at my request, granted a two months' leave of absence to visit the North German Clinics, also to call upon Dr. Bruce, of Edinburgh, in order to find out if anything new in the line of treatment, unknown to us, could be learned. His visit to Europe was not productive of anything new, and after his return it was determined to try a partial thyroidectomy on two cases, to see if anything favorable would result, the passing resemblance to Graves' disease being uppermost in my mind. Dr. Richard H. Follis, the visiting surgeon to the institution, was then consulted in the matter, and together with the resident physician, we carefully examined a number of cases whose physical condition admitted of the strain

CORRESPONDENCE

of an operation, and who were not too far advanced in the malady; a recovery being deemed impossible after organic changes had begun in the brain cells.

From among these several cases two were selected, and application was made by me to the board of trustees to permit the operation, also the consent of the parents or relatives of the patients was obtained by the resident physician. Toward the end of June. 1907, the two patients were partially thyroidectomized by Dr. Follis, about four-fifths of the right lobe of the gland being removed, the parathyroid glandules being carefully spared.

Both patients recovered their mental integrity, again be came useful members of society, and are now attending to their usual avocations. Two more patients were thyroidectomized in November, 1907. Of these one recovered her mentality; the other at first promised to do so, and then relapsed, in part, though, not wholly. A fifth patient was operated on in December. He also recovered his mind, and promises to make a complete recovery.

The one that did not recover was a well advanced case of musually severe type, with whom the stage of mutism began in April. After admission to the hospital, he lost flesh at a rapid rate, became profoundly emaciated, bronzed, and showed signs of advancing dementia.

At the beginning of the surgical portion of the investigation all the house physicians were enjoined to silence, not that there was anything to conceal, but to avoid any sensational reports, such as are only too frequent in the daily papers, and are often misleading. You may imagine my surprise, not to say disgust, when my attention was called to the highly sensational, as well as inaccurate, article that appeared in the *Baltimore News* on December 19, 1907.

It is by no means sure that we have discovered a cure for catatonia, and I even doubt it greatly. The number of cases operated upon by Dr. Follis is insufficient to base an hypothesis upon. and it would require a much larger number to make sure of even a reasonable foundation.

I should add that the microscopic examinations of the removed portions of the glands by Dr. McCallum, of the Johns Hopkins Hospital, have shown in two instances an abnormal condition, and in the other three a practically normal one.

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Nevertheless, in catatonia, it is possible that there is a functional perversion of the secretion of the thyroid gland, also that the operation induces a return to the natural secretion of this ductless body. The partial ablation of the gland may also produce unknown changes in the general metabolism of the entire body, induced, first, by the high leucocytosis that immediately follows the operation, and secondly, through the partial annulling of the thyroid hormone. In all the patients that have had sufficient time to fully recover, both after the thyroidectomy and thyreo-lecithin treatment, a marked change in the general nutrition was superinduced, so that after the lapse of four or five months there has been the enormous gain of from forty to fifty pounds in weight, and this not confined to the adipose tissues, but equally apparent in the muscular structures. None of the individuals operated upon have shown any signs of myxcedema. I remain, with Very sincerely yours, regards,

HENRY J. BERKLEY,

Senior Visiting Physician City Detention Hospital, Baltimore.

Hotes and Comments.

CATATONIA AND THYROIDECTOMY.-Elsewhere in this number of the AMERICAN JOURNAL OF INSANITY will be found letters from Drs. Brush and Berkley relative to some important observations made by the latter as to the effect of a partial thyroidectomy upon several cases of catatonia lately under treatment at the Detention Hospital for the Insane connected with the Bay View (Baltimore) Asylum. Although the premature and misleading exploitation of this mode of treatment in the local newspapers at first, and subsequently through the agency of the Associated Press is much to be regretted, it is apparent, from Dr. Berkley's excellent letter that the whole subject is of extreme interest and impor-The writer, in reply to Dr. Brush's letter of inquiry, tance. details how the operation was thought of and describes the results obtained in the cases which had undergone a partial thyroidectomy. In view of the failure of past methods of treatment and the hopeless degeneration of cases of chronic catatonia he had felt the need of instituting new methods of treatment for early cases of this disease. The efforts of Drs. Berkley and Follis to bring surgery to the relief of these unfortunate patients is most praiseworthy. There seems some analogy between catatonic rigidity and the muscular condition in Graves' Disease, and this fact led them to attempt the first operation to be followed by other similar operations. It is to be hoped that still other similar operations may be made until the exact benefit to be expected from surgical interference may be fully ascertained. No one claims or believes, and Drs. Berkley and Follis least of all, that the work has advanced beyond a tentative stage. Hence, the present publication is but a preliminary statement which may be modified materially by subsequent experience. We know that the ductless glands exercise a powerful, even if unknown, influence upon metabolism and nutrition. Starling's doctrine of hormones or chemical messengers illustrates the interdependence of all parts of the alimentary canal and the influence of the secretion of one organ

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upon the activity of another. Thus the acidity of the gastric juice in the partially digested mass which emerges from the pylorus excites a flow of pancreatic juice and the latter in turn stimulates the activity of the liver and the secretion of succus entericus. A section of the nervous supply to the intestinal tract has demonstrated that the interactivity of these various organs does not depend upon the nervous system and shows rather that a chemical element must be absorbed into the blood which by its presence gives rise to the correlated phenomena of intestinal digestion.

These and similar phenomena warn us that, as alienists, we ought not to confine our thoughts and investigations strictly to the study of the nervous system. Problems of nutrition, metabolism, and vital action are equally involved in the study of insanity, and the influence of the secretion of the ductless glands upon the nervous system and the manifestations of mind should not be neglected. The conservative position assumed by Dr. Berkley commends itself to all observers. There is always great danger of harm from half-knowledge and hasty deductions from a scanty collection of facts. Already alienists are being inquired of as to the possibility of thyroidectomy in all sorts of diseases. Is it probably beneficial in spondylitis deformans, writes the friend of one patient; in dementia præcox, inquires another, and in chronic alcoholic insanity, writes a third? Thus far it appears to have been beneficial only in early cases of catatonia and the limitations of the operation, even in this form, need to be much more thoroughly studied before it is widely employed. More observation is required and more operations should be done, but these operations should only be undertaken by competent surgeons and upon cases carefully diagnosed, and which have been, and can be, after operation under careful observation. The present state of our knowledge is not conclusive.

ANNUAL MEETING OF FRENCH ALIENISTS.—The seventeenth annual meeting of *Médicins aliénistes et neurologistes de France* et de pays de langue française was held at Geneva, August 1-6, 1907. This is the second time only that the meeting has been held outside of France. After the usual addresses of welcome and replies, the president, Prof. Prevost, described the work of

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himself and his assistants, Drs. Batelli and Samaja, in producing epileptiform convulsions by means of electricity applied to the brain. Following, Dr. Ladame, of Geneva, read a paper on Dr. Gaspard de la Rive, of Geneva, an eminent alienist who lived from 1770 to 1834, and who occupied a foremost place in the care of the insane. In the afternoon, Prof. Gilbert Ballet spoke of medico-legal experts and their responsibility, following which there was a long discussion. Other papers of medico-legal interest were read by Clark Bell, of New York, and by Dr. Paul Archambault, of Tours. These concluding the work of the day, which was followed by a boat ride on Lake Leman with a dinner.

The next day a visit was paid to the asylum of Bel-Air, at Chêne-Bourg, where a session was held at which seven papers were read. Luncheon tendered by the city council was served at Chêne-Bourg, and the afternoon meeting was held at the University where Dr. Antheaume made his report on the "Periodic Psychoses," and was followed by M. Dupre, who spoke of the influence exerted upon the genius of Schumann and Hugo Wolff by periodic attacks of insanity.

The next morning Prof. Prevost gave a demonstration after which three papers were read, and a visit was then paid to the hydrotherapeutic baths of the Hotel Beau Sejour where luncheon was served.

After this the congress divided into two sections, one on psychiatry, the other on neurology, and separate meetings were held.

A number of dinners, luncheons, and excursions were given in connection with these meetings, and on the fifth, the congress adjoured to Lausanne, where M. Claude made his report upon hysteria, being followed by M. Schnyder on the same subject.

The last day of the congress, August 6, was given over to an excursion to Caux.

The next meeting will be held at Dijon, under the presidency of M. Cullerre, where M. Laignel-Lavastine is expected to report upon the "Mental Troubles due to Abnormal Action of the Internal Secretory Glands; M. Berger, on "Diagnosis and Clinical Forms of Neuralgia"; and M. Charon, on "Care of Abnormal Children."

[Jan.

THE PSYCHIATRIC SITUATION IN ONTARIO.—The first definite step in the organization of the new department of psychiatry in the University of Toronto was taken in November, when it was announced that Doctor C. K. Clarke had been appointed by the board of governors, professor of psychiatry. The further announcement of the appointment of two demonstrators in the same department was also made: Drs. W. K. Ross and J. G. FitzGerald, of Toronto Asylum, being the appointees. The actual significance of this step is considerably greater than may be apparent because it really foreshadows early action on the part of the provincial government in establishing a psychiatric clinic.

From the above it will be seen that psychiatry is coming into its own in Ontario where a fair-minded government has been found willing to deal with affairs in the broadest possible fashion.

THE INQUIRY AT WARD'S ISLAND.—Probably most of our readers learned through the daily press some time since that charges had been made of brutality existing at Manhattan State Hospital, and an inquiry ordered, but the fact that the charges were not sustained has not been given the same prominence. The following editorial from the *New York Evening Sun* of December 26, 1907, is reproduced in this place because it is an unusual thing for a daily paper to give so much space to a collapsed sensation, and also because we are glad to be able to show in this manner that the charges were not sustained.

The official inquiry into the allegations of brutality at the Manhattan State Hospital is now ended, and though the report has not been published, the commissioners in lunacy intimate clearly that the charges against the attendants were not confirmed. This is fortunately the result in the great majority of similar investigations after the charges have been carefully examined.

The frequency with which accusations of cruelty are brought against attendants in hospitals for the insane is apt to make a great impression upon the public mind, and the acquittals which usually follow a trial are almost always greeted by some hostile critics with cries of "whitewash." A very little reflection, however, will convince any one of the common understanding that complaints of this sort must always be of frequent occurrence in any asylum. Setting aside the considerable number of patients in every large asylum who suffer from delusions of persecution and are always making most monstrous, and often the most ridiculous and impossible, accusations against their neighbors—setting them aside, it must be remembered that among the insane there are many who are violent and dangerous and that with the best will in the world it is not always possible to deal with them tenderly either for their own safety or for the safety of those about them.

When such a patient in a maniacal outbreak puts on the strength of two or three ordinary men and is bent upon destruction it is sufficiently clear that a certain degree of force is necessary to restrain him. Nor is it at all doubtful that on such occasions his own violence, together with the efforts of those whose duty it is to hinder him from harming himself or others, must sometimes result in bruises, nor can any one who knows the difficulty of controlling these cases wonder at an occasional injury.

There are, however, other accidents to be considered. Now and again we hear of broken bones, contusions, and what not, unaccounted for and consequently attributed by popular consent to unnecessary violence in the wards. Now it is well known that certain trophic disturbance in the insane gives rise to marks very nearly resembling bruises; but apart altogether from these phenomena there are the bruises so often inflicted by the patients themselves and frequently unnoticed at the time. In advanced cases of general paralysis bruises sometimes appear on the least provocation—even the slightest pressure may be sufficient—the bones are brittle and fractures or other injuries may occur without attracting the attention even of the patient himself, who is often more or less insensible to pain. All of these things must be borne in mind when we hear of circumstantial evidence of "beating" and other forcible discipline in hospitals for the insane.

Finally, allowance must be made for the misunderstanding of inexpert observers. It appears on this occasion objection was made to the continuous bath as a barbarous and inhuman method of treatment. The full report of the investigation not having been published, we are ignorant of the precise grounds upon which it was criticised, but certainly the majority of psychiatrists are in agreement about the value of the bath as a hypnotic or sedative in the treatment of disturbed cases. Even in hospitals where restraint of any sort is frowned upon hydrotherapeutics are regularly resorted to, and it does not appear that the men in authority at the Manhattan State Hospital were accused of resorting to any extraordinary measures.

It is well that the commissioners should call attention to the position of the attendants and the nurses in the State hospitals. Their duties are important, and in consideration of their responsibility they are surely not overpaid.

THIRD MEETING OF BELGIAN NEUROLOGISTS AND PSYCHIA-TRISTS.—This meeting was held at Antwerp, September 27, 28, and 29, 1907. The last day was given over to social diversion, no papers being read that day. Interest was especially shown in the reports by Dr. Debray on La déviation conjuguée des yeux, by Dr. Crocq on La situation du médicin d'asile en Belgique, and by Dr. Hollander on L'apraxie. The sessions were well attended, and the meeting seems to have been quite as successful as those previously held.

DEATH OF DR. ORDRONAUX.—It is with a sense of personal loss that we record the death of Dr. John Ordronaux, which occurred on January 20, at his residence, Glen Head, L. I., from apoplexy. Dr. Ordronaux was born August 3, 1830, received his A. B. from Dartmouth in 1850, graduated in law from Harvard in 1852, and in medicine from the Columbia University, National Medical College, in 1859. He was probably best known to our readers as the first commissioner in lunacy of the State of New York, having held that office from 1872 to 1882, and as the author of papers upon medical jurisprudence.

A more extended notice of his life and work will appear in a future issue of the JOURNAL.

Book Reviews.

Publications of Cornell University Medical College. Studies from the Department of Neurology. Vol. II. (New York City: 1907.)

Like the first volume this is made from reprints of articles by Drs. C. L. Dana, J. Ramsay Hunt, M. G. Schlapp, and A. S. Leverty, who are connected with the department of neurology of Cornell Medical College.

As an introduction, Dr. Dana has written a brief account of the manner in which instruction is carried on in his department, to which Dr. Leverty adds a summary of the cases which have been treated in the dispensary during the last six years, and a description of the method of filing histories. It is interesting to note that 644 psychoses of mild or early type were treated, including 207 cases of alcoholism, 90 of paresis, 96 of dementia præcox, 35 of manias and melancholias, and 14 of senile psychoses. The average number of mental cases per year is thus 107, which is a sufficiently large number for teaching purposes.

The papers are all of considerable interest and of great merit. Two papers by Dr. Hunt on herpetic inflammations of the geniculate ganglion are of special interest to neurologists, while Dr. Dana's papers on paraepilepsy and psycholepsy, and on "The Limitation of the Term Hysteria" contain much that is of value to psychiatrists.

All will welcome this convenient collection of papers from the above writers. W. R. D.

Functional Nervous Disorders in Childhood. By Leonard G. Guthrie, M. A., M. D., F. R. C. P., etc. Oxford Medical Publications: London, Herbert Froude, and Hodder & Stoughton. (New York, Oxford University Press, 1907.)

In many respects this is the best book that has been written on the functional nervous disorders in childhood, and it is to be hoped that it may have a large sale. Every general practitioner should read it, for few of them understand the subject and recognize its importance. There is so much good sense in this volume, and so much that would be of value to parents, that Dr. Guthrie ought to be induced to remould it in small form for the use of mothers, fathers, and school teachers. In his preface the author states "I may at once disclaim all pretentions to scientific treatment of my subject. The lectures were not didactic when delivered, nor are they *ex cathedra* now; they were intended to promote discussion and to excite interest in the medical aspect of the twentieth century neurotic child." This these lectures will certainly do, and if the author's treatment is not scientific in the narrow sense of the word, it is all the more valuable from his broad views, which are sound and generous, and from his ability in setting forth clearly the case of the poor neurotic child.

R. N.

Physicians' Visiting List for 1908. (Philadelphia: P. Blakiston's Son & Co.)

This list presents its usual attractive form and is as conveniently arranged. It seems to us to be one of the most satisfactory lists that are on the market. W. R. D.

Anatomy of the Brain and Spinal Cord with Special Reference to Mechonism and Function. For Students and Practitioners. By Harris E. Santee, M. D., Ph. D., Professor of Anatomy in the College of Physicians and Surgeons, Medical Department, University of Illinois; Professor of Anatomy in Jenner Medical College, Chicago; Member of Association of American Anatomists. Fourth edition. Revised and enlarged. (Philadelphia: P. Blakiston's Son & Co., 1907.)

The following quotation from the preface gives the author's plan of the work: "Being designed for a text-book, the subject matter is presented in the order found convenient to the dissector. The description proceeds from the gross structures to the constituent neurones in each successive region. Wherever the embryology will assist the student to comprehend the adult forms, the development is briefly given in the text; but a special chapter is also devoted to embryology, which presents a concise and connected statement of the development of the entire brain and spinal cord. The special objects held in view throughout the book are the location of functional centers and the tracing of their afferent, associative and efferent connections. Particular emphasis is laid upon the origin, course, termination, and function of conduction paths as they are met in the regular study, and the more important and better known of these paths are summed up in a final chapter on the tracing of impulses. Function is everywhere correlated with structure; and so far as present knowledge permits, the function of each group of neurones is given in connection with its anatomical description."

It can easily be conceived that a work which carries out the plans which are outlined above will give the student a clear and thorough idea of the structure and functions of the nervous system. In every branch of medicine it is becoming more important that a knowledge of the nervous system is essential to a proper understanding of the human body, and this work seems to us to be up to date and to be written in a clear and simple style so that one is not bothered in reading with untangling involved sentences. Then, too, instead of arbitrarily learning a structure we have associated with it its function so that the knowledge may be retained in memory

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more easily. All can appreciate this who have had to make these associations themselves.

The book contains 431 pages so that the subject is treated fully and does not resemble a compend. An index of 21 pages seems to fully fill its somewhat important rôle. There are 128 illustrations of which 33 are printed in color, many of these being original, but the majority being copied from other works. While apparently they amply illustrate to the student with his dissection before him, to him who is not so fortunate, a few more would not be amiss. Mechanically the book is well done, but the book is marred by the inclusion of a page of errata, 14 in all, which should not have been overlooked in proofreading.

The book is a most excellent treatise on the anatomy of the brain and spinal cord, and is to be recommended to all seeking for a work on the subject. That it is in the fourth edition argues for its past success, and we are sure that this will continue with the present.

W. R. D.

Third Annual Report of the Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis. February 1, 1905, to February 1, 1906. Edited by Joseph Walsh, A. M., M. D. (Philadelphia: Henry Phipps Institute, 1907.)

This report is always a most interesting one and the present volume does not fall behind its predecessors. It comprises 16 separate parts by various members of the staff, many of them upon special medical or pathological subjects. That which is of greatest interest to us is the report of D. J. McCarthy upon the "Neurological Work of the Year," in which besides detailing the results of examination of the central nervous system of 32 cases which came to autopsy there have been recorded the nervous manifestations of 176 cases, of which 65 were in the house and 111 in the dispensary. This comprised a history of nervous diseases in the family, a history of insanity in the family, mental attitude, sleep, dreams, memory, delusions, muscular power, coordination, reflexes, cranial nerves, vasomotor tone, Von Graefe sign, retraction of eyelids, and disturbance of the sympathetic system. This report contains much that is of interest to the alienist, and the parts relative to heredity and to the mental attitude seem to us to be very valuable summaries.

The report contains 404 pages, including the index of 18 pages, and is uniform with previous issues, being well printed and attractively bound in grey paper. W. R. D.

Abstracts and Extracts.

Die Heredität bei Dementia praecos. Von Ryssia Wolfsohn. Allgemeine Zeitschrift für Psychiatrie, Bd. 24, heft 2 and 3, s. 347.

This is a careful statistical study of 647 cases of dementia præcox which were admitted to the Irrenanstalt Burgholzi from the beginning of 1898 until the end of 1905. The total number of cases admitted during this period was 2215, so that the cases of dementia præcox formed about 30 per cent of the total admissions. Ninety per cent of the cases of dementia præcox were found to have nervous or mental diseases, alcoholism, or some other form of heredity in direct or indirect line.

It is impossible in an abstract to give all of the interesting results obtained, but the following conclusions of the author give the gist of the article:

I. About 90 per cent of cases of dementia præcox show hereditary taint in both sexes.

2. Of the four hereditary factors insanity is most frequently (about 64 per cent) met with, followed by nervous diseases, alcoholism, and other forms of hereditary taints.

3. The heredity was combined in about 34 per cent of the cases studied, the most frequent combinations being insanity and alcoholism, and insanity and nervous diseases.

4. A distinct influence of the hereditary taint on the form of the disease cannot be proven when the taint is alcoholism, nervous disease, or other forms of hereditary taint. While by a slight difference the catatonic form is the most and the paranoid the least affected by taint of insanity.

5. The influence of the taint has no striking effect on the issue of the first manifestations of dementia præcox. W. R. D.

Les Auras Visuelles des Épileptiques. By A. RODIET and F. GAUS. Archives de Neurologie, Vol. II, p. 177, Sept., 1907.

The authors define the aura as the sum of the phenomena at the beginning of the attack. These phenomena are motor, sensory, or intellectual.

The visual phenomena reported by various authors are reviewed, and the authors report six personal observations.

CASE I.—Madame Ga., aged 27 years. The aura which precedes the attack is a voluptuous sensation which the patient feels from the knee to the abdomen. At the same time all is black before her eyes and she loses consciousness.

CASE II.—Mile. Us., aged 20 years, often has a visual aura consisting of frightful hallucinations very like those of alcoholics in which the patient sees mice and serpents.

CASE III.—Mile. R. de C., aged 33 years. The patient has fear of the devil which is represented as clothed in red and surrounded by red flame. She does not like red.

CASE IV.—Mile. Mi. About an hour before the attack she experiences a sensation as if someone had thrown salt or vinegar in her eyes. At the same time there is a whistling in her ears and her head becomes heavy as if sleepy. A few seconds or minutes before the attack there is an impresion of icy cold in the eyes and vision is disturbed as if it was dark. There is an impression of twilight and the attack begins with a cry.

CASE V.—MIle. Ta., age 17 years on admission. Some minutes before the attack she feels a blast of air from the abdomen rising to the bad. She then seems to see fire and to avoid this she runs a hundred meters. She then sees behind her some one who resembles God with a little figure in his beard, gentle eyes, and holding a pistol in his hand. She hear something say she will never be cured, and loses consciousness.

CASE VI.—M. Math., aged 35 years. Before the attack he experiences visual impressions so strange that he cannot relate them. He sees something very hard, very painful, very bad, coming toward him, which causes fear, but of which he cannot distinguish either the form or color. Some times he strikes his eyes and turns in order to avoid seeing it, and from this moment amnesia is complete.

The authors state that these visions are most frequently frightful and the patients experience great fear. The movements of defense are be cause of the impulsive unconscious acts which render the epilptic dangeross RECESTRA

Further Investigations on the Galvanic Phenomenon and Respiration B Normal and Insane Individuals. By CHARLES RICESHER and C. G. JUNG. The Journal of Abnormal Psychology, Vol. II, p. 189, Dec. 1907-Jan., 1908.

The experiments described are a continuation of work begun in the Psychiatrical Klinik in Zurich to determine the value of the galvanometer and pneumograph in psychological work and especially in abnormal psychology.

For many years it has been known that the emotions caused a change in the electrical resistance of the body. This was first pointed out by Ch. Féré in 1888, and since then various observers have noted it, but 10 definite systematized work has been done until the present.

In the experiments, both normal and insane, educated and uneducated individuals were used as test persons. In the normal test persons the decrease in resistance caused by various physical and psychical stimuli varies greatly and seemed to vary as to the temperament of the individual

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and to the interest taken. By concentrating his attention on some difficult mental problem the individual could disassociate himself and prevent changes in resistance.

The curves obtained by the pneumograph in normal test persons differed from those obtained by other authors and lead to the conclusion that no definite rule could be formulated for the changes in respiration caused by the emotions.

The abnormal test-persons consisted of patients suffering from epilepsy, dementia præcox, general paralysis, chronic alcoholism, alcoholic dementia, and senile dementia. In all diseases in which there was mental deterioration there was a decrease in the changes in electrical resistance caused by the various stimuli. In catatonic stupor and in extreme dementia there was practically no change. In acute alcoholics and in general paralytics in a state of euphoria the changes were greater than in the normal testpersons. In one case just emerging from an attack of delirium tremens the changes produced in the resistance by the various stimuli were very great.

In all cases psychical stimuli cause a less galvanic fluctuation than do physical and this is especially marked in those cases showing intellectual deterioration.

The pneumographic results in the abnormal test-persons were practically those found in normal cases.

That the galvanic fluctuation was caused by the psychical and not the physical factor of a stimulus was shown by the facts that:

The reaction was greatest when the stimulus was such as to call up a great number of associations.

A stimulus causing doubt and perplexity was accompanied by a marked galvanic fluctuation.

In dementia where associations were few the reactions were correspondingly decreased.

The physical intensity of a stimulus bore no regular relation to the size of the galvanic reaction.

The conclusions of the authors were:

I. The galvanic reaction depends on the attention to the stimulus and the ability to associate it with other previous occurrences. This association may be conscious, but is usually subconscious.

2. Physical stimuli as a rule cause greater galvanic fluctuations than do the psychical in our experiments. This may be due to the fact that they occurred before the psychical stimuli, early stimuli nearly always causing greater reactions than do later ones.

3. While the normal reactions vary greatly in different individuals, they are as a rule always greater than pathological reactions.

4. In depression and stupor the galvanic reactions are slight, because attention is poor and associations are inhibited.

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5. In alcoholism and in the euphoric stage of general paralysis the reactions are high because of the greater excitability.

6. In dementia the reactions 'are practically nil because of the lack of associations.

7. The reactions show great individual variations and within certain, rather wide, limits are entirely independent of the original bodily resistance.

The pneumographic results may be summarized as follows:

I. The inspiratory rate varies according to the individual and no general rule can be given.

2. The amplitude of the inspirations is generally decreased during the rise of the galvanic curve.

3. This decrease in the amplitude, however, has no relation to the height of the galvanic curve, but varies according to individuals.

4. In cases of dementia where there is no galvanic reaction the changes in the respirations exist, but are very slight. RICKSHER.

Ophthalmo Reaction en Psychiatrie. Par Mm. G. RAVIART, médicin en chief, et LORTHIOIS, GAYET et CANNAC, internes de l'Asile d'aliénés d'Armentières. L'Echo Médical du Nord, An. 11, p. 565, 1 Dec., 1907.

Those who know the difficulties attending the diagnosis of pulmonary tuberculosis in certain of the insane will understand the appreciation which has been given the new method of investigation introduced by Calmette. Also certain forms of mental disturbance are apparently due to tuberculosis, so that any investigation of the subject will naturally be divided into two parts. First, the frequency with which tuberculosis occurs among asylum patients, and especially the relationship to their age, and the length of their residence in the asylum. Second, the relationship to various mental diseases which is of interest from an etiologic viewpoint.

The subjects of the present investigation were 623 adults and 66 children from five to sixteen years, none of whom showed the slightest sign of ocular inflammation. One drop of Calmette's tuberculin solution was dropped into the left eye and some of the patients were observed for eight days. This prolonged observation was made on account of the different reactions found. The reaction occurs so frequently in 24 hours that this duration has been fixed by Calmette, but the reaction may be delayed or prolonged.

Among the 623 adults the reaction was positive in 272, negative in 328, and doubtful in 23. Among the 66 children the reaction was positive in 42, negative in 21, and doubtful in 3. That these figures are so high is doubtless due to the frequency with which pulmonary tuberculosis is met with about Lille and among the insane.

The following table gives the results in patients grouped according to length of residence.

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	Adults.			Children.		
Longth of Residence.	Positive	Negative.	Doubtful.	Positive.	Negative.	Doubtful.
From o to Iyr.	36	79	II	4	II	0
" I to 5 yrs.	81	IOI	6	21	6	I
" 5 to 10 "	69	62	4	10	2	I
" IO tO 20 "	59	62	2	7	2	I
More than 20 "	27	24	0	—	-	_

The reaction upon cases of psoriasis, anal fistula, cold abscess, otitis, white swelling of the knee, and sero-fibrinous pleurisy is reported with variable results.

The majority of the positively tuberculous reacted, and of four tuberculous cachectics only one who died 20 hours after the instillation did not react.

Three cases in whom the reaction had been observed came to autopsy and showed no tuberculous lesions, but five others confirmed the reaction.

The reaction in 620 cases grouped according to mental disease is shown by a table and graphically by curves. In paranoia, paresis, alcoholism, and epileptics the reaction was positive in 30 to 35 per cent; in senile dementia, 37 per cent; in imbecility, organic dementia, and debilité mentale, 40 to 45 per cent; in dementia præcox, 60 per cent; in idiocy, 64 per cent, and in secondary dementia (dementia vesanique), 74 per cent. This last group comprising patients who have been insane for a great many years and have been resident in the asylum for a long period.

The question as to the etiologic importance of tuberculosis is not answered, there lacking sufficient proof upon this point. W. R. D.

Gustatory Audition: A Hitherto Undescribed Variety of Synæsthesia. By ARTHUR H. PIERCE. The American Journal of Psychology. July, 1907.

The case reported by the author is that of a young woman about to graduate from college who, as far as she can tell, has had these experiences all her life, but the fact that they were peculiar to herself only came to notice about four years ago. Two sense defects are noted in the subject: (a) she is slightly deaf, and (b) she is anosmic.

A list of words are given with their gustatory equivalents. These equivalents refer to the fact that the subject feels as if she were actually having in the mouth the described substance, or some substance possessing the equality indicated. All the possible qualities of gustatory, cutaneous, and tactual-motor experiences are represented. As examples:

Alice-Spanish cream, with sprinkling of sugar.

Amy-Ketchup (especially vivid).

Amethyst—Bitterness.

Belfast-Juicy beefsteak.

Boy-Gum drops.

Box-Nothing definite.

Cause-Hot, soft corn-bread.

Cox-Sensation of irritation in throat.

Dice-Cool, salty.

Eunice—Intensely sour. Draws the jaws so that there is decided pain. Lida—Mutton tallow.

Ralph-Moist, cool. Raw cucumbers (vivid).

Sarah—Cold metal between the lips.

Silas-"Si" is indefinite; "las" is candy.

A table of representative words yielding the various sense qualities is as follows:

Sweet: Dolly, Irving, joy, parlor.

Sour: Eunice, Inez, Italy, Josephine.

Salt: Idle, Judith.

Bitter: Amethyst, Browning, Harriet.

Cold: Noise, Sarah, William.

Hot: Cause, discrete.

Pressure: Ethel, Hall.

Pain : Eunice.

Tactual-motor: Ben, Bess, Clara, Kitty, John.

The synæsthesias are often experienced in the ordinary course of listening to conversations, lectures, etc. They vary when the word is pronounced differently. A state of hunger favors the synæsthesia, fatigue impedes it.

Various nonsense syllables, foreign words, and non-vocal sounds also produced the synæsthesia. The question as to whether the synæsthesia is real and not a case of artificial association due to a lively dramatic fancy is answered by saying that the subject is an accurate, careful, and discriminating person, and that the gustatory part of the experience comes quite unsolicited. It is found, not manufactured. The food-equivalent of the gustatory qualities experienced must often be sought for with some diligence before an adequate description of the matter can be given to the questioner. Many of the experiences are given quite definite localizations in the mouth. When in doubt, the subject has a way of slightly pressing the cheek inwards with the fingers until the satisfactory equivalent comes. The erratic nature of the matter, many words and sounds evoking no "tastes" whatever, is like that of the well-known syngesthesias. The subject testifies that the experience has a character intermediate between the reality of sensation and the unreality of fancy, imagined tastes seeming to be in the head rather than in the mouth. The equivalents possess a constancy hardly possible apart from a true synæsthesia. After an interval of six months a number of words were given at random from the original list, with the result that the identical equivalents were described in nearly the same language. RICKSHER.

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Calmette's "Ophthalmo-reaction" for Tuberculosis: A Suggestion of Caution in its Use. By ALEX. NAPLER, M. D., F. F. P. S. G. Glasgow Medical Journal, Vol. LXIX, p. 4, January, 1908.

The author quotes Dr. Maitland Ramsay (Glasgow Medical Journal, Vol. LXVIII, p. 515, December, 1907), who, writing of ocular tuberculosis, states of the ocular reaction that it is "entirely local" and refers to its "freedom from danger"; and Dr. W. MacLennan (British Medical Journal, December 7, 1907, p. 1642), who says that "it produces no constitutional disturbance, and, locally, usually nothing more than a slight ocular discomfort and lachrymation," and "to the eye of the healthy it is bland." Also from an article (Lancet, December 7, 1907, p. 1630) in which it is stated that the new test is harmless.

He believes that the above encomiums must be accepted with some reservation, as in two cases of advanced pulmonary tuberculosis he obtained no reaction after frequent trials and in one case (a small bunch of tubercular glands in the posterior triangle of the neck) the inflammation was "very acute and severe, attended by brawny infiltration of both eyelids, much chemosis, and a copious, stringy, muco-purulent discharge-a condition which had not quite subsided at the end of a fortnight." Another case, a man of 50, suffering from peripheral neuritis, had a few drops of sterile tuberculin solution instilled into the right eye October 21, with no reaction. October 26, one-tenth mgr. of new tuberculin was injected under the skin, with no reaction, either general or ocular. October 29, I mgr. of new tuberculin reaction was injected, again without result. November 2, 5 mgr. new tuberculin were injected subcutaneously, and the next day, or 13 days after the instillation into the right eye, this eye, and this eye only was found to be acutely inflamed. Both eyelids were markedly ædematous, there was much swelling of the conjunctiva, and there was copious secretion. Accompanying there was a mild general reaction, marked by slight rise of temperature. Another case, a girl of 17, under treatment for lupus vulgaris, had a few drops of the sterile tuberculin solution instilled into the left eye October 11, this being followed by a slight conjunctivitis. October 23 treatment by new tuberculin hypodermically, which had been suspended, while the lesion was curetted and cauterized, was resumed, a fifth milligram being given, and I mgr. on the 26th and 29th, none being followed by any local reaction. On November 1, or 21 days after the instillation into the left eye, I mgr. was injected under the skin and was followed in an hour or two by a "sharp conjunctivitis" involving only this eye. On November 5 and 9, and after each subsequent injection the inflammation of the left eye returned.

The author believes that in these two cases there is evidence of a local change which responds to the introduction of a moderate dose of tuberculin into the circulation, and that this change is not evanescent. Whether this local irritability is met with only in the tubercular subject or also in the nontubercular, can only be answered by future experience, but meanwhile those using this test should bear in mind that it is not quite harmless.

W. R. D.

The Tuberculo-ophthalmic Reaction of Calmette. Editorial (signed E. M.) American Journal of Surgery, Vol. XXII, p. 25, January, 1908.

Mention is made of the method of diagnosis introduced by Koch, and its failure of general use because the opinion some have that it is not entirely harmless, and because of the severe effects of a positive reaction. Von Pirquet's method of vaccination is then mentioned, and Wolff-Eisner's proposal to use a 10 per cent solution of tuberculin instilled in the eye. Calmette (Presse Medicale, Vol. XV, p. 443, 1907, also Echo médical du nord, Vol. XI, p. 327, 1907) first published a definite method of diagnosis, using a 1 per cent solution of tuberculin. This was prepared by precipitating Koch's tuberculin with 90 per cent alcohol, washing, drying and making a 1 per cent watery solution from the powder.

Since the appearance of the above, Comby has published (Presse Médicale, November 20, 1907) the results in 300 cases, Cohn (Berliner Klinische Wochenschrift, November 25, 1907) in 310 cases, and Boyd (Scottish Medical Journal, December 19, 1907), Austin and Greenbaum (Lancet, November 23, 1907), Hutchings (Therapeutic Gazette, December 15, 1907), and Baldwin (Journal of the American Medical Association, December 14, 1907) in lesser numbers. The consensus of opinion seems to be that, while a positive reaction renders a diagnosis highly probable, a negative reaction does not exclude it. Baldwin believes that the 1 per cent solution is too strong and a half or two-thirds per cent solution should be used. W. R. D.

L'ophthalmo-réaction dans le diagnostic de la tuberculose. Par POULARD, Ophthalmologiste des Hopitaux. Progres Médical, T. XXIII, p. 909, December 28, 1907.

The author first speaks of the general reaction following the subcutaneous injection of Koch's tuberculin, of the reaction following cutaneous application of the same, and finally of the ophthalmo-reaction, giving the technique and describing the reaction in some detail. He points out that the reaction is not observed in certain cases of advanced tuberculosis, but considers this a slight disadvantage as it is not useful in these cases, but especially in the early or local cases. It still remains to be proved that the reaction cannot be obtained in subjects not tuberculous. The dangers to its use are few, but exist. The reaction may be very intense, the conjunctivitis may persist for weeks, or be accompanied by lesions of the cornea. When applied to an eye already tuberculous the condition is aggravated, and it is questionable whether the reaction should be used for the diagnosis of ocular tuberculosis. He gives the following bibliography: Wolf-Eisner. Soc. de Medicine de Berlin, Mai 1907 .- Calmette. Compte rendu de l'Acad. des Sciences, juin, 1907.—Letulle. Compte rendu de la Soc. de Biol., 22 juin 1907.-Comby. Arch de Med. des Enfants, No. 10, Rev. Generale, Soc. Méd. des Hôp., juillet 1907 .- Dufour. Soc. Méd. des Hôpitaux, juin 1907 .-- Lépine (J.). Ophtalmo-réaction en psychiatrie. Compte rendu de la Soc. de Biol., 27 juin 1907 .- Sicard et Descomps, Soc. Med. des Hôpitaux, 14 juin 1907. W. R. D.

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Twenty-seventh Report of the Superintendent of the Iowa School for the Deaf at Council Bluffs to the Board of Control of State Institutions, for the year ending June 30, 1906.

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AMERICAN JOURNAL OF INSANITY

ON THE MECHANISM OF GLIOSIS IN ACQUIRED EPILEPSY.

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(From the Laboratory of the Danvers Insane Hospital.)

The present paper undertakes to describe the histology of certain cases of epilepsy from a functional point of view. The essential novelty of this description consists in the emphasis laid upon certain mechanical characters of the central nervous tissue in disease. The resulting theory might, perhaps, be termed briefly a microphysical theory, in the sense that it seeks a logicalbasis for the epileptic discharge in certain intimate alterations of pressure in the central tissues. But the term microphysical, besides being a little pretentious in view of our dense ignorance of the nature of nerve impulse, is also too narrow in view of further interpretation. That is to say, however convincing the data in the group chosen—late epilepsies—may appear, the structural considerations which develop are analogous and not identical with conditions in epilepsy at large.

The present study, whether it be termed microphysical, cytological, or what not, lays the emphasis no longer upon characters of nerve fibres or of nerve cells or perhaps of their adnexa. The essay would rather call attention to certain pericellular conditions, giving rise to intimate alterations of pressure. At the present time we can merely describe these conditions and leave their translation into terms of volume energy and of surface energy to the future.

The endeavor to describe pericellular conditions along these lines seems to be in a direct logical line with modern physiological

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work. No one has brought out more clearly than Sherrington the importance of what happens at the confines of the neurones, the synapses,¹ or (perhaps still more happily) the interneuronal surfaces of separation.

At these interneuronal or, more broadly, intercellular surfaces of separation a wealth of reaction is possible. A somewhat formidable list of their possible activities is offered by Sherrington. Thus they "might restrain diffusion, bank up osmotic pressure, restrict the movement of ions, accumulate electric changes, support a double electric layer, alter in shape and surface-tension with changes in difference of potential, alter in difference of potential with changes in surface-tension or in shape, or intervene as a membrane between dilute solutions of electrolytes of different concentration or colloidal suspensions with different sign of charge."¹ All this is perhaps as unknown as it is tantalizing; but it cannot be denied that histology can play some part in describing alterations which affect these crucial surfaces of separation, and so lay a foundation for future physical interpretation. Therefore, although modern interest in the synapse or physical surface of separation between neurones has been a physiological interest, the histologist must certainly enter the field, and define carefully what are the types of structural alteration in pericellular and intercellular regions.

Before describing the cases which underlie this study, let us briefly review, in the light of the considerations sketched above, some of the dominant hypotheses in the field of epilepsy.

Since the cases which form the immediate basis of this report are cases of late epilepsy, in which there is no proof of hereditary antecedents, it will be necessary to include in our review the general subject of organic epilepsy. Indeed, inasmuch as our argument hangs upon the possibility of parallel conditions in organic and in so-called essential epilepsy, it is important to bring out the part played by organic cases in the pathology of epilepsy.

The point of view of Hughlings Jackson has been chosen for the first consideration, both because these ideas underlie a somewhat large portion of modern work and because they are free from fashionable and perhaps perverse distinctions between the so-called structural and the so-called functional. After a review of the Jacksonian positions, a number of later contributions will be very briefly taken up.

The service of Hughlings Jackson to epilepsy consists, not merely in the definition of the cortical or partial epilepsy usually termed Jacksonian, but also in the suggestion of general principles of use in the definition of genuine epilepsy. There remains much that is physiologically sound in the *three-level theory* of Hughlings Jackson as applied to the nervous system at large; and the paroxysmal *discharge in the highest level* amongst nerve centers as the physiological basis of genuine epilepsy must stand as an important suggestion for the pathogenesis of epilepsy.

The ideas of Hughlings Jackson as particularly applied to epilepsy have been given expression by a writer in Tuke's Dictionary of Psychological Medicine.⁴ Anderson here maintains that there may be an epilepsy taking rise in the lowest nervous level, i. e. the spinal system together with its upward prolongation as far as the oculomotor nuclei. This *lowest level epilepsy* is exemplified in the respiratory or "inward" fits of children. The spasmodic bulbar disease of children, laryngismus stridulus, belongs to the same group. Anderson is inclined to include spasmodic asthma in the adult as an affection of this group showing bulbar instability.

The middle level of Hughlings Jackson is concerned with more frequent and definite epileptic phenomena, those, namely, of the partial type named Jacksonian. The limits of the middle level have never been laid down with exactitude. The middle level includes the corpora striata and the motor area of the cerebral cortex as well as much of the sensory cortex, but excludes at any rate the prefrontal and occipital parts of the cerebral cortex. Paroxysmal discharging lesions in the middle level produce *epileptiform seizures* which, though they may be accompanied by unconsciousness, have no essential relation to unconsciousness and never begin with it. These seizures are associated with gross cortical lesions, and begin in the midst of clear consciousness with a localized spasm and, spreading in quite definite fashion, lead eventually to unconsciousness. In Jacksonian epilepsy loss of consciousness is an incident merely.

Not so in the case of genuine epilepsy, which is a matter of the highest nervous level and exhibits unconsciousness as the dominant feature. The highest level is situated in the anterior or prefrontal and posterior or occipital regions. These centers form a sensorimotor mechanism and are also the organ of minda sensorimotor mechanism, in the sense that they represent more ments and impressions in complex combinations, and the organ of mind, in that consciousness arises and declines in connection therewith. The initial unconsciousness of genuine epilepsy is a sign that a discharge has taken place in the highest nervous level. The sequent universal convulsions signify a spread downward of the discharge to lower levels. Even the bulbar part of the lowest nervous level is likely to be affected for a time, but this part of the mechanism recovers first.

As a matter of course the three-level theory of Hughing-Jackson can no longer be accepted bodily. Nevertheless, however much we shift the boundaries of our levels, we must admit that epilepsy as a high-level disease presents many attractions in theory. Moreover, one point stands out clearly as a point to settle. What, after all, is a discharging lesion? Wherein does a discharge in epilepsy differ from a neural discharge of the usual type? These questions appear logically prior to the question, Where do discharging lesions occur?

In the following paragraphs brief mention is made of various contributions to the pathology of epilepsy as bearing on the mechanism of discharge. No regard has been paid to the chronology of the researches cited, nor is any effort at completeness made.

The Jacksonian three-level classification of epilepsies has already suggested how various in site of origin convulsions of this general class may be. From this standpoint the unity of epilepsy may well be called in question. The topographical method of research, successful as it has been in making out the general principles of neurology, has signally failed for epilepsy.

From the topographical point of view we have to consider: (1) the body and fluids at large, (2) the muscles, (3) the peripheral nervous apparatus, (4) the bulbospinal apparatus, (5) superior nerve centers.

1. The body at large and its fluids have been considered irom time to time as yielding poisons of secretory or excretory character which give rise to convulsions. Periodicity in production or continuous formation with explosions after accumulation for

various periods have been supposed. Examples of non-nervous conditions of alleged importance in epilepsy are the persistent thymus and status lymphaticus of Ohlmacher,⁴ the hypoplasia of aorta and great vessels of various writers, autointoxication or perverted renal secretion (paroxysmal hypertoxicity of Voisin and Péron'), the uric acidosis of Haig, the carbamic acidosis of Krainsky," certain serum properties of Ceni," and infection of fluids bathing the central nervous system (neurococcus of Bra.") Without attempting to appraise the very various values of the above suggestions, we may remark that no one of them yields insight into the method of production of an epileptic convulsion. Experimental work with injections of blood and urine, uric acid, carbamic acid, neurococci, has so far yielded little or no information with respect to the mode of production of convulsions. Nevertheless, it is conceivable that histopathological work upon the differential lines indicated in the present essay might yield results, despite the barrenness of the usual pharmacological procedures. The same suggestion obtains for work with the simple convulsions produced by alcohol and absinthe or incidentally in uremia and diabetes.

2. The *muscles*, it would appear, must actually be normal or nearly normal in epilepsy (regarded as a disease showing repeated convulsions). The fatty changes in voluntary and cardiac muscle, described by Mott[•] in the status epilepticus, can scarcely be thought to accompany each attack of convulsions. Mott's interesting finding is obscure, but may indicate the direction in which changes are proceeding in ordinary attacks of epilepsy.

It is within the range of possibility that a kind of epilepsy might be produced by a poison acting directly on muscular substance (for convulsions) and on central tissues (for unconsciousness.) It is possible that twitchings in the death agony are so produced. But the march of convulsions in ordinary epilepsy suggests a higher origin.

The case quoted by Gowers¹⁰ to show the cerebral origin of epilepsy (case of Oebeke¹¹) might be again quoted in this direction. The epileptic in question suffered apoplexy and the muscles of the paralyzed side never again shared in the hitherto generalized convulsions.

3. The peripheral and sympathetic nervous system fails to

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offer much light on the mechanism of epileptic discharges. Edge verria's suggestion concerning the sympathetic ganglia set without foundation. The existence of epileptogenous zone i certain cases (compare Hughlings Jackson's case of a "boy w had fits when his head was touched ""), and in Brown-Seguration experimental guinea-pigs " (trigeminal distribution). not to the tion certain characteristic auræ in epilepsy, suggests that peripheral nervous system may be profoundly concerned in t initiation of certain fits. The "lowest level" fits of Hugh Jackson and the "reflex epilepsies" of various writers renor difficult to exclude the thought that various irritations (per eral or sympathetic) may give rise to convulsions, provided normal checks and balances be removed from the discharge It seems difficult to conceive, however, any post apparatus. differentiation of stimulus which could effect through the interview of several neurones the characteristic convulsions of ender In any case we are left with no more insight into repetitive of vulsions than what we possess for, e. g., strychnine convulsion A consideration of peripheral nervous conditions leads us to the conclusion that some higher or central provision is necessary in maintaining the motor effects of a given stimulus beyond the The inhibition of normal period and with abnormal force. countercurrents to a given motor discharge must evidently per mit the continuance of that discharge until the exhaustion of the discharging cells.

4. Proceeding centralwards, the epileptologist has to consider the *spinal-trigeminal* type of epilepsy as produced experimentally in guinea-pigs and as observed to occur spontaneously in the offspring of the injured animals by Brown-Séquard. The grat variation in the site of the effective spinal injuries suggests that the injury may produce or liberate a substance which pass through the cerebrospinal fluid or blood of the guinea-pig ¹⁰ remote parts of the nervous system where the removal of inhertions may be brought about. The occurrence of repetitive corvulsions in the offspring without individual injuries supports the idea, since the chemical products of maternal injury may readipass through the placenta. The conception of such placental pairsage is easier to manage than the conception of direct inheritant of injured spinal cords.

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A consideration of Brown-Séquard's work consequently shows an epilepsy compounded possibly of two factors: (a) removal of inhibitions in some part of the nervous system by means of a product of the destruction of nerve tissue and (b) an effective stimulus (trigeminal irritation).

The medullary epileptic centers of Nothnagel¹⁴ and Schröder van der Kolk¹⁹ suggest again a *place d'armes* for the removal of inhibitions. The conception of such a center is not beyond the range of reasonableness; but there are as yet no sufficient histological data for arriving at any notion of conditions in these supposed centers.

5. The higher nerve centers are the favorite seat of modern work on epilepsy. Some writers, as Gowers, regard epilepsy as patently a cerebral disease, though of obscure character. It is evident, however, from our review of Hughlings Jackson, that to term a disease cerebral merely is to neglect to specify whether we deal or not with the sensorimotor and psychical mechanism. The cerebral character of epilepsy, were it admitted, carries us a short way only in the analysis.

As a fact the higher centers are certainly the loci of the most extensive and important inhibitions, so that the synaptic tissues of the cerebral cortex in particular are approached with a degree of hope. The satisfaction of this hope along anatomical lines has been considerable. The intimate effects of the gross lesions found—a task of histopathology—have been less easy to decipher. The well-worn and efficacious methods of classical neuropathology—of cerebral and spinal localization—are of less service in these directions, and of almost no service when it comes to the elucidation of non-destructive lesions.

The best effort of classical and localizing neuropathology has been spent on the possible relation of Meynert's sclerosis of the cornu ammonis to epilepsy. As an epileptogenous center the cornu ammonis ranks with Nothnagel's medullary center. The possibility, nay in some cases probability, of association between these centers and epilepsy is certain. The manner of this possible association is not clear. The usual form of critique is to point at cases without such centers and stringently require some unique and disparate center for satisfactory explanation. As a matter of fact the present superficial review indicates that we must probably accept what may be termed a manifold causation for epilepsy. If this is granted, we must evidently seek the intimate mechanism in type cases. The task is to show what may be the basis of the inhibitions necessary for the production of repeated convulsions.

An enumeration of the manifold anatomical causes which have been alleged in epilepsy is almost superfluous—foci of softening in central or temporal cortex, sclerosis of cornu ammonis, gliomata of various regions, dural endotheliomata, calvarial thickenings, chronic leptomeningitis, chronic encephalitis, focal lesions of a chronic inflammatory character (including tubercles and gummata).

So far as those who report these lesions regard them as causative of epilepsy, in the sense that internal capsular hemorrhage is causative of hemiplegia, these modes of explanation seem detined to failure.

Another path is open. In common with several other workers, the present writer feels that the proper mode of explanation must be a cytological one. Conditions at the synapses must be investigated. The methods for studying nerve tracts should be discarded for the present purpose and replaced with finer histological methods.

The histopathologists have worked to some extent in the field of epilepsy. Their findings are usually taken as secondary. Thus Adolf Meyer," in a highly critical review of the pathology of epilepsy, remarks: "Histological findings of the brain yield little that could be called causative. The occasional gliosis of the cortex discovered by Chaslin and Bleuler, and corroborated in some cases by Alzheimer, Weber, and others, and the nuclear changes shown by Bevan Lewis," are not explicable, except 25 a secondary condition." It is evident that the changes described by Clark and Prout " and by Mott " are liable to the same charge

Perhaps we should not throw out of court some of the most precious material for the elucidation of the general problem. The present writer is inclined to think that, by combining the corsideration of gliosis on the one hand and of certain stratigraphic changes on the other, a structural basis can be laid for the understanding of the inhibitory mechanism which underlies epilepsy. Before inquiring what these significant changes are, it may be well to forestall certain objections.

Thus it may be alleged that the alterations described below, being found in cases of late epilepsy, are not only of suspicious value for any special purpose, but also can obviously have no relation to the problem of idiopathic epilepsy. To the latter objection I may reply that, in the case of idiopathic epilepsy, we are often in the position of some one who had inherited the second generation of Brown-Séquard's guinea-pigs without knowledge of injuries to the first. We are obviously better off if we examine cases of epilepsy whose histories we know, with respect to date, manner of origin, and course. Naturally the conditions of inherited epilepsy are not reproduced with exactitude in these cases : but surely, were we keen enough, we could make out the elements involved in the first instance. And, if it be interposed that the hypothesis of inherited toxines is pure speculation, I reply that, after all, I do not use the hypothesis in interpretation of specimens, and the neglect of cases of epilepsy, just because they show lesions, is an unphilosophical neglect.

But the former part of the objection—viz., that the changes, being found in admittedly organic cases, have little differential value for our purpose—is more serious. To this I would urge that the data of cortex histology are at the present writing not wholly obscure—witness the work of Ramón y Cajal or the work of Campbell.^{**} That is to say, there is a certain outstanding stock of knowledge which permits us to say roughly where in the cerebral cortex and *in what layers* certain operations go on. As general topographical relations begin to be understood, there is becoming clear a certain movement in knowledge of a stratigraphical character. And, although the doctrine of inhibition isstill inchoate, we are not quite destitute of contributions thereto.

The cerebral cortex is evidently the most promising field for work, since it contains synapses of primary importance. The well-known cases (one of which was cited above) in which hemiplegia supervening in epilepsy suspends convulsions on the paralyzed side throw interest back upon the cortex. Moreover Prus^{*} has shown that painting the motor cortex with cocaine will prevent generalized convulsions, although it fails to suspend the electrical irritability of the cortex for single muscular movements.

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Now the single muscular movements are, almost beyond doubt, initiated by activity in the characteristic large cells of the precentral region (giant cells or cells of Betz). When cocaine is locally applied to the cortex (or when bromides are administered), we have to suppose either a general or else a differential diminution of irritability in the nerve cells of the cortex. In case this heightened threshold of stimulation is general, then we must suppose that electrical stimulation breaks through more speedily for the great motor cells (perhaps by reason of their relatively extensive receptive surfaces) than for the remainder of the cortex. Or in case the heightened threshold be differential, we may suppose the cocaine or bromide to leave the motor cells unaffected and to act upon the remainder of the synaptic apparatus.

Proceeding to an analysis of the functions of the motor cortex we observe, of course, tremendous gaps in knowledge. In the first place, as taken for granted above, the giant cells must be regarded as analogous to the anterior horn cells of the spinal cord and to the Purkinje cells of the cerebellum, namely, as the discharging elements for that portion of the apparatus to which they pertain. It is, therefore, by means of these cells that some kinds of epilepsy are rendered possible. The remainder of the motor cortex appears to have three possible functions (exclusive of unknown ones)-the reception of stimuli from elsewhere, and the modification of motor discharges in one of two directions. either through inhibition or through facilitation of the discharges. As for the reception of stimuli, we do not stringently require the allotment of a separate type of cell: the receptive surfaces of the motor cells could readily take up energy directly from instreaming fibers (from the postcentral gyrus or elsewhere). The functions of inhibition and facilitation seem to require more specialized apparatus. Most workers assume that these functions are performed by the outer layers (on acount of various evolutionary considerations which do not here concern us). Thus, according to this conception (which is not far removed from the current conception), the motor cells are those elements upon which the remainder of the cortical elements play, checking or hastening their impulses and perhaps modifying their force of impulse.

We considered above that the muscles must in the great majority of epilepsies be normal muscles. Just so with the motor elements and the intervening tracts: as a part of the transmissive apparatus, both spinomuscular neurones and corticospinal neurones must, to permit epilepsy, in the majority of cases be functionally normal. Just as it would be immensely difficult to procure conditions at the surfaces of muscles which would permit a simulation of the epileptic march of contractions from group to group and from limb to limb, so also would it be a complex circumstance which would permit the same event through effects wrought upon the surfaces of the anterior horn cells. Higher in the axis, such generalized disorder becomes more easy to produce, perhaps by reason of the intercalation of the cerebellum and of Monakow's tract." The possibility of a cerebellar type of epilepsy cannot be denied even on clinical evidence. But such types and the bulbar or pontine types of various authors must represent a combination of circumstances greatly less frequent than those cortical conditions which admit epilepsy. And the central phenomena which underlie the epileptic march of convulsions-the "occasional, sudden, rapid, and excessive discharge " of Hughlings Jackson-must happen in these subcortical cases within so small a space as to be extremely difficult to unravel histologically.

We have analytically arrived once more at the cerebral cortex as the most promising field for work. Therein exist the motor cells as so many filters through which the nervous currents arepoured. These filters are of a certain capacity, and they become occluded to nervous currents after a time (or so we may express the phenomenon of exhaustion). What now governs the amount and character of the currents which reach the filtering surfaces?

We must be wary of speculation concerning the nature of nerve impulse, at least for the present purpose. What have epileptologists found in the cerebral cortex which might influence the amount and character of impulses to be let through the motor cells?

In the first place, there are certain vague ideas afloat concerning the possible epileptogenous character of variations in intracranial tension. Gowers, in the latter part of his second edition, speaks with a certain ridicule of various trephinings in epilepsy based on these vague ideas. Nevertheless, for fifty years since the carotid compressions of Kussmaul and Tenner,^a these ideas have had a certain justification. We are able to reconcile these findings in several ways with more special ideas, and in case the Kussmaul-Tenner contractions are not of subcortical origin. we can still invoke the differential action of cerebral anemia upon the various parts and layers of the cortex.

Secondly, epileptologists have busied themselves with local (intracortical) vascular conditions. A revival of conceptions of this group is seen in the latest book on epilepsy accessible to me^{*} Herein J. Turner describes epilepsy as "a disease occurring in persons with a defectively developed nervous system, indicated by certain structural peculiarities, and in whom there is a special tendency to intravascular clotting; the convulsions are a symptors of the disease, and prior to a seizure a condition of cortical stass is induced by the formation of intravascular coagula." Whereas none will doubt that there are cases of epilepsy based upon intracortical thrombosis, it is probable that Turner's hypothesis is of too general a character to prove satisfactory in the end.

We now approach considerations which it is less easy or desirable to blink, namely, the very general allegation of cortical gliosis in epileptics and the cell-findings of Bevan Lewis and of Clark and Prout.

With respect to gliosis, it was developed above that the condition is usually deemed secondary. The present writer feeks that the significance of gliosis in epilepsy may be attacked on another line; the condition is altogether too generally found to permit its unequivocal acceptance as intimately related to epilepsy. Gliosis of a particular character and locus, as will be developed below, may attain a separate and important meaning for epilepsy. The gliosis required is evidently not a gliosis following destruction of motor elements or a gliosis following generalized atrophy. but a gliosis having special relation to the non-discharging part of the motor cortex.

The writer therefore agrees with those writers who allege the frequent or even virtually universal finding of gliosis in cortial epilepsies, but is not satisfied that all of these glioses have been properly localized or interpreted. Especially is this true of the superficial cortical gliosis of many writers; this, the most frequent 1908]

of significant lesions in the brains of adults, must be quite particularly investigated before accepted as epileptogenous.

The important stratigraphic contributions are those of Bevan Lewis and of Clark and Prout. The second cortical layer is the locus of lesion in both studies, and this unity of opinion is the more remarkable since the later writers (Clark and Prout) do not appear to have considered Bevan Lewis' work as extremely important.

Bevan Lewis " described certain cell changes, demonstrable by fresh methods, as characteristic of epilepsy, although found to some degree in alcoholic brain-disease. The characteristic lesion is a degeneration of the small nerve cells of the second cortical laver. The nucleus is first injured and presents in its center a refractile fatty body. Later stages of the injury may show the nucleus occupied by two such bodies, or completely replaced by one. At a stage when one-half of the nucleus is occupied by such a body, the nucleus begins to stain poorly and to be scarcely differentiated from the cell-body. The cells themselves persist for The cells of other lavers besides the second are some time. occasionally affected but not universally. The fatty bodies eventually enlarge and burst, leaving the cells strikingly vacuolated. Along with the fatty nuclear change and vacuolation, Bevan Lewis says the "neuroglia is, as long known, invariably in excess of the normal; but there is no increase of adventitial nuclei or of spider-cells."

Parallel with the above changes in idiopathic epilepsy, Bevan Lewis describes certain other findings as characteristic of epileptic idiocy, viz., inflated spheroidal cells with few processes in the same (second cortical) layer.

These stratigraphic lesions of Bevan Lewis suffer from the lack of sufficient indications whence the sections were derived. Moreover, his induction that the sign of the convulsive constitution is a disparity between nucleus and cell-body, with alteration of the nucleus, is over-bold and probably too general.

Turning to Clark and Prout,^{**} we find these writers incriminating the same second cortical layer. Curiously enough, these writers again allege characteristic nuclear changes. Most of their work appears to have been done with the motor cortex; but topographical description is for the most part lacking. Chromatolysis was found by Clark and Prout in all types of cortical cell, most marked in the large pyramidal cells of the third layer. Some cell-bodies stained diffusely; some showed finely granular chromatic substance. The type of chromatolysis varied. Vacuolation attended the chromatolysis.

The nuclei of the cells throughout showed changes, but particularly the nuclei of the small pyramidal cells of the second layer. These nuclei are swollen and granular and often without distinct membrane. In the cells of the third layer, the nuclei are often distorted, small, pale, or have "almost disappeared." The karyoplasmic network of the nucleus was often absent and replaced with a lightly staining granular mass. The nucleolusand here lodges the most remarkable portion of Clark and Prout's findings—was found displaced to one side, especially in the cells of the second layer. The nucleoli were often abstracted in the line of direction of the knife employed in cutting the sections. More than sixty abstracted nucleoli were found in a section with a surface of one centimeter.

Disregarding certain details of description, the findings of Clark and Prout correspond to those of Bevan Lewis, in so far as they point to the outer portion of the cerebral cortex, and particularly the second cortical layer as the essential locus of disease in epilepsy.

The present writer feels, as the above analysis shows, that the second cortical layer and the intermediate layers are certainly the loci to examine on theoretical grounds, since therein must he the apparatus for controlling and modifying motor discharges.

In an experience of towards a hundred autopsied cases of epilepsy of many types, the writer has examined both the nervous and the neuroglia structures with greater or less care. The phenomenon of gliosis in the subpial and perivascular regions is so constant as to be at first blush very promising. But this finding proves, if anything, too much; and indeed a sclerosis of greater or less degree is found in so many cases of nervous disease that are not epileptic that little can be induced from the finding with respect to epilepsy. The loss of a certain transmissive or associational function can probably be assumed from this superficial lesion. In passing it may be noted that the topographical analysis of lesions of this stratum, as evidenced by methods for ner-

roglia, might prove of greater service to mental disease than the more usual analysis by myelin sheath methods. As is well known, the lips and bases of the gyri are more apt to show a dense gliosis than the crowns of the gyri. In epilepsy this finding-which may be significant of difficulty in transmission from gyrus to gyrus-is not particularly striking. On the contrary, I have found rather more often a tendency to stringently focal glioses which are found upon the crowns of the gyri perhaps as often as at the bases. Plate X, Fig. 1, illustrates this finding and exhibits the cortex of the motor area (arm) overlaid with neuroglia fibrillary tissue in three distinct nodules separately by unaffected tissues. Such appearances can be found in numerous brains upon search; in certain cases of organic epilepsy, the finding is practically universal. The similar focal distribution of neuroglia tissue about a cortical vessel from the same case (Plate X, Fig. 2) shows how chary we must be of making functional inductions from findings of this character.

The writer is, therefore, skeptical concerning the significance of subpial gliosis for epilepsy, though seeing therein evidence of a transmissive disorder of great interest topographically in mental disease. This statement seems unconditionally true for the gliosis of uniform depth (or gradually augmenting at bases of convolutions) which is so often seen. And, despite the greater incidence of a more focal type of sclerosis in the writer's cases of organic epilepsy, he is wholly prepared to admit their dependence upon more general conditions than the epileptic discharge. Probably most workers would agree that such findings, if significant, are in any event secondary.

There are glioses of a different order of significance. In connection therewith the following case may be presented. The case is anatomically extraordinary and affords some little color to the well-known cornu ammonis theory of epilepsy. The epilepsy had lasted only nine weeks (although there had been shaking attacks for a year or more), and was ended by a series of convulsions, amounting to status, lasting four days. The autopsy showed intense intracranial congestion with a deep red line in the midst of the right cornu ammonis. Plate XI shows conditions in the cornu: injection, extreme overgrowth of neuroglia cells,

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from without inwards, coupled with no demonstrable loss # nerve cells, except perhaps in the outermost layer.

Before discussion, the details seem worthy of presentation:

CASE I.*-The patient, a fisherman, born in 1836, had a number of m sane but, so far as could be learned, no epileptic, relatives. Scarlet for in childhood had left him slightly deaf. There were two accidents with unconsciousness, one a fall from mast-head at 54 or 55 years with m consciousness three or four hours, the other at 65, unconsciousness from vapor on a launch. A gradual decay of faculties began at 66 years. failure of memory, depressive ideas, train of thought limited to fisher attacks of trembling without unconsciousness, irritableness. At 68 years nine weeks before death, the patient began to have fits which were first severe but infrequent (three, once with a slight shock, in the int three weeks), then grew less frequent but remained severe, and ended w four days of practically continuous convulsions with unconscious (over 400 attacks). The convulsions were general, clonic, with head # eyes turned to left, right arm flexed over abdomen, thumb dras under fingers, left hand extended by side. At times there were tore convulsions.

The autopsy (four hours after death) showed the following conditions: Intracranial congestion.

Focal encephalitis of right cornu ammonis.

Bronchopneumonia of hypostatic distribution.

Coronary arteriosclerosis with calcification.

Aortic and renal arteriosclerosis.

Chronic valvular endocarditis.

Chronic fibrous myocarditis.

Fatty myocarditis.

Chronic passive congestion of liver and kidneys.

Marked chronic external adhesive pachymeningitis.

Following is a description of findings in the head:

Calvarium not notable. Dura mater completely and firmly adherent to calvarium. Sinuses negative. Arachnoidal villi moderately developed Pia mater dark in color, with veins intensely engorged. Pia mater a little hazy and in the frontal regions distended with liquid. None of the intracranial arteries show macroscopic signs of arteriosclerosis. Weight of encephalon 1270 grams. Blood content of cortex high. There are no notable anomalies in size or arrangement of gyri. The gyri are as from as normal except that the cornu ammonis are a little firmer than usual Section of the encephalon in various parts shows intense injection of the brain substance affecting both gray and white matter. The right cornuammonis shows a grayish red linear streak running about the convolution

* I am obliged to Prof. A. M. Barrett for the material of this case. drawn from his Danvers service. in' the nerve-cell layers. This has an anteroposterior extent of perhaps 1 cm.

There is no need for the present purpose of analyzing finely the relationship of symptoms and findings in this case. Probably there exists in the literature no more demonstrative case of a virtually non-destructive lesion of the cornu ammonis which canbe reasonably related to an epilepsy which was acute. A focus of irritation existed in the right cornu ammonis which, whatever its cause, exhibited an interstitial accumulation of neuroglia cells leaving the nerve cells intact. It does not require undue stretching of the facts to allege that new and unusual surfaces of separation (to use Sherrington's phrase) had been provided for the nerve cells in question.

Suppose that these cells subserve some sensory function (as that of smell), there is little doubt that a continuous stream of impulses is impinging upon these cells causing them to discharge along their normal lines. Their discharge may occur to the point of exhaustion, or, if not so violent and continuous, the discharges of the next neuronic links may be limited by exhaustion or by counterstreams or intercurrents from other regions. At all events, whatever the details of spread (and those may well be beyond the range of investigation), the elements of an hypothesis stand out and get illustration from the above case: Fresh surfaces of separation have been interposed between sets of nerve elements. Those elements which have their currents in the forward direction, being placed under fresh conditions of intimate pressure, initiate continuous or lasting streams of impulse which set the remainder of the apparatus moving in abnormal fashion. Supposing, for the sake of illustration, that these particular intimately compressed cells formerly subserved the sense of smell, it might be inquired whether some unusual and violent olfactory stimulation at the sensory surface might not produce epilepsy. An affirmative reply is wholly permissible acording to the present hypothesis: but the combination of circumstances which would permit such a result is simply unusual. The above case of focalencephalitis of the cornu ammonis may be therefore said to demonstrate clearly but one of many possible chains of events in epilepsy.

Let us now examine a second case of epilepsy which presents 42

somewhat similar features, but which ran a chronic course and falls more readily into the so-called organic group.

Our second case is also one of unilateral cornu ammonis lesion. The symptoms in this case can be traced to an aneurysm of the left anterior choroid artery which compressed both the uncus and the superior temporal gyrus of the left side. It is fortunate that the date of this aneurysm (or at least of a hemorrhage early in the aneurysm's development) can be assigned with considerable exactitude, because the patient was taken to a general hospital at the age of 44 suffering from her original convulsions. Epileptic convulsions of mild character ensued, but there was no marked mental failure for ten years or more. The patient died a confirmed epileptic at the age of 60.

Details of the case follow:

CASE II.—M. Y., female, born in 1848. One sister insane. An aunt epileptic. Nine other brothers and sisters without history of insanity. Education poor. Mental capacity good. Married at eighteen years of age. Gave birth to five healthy children. At the age of 44, she was brought to a general hospital having "fallen in a fit" and vomited in the street. Respiration of Cheyne-Stokes' type. Pulse fair strength and volume, regular. Right external strabismus. Right pupil dilated and stationary to light. "Chewing motion of jaws." Before nightfall the next day she became rational and could answer questions tardily. Semiconsciousness was maintained without change of symptoms for twentyfour days, whereupon a sudden attack of nausea and vomiting with cyanosis and slight twitching of arms supervened. She grew gradually brighter during the next fortnight but afterwards, about seven weeks after the original admission to hospital, began to complain of a numbness in the right hand. Her general condition gradually improved and she was discharged nine weeks after her accident much relieved.

After this attack the patient had frequent slight epileptic convulsions, affecting the right side. Her mental power gradually failed. Failure began to be particularly extensive at the age of 55. The patient developed visual hallucinations at 60 years of age and grew gradually worse until she became confined to bed eight days after admission to an insane hospital.

A somewhat unusual array of skin lesions was presented suggesting decubitus in some ways, but far more extensive than usual. The left foot was greatly swollen and blistered. The pupils were equal. The right pupil was stationary to light. Sensation, as far as demonstrable, good. Knee-jerks and Achilles reactions brisk, on both sides. Brisk Babinsky reaction on right side. Plantar reaction absent on left side. Elbow and forearm reflexes exaggerated. Abdominal reflexes normal.

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Organic reflexes impaired. General muscular weakness with incoordination and inability to stand or walk. The patient's utterances were confined to a few oaths.

The patient showed no convulsions while in the hospital and died two days after admission.*

The autopsy (seventeen hours after death) showed the following conditions:

Multiple ulcers of skin (decubitus?).

Fatty change of heart muscle.

Chronic diffuse nephritis.

Slight aortic sclerosis.

Mitral and aortic valvular sclerosis.

Bilateral hypostatic pneumonia.

Chronic adhesive pleuritis of left apex.

Chronic splenitis.

Slight chronic external adhesive pachymeningitis.

Chronic internal hemorrhagic pachymeningitis of vertex in both hemispheres.

Dilatation of lateral ventricles of brain.

Flattening of convolutions.

Focal basilar arteriosclerosis.

Aneurysm of left anterior choroid artery with atrophy of left uncus and compression of superior temporal gyrus.

Herniation of lips of superior temporal gyri.

Dilated perivascular spaces of left basal ganglia.

General encephalomalacia and myelomalacia?

Following is a description of findings in the head:

Hair red, mixed with gray. Scalp more adherent than usual to calvarium. Calvarium contains a moderate amount of diploe. Dura mater slightly adherent to calvarium in vertex region, but more than normally adherent to base of skull especially in middle fossæ. The bone underlying this region of adhesion is slightly porous. The inner surface of the dura mater on both sides over the vertex and superior surface of the cerebrum is underlaid by a delicate transparent slightly brownish membrane measuring nowhere over I to 2 mm. in thickness and playing out gradually over the flanks of the brain. Sinuses normal. Arachnoidal villi moderately developed. Pia mater everywhere transparent and clear except over both hippocampal gyri and the tip of the left temporal lobe. The pia mater is everywhere distended by the swollen brain and contains very little liquid. The cisternæ at the base contain considerable slightly turbid liquid. Brain weight 1165 grams. Convolutions flattened notably on left side. The cortical surface suggests a moderate pigmentation. The gyri show a normal arrangement and size, in both hemispheres, except for

^{*} I am obliged to Dr. H. A. Cotton for these notes, drawn from the records of his Danvers service.

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distortion of the left temporal gyri opposite the optic chiasm. This latter process is merely incidental to the distortion of structures consequent upon an aneurysm imbedded in tissue below the left uncus. The aneurysm is globular and measures 1.8 cm. in all directions. The cavity of the dilated vessel is completely filled with laminated clot. The wall is of varying thickness, measuring internally, where its surface gives directly upon interpeduncular space, from 3 to 4 mm. deep. The remainder of the wall also varies in thickness but rarely exceeds 2 to 3 mm. in depth. The interior of the aneurysm shows chocolate-colored clot peripherally with mixed red and gray clot in the middle. The vessel affected is the anterior choroid artery. The proximal portion of the artery shows in common with the internal carotid and Sylvian arteries in this region a considerable thickening and dilatation so that the aneurysm appears to be situate upon a kind of yellow stem measuring I cm. in diameter. The other arteries at base show well-marked focal sclerosis without dilatation except in the case of the left posterior communicating artery which is dilated to a diameter of 2 mm. and runs in the same axis with the posterior cerebral artery.

The substance of the uncus appears to have been largely destroyed by the aneurysm, but remains of it, together with a portion of the superior temporal gyrus, can be made out in that portion of the brain substance which has been displaced outward and downward by the lesion. The substance of the left putamen, external capsule, claustrum and white matter of the temporal lobe contains numerous dilated perivascular spaces. The lenticular nucleus has been displaced outward and upward but appears to have undergone no diminution in size. The internal capsule has apparently not suffered in width.

The contour of the ventricles appears to be slightly altered by pressure. Frontal section in a plane 1 cm. posterior to the optic chiasm gives the following measurements:

Left lateral ventricle—body 2 cm. laterally \times 0.9 cm. from above downwards.

Left lateral ventricle—inferior cornu 2×0.8 .

Right lateral ventricle—body 2.3 cm. laterally \times 0.5 cm. from above downwards.

Right lateral ventricle inferior cornu 1.2×3 cm. laterally.

These measurements appear to show that, whereas, both ventricles are moderately dilated, the lateral ventricle on the side of the lesion is somewhat more dilated than its fellow. It is possible that this condition is related with alterations of pressure in the area supplied by the anterior choroid area. Another hypothesis is that the lesion has compressed the foramen of Monro.

The convolutions although flattened are reduced in size and almost of plastic consistence. This character is shared by the cerebellum, pons, bulb and spinal cord. No focal lesions were seen elsewhere about the aneurysm.

The tissues of a case of sixteen years' standing cannot afford the striking evidence of acute change which was afforded by

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Case I. A different sort of evidence is procurable. I have chosen for photographic reproduction the superior temporal gyrus, because that gyrus seems to have suffered most recently from the effects of pressure (Plate XII).

The photograph shows several points of interest. The normal depth of cortex is well maintained. The innermost layers of cortex are not far removed from normal, exhibiting a few triffing denuded areas. On the other hand, the outer nerve-cell layers exhibit a relatively striking irregular denudation of nerve cells. The second cortical layer is notably cut through at one point by a lane virtually bare of the characteristic small nerve cells. And the layer of large external pyramids has preserved but two islets of its characteristic cells. Under the stress of a somewhat diffuse pressure, coupled no doubt with arterial changes, the temporal cortex has become somewhat irregularly denuded of a portion of its cells, and these rather in the outer layers. The larger cells tend to last longest; the smaller cells (particularly of the second and third cortical layers) tend to disappear first.

It is unnecessary here to linger on this point which becomes clearer with later cases. I would only insist that not only does inhibition (or hastening action) on the part of these outer layers become more difficult through the absence of whole blocks of cells, but also any impulse once initiated in a process of some intact nerve cell gets a diminishing chance of interruption by countercurrents of any sort. There is a kind of functional vicious circle in tissues subject to these differential lesions. There is a kind of inertia in impulses once set going. Intercurrences are few in this new synaptic tissue of lowered quality. The multitude of energy-absorbers which formerly enwrapped the path of a propagating impulse has now vanished. The system is much simplified; and, until such time as the onset of atrophy shall separate the discharging constellations altogether, it would appear that immediate discharges can scarcely be stopped among surviving cells, when they are stimulated.

The present case showed conditions of this sort in all the convolutions abutting upon the aneurysm, and, indeed, slight tendencies in the direction of differential cell atrophy were observable throughout the brain (perhaps the result of chronic internal hydrocephalus). Such tissues, intermediate between perfect tis-

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nic ones form the proper soil for keep

sues and thoroughly atrophic ones, form the proper soil for keeping up, if not for producing, epileptic discharges.

In Case I we were fortunate enough to light upon an adequate epileptogenic focus in the form of a localized encephalitis in one cornu ammonis. In Case II we again meet with a lesion in one cornu ammonis which may well have formed an epileptogenic focus in the first instance and subsequently formed new ones in the course of its gradual and differential destruction of tissues. In the second case the original focus has doubtless wholly ranished with the growth of the aneurysm. All we now find is a medium favorable for unimpeded discharge. The recent active foci may have escaped search; or an epileptic habit may have developed, by virtue of which occasional summations di stimuli from several sources may serve to set off the chain di convulsions.

We now turn to the more debatable ground of those organic cases in which the direct relation of lesions to symptoms is more difficult to prove largely through the multiplicity of the lesions (1) By means of Cases III and IV I hope to lend further sup port to the ideas developed from Case II—viz., to set forth more clearly the conception that tissue destruction of moderate degree may frequently leave the discharging apparatus intact, whereas the inhibitory and controlling apparatus is destroyed. We shall find that even coarsely destructive lesions of the motor cortex are prone to this differential effect and that, whether for erobtionary reasons or not, the more delicate portion of the machinery is first lost. (2) Finally in the residue of cases described I hope —to develop further the idea of unchecked discharge and a related conception, that of progressive or lateral discharge.

Plates XIII and XIV (from the right precentral and right occipital regions of Case III) show clearly one point: the preservation of large elements and simultaneous disappearance of small elements about small infarcts, Plate XIII shows this tissue property most distinctly, because the confusing feature of neurogia cell overgrowth has passed. The lesion in Plate XIII is possibly far older than that shown in Plate XIV. In both instances, however, there are lanes of nerve-cell destruction setting in from the exterior. Along the borders of both lanes the larger elements are still in evidence. At the right side of both plates it is evident that the second cortical layer and (to some extent) the third have been destroyed, so that underlying elements are in so far without their influence. At the same time these larger elements (as adjacent sections prepared according to Benda's method show) are now well wrapped with neuroglia (in a quiescent state in the precentral region, in an active proliferating condition in the occipital region).

Plate XIII betrays the stratigraphy of the cortex particularly well with respect to the differential loss of elements of which we are speaking. The outer nerve-cell layers tend, so to say, to weather out more readily than do the inner layers when under virtually the same conditions with respect to noxious agent (in this case ischemia). And, although infarction leaves at times many bizarre figures of differential destruction, yet the configuration of layers seen in Plate XIII occurs very frequently in organic cases.

Plate XV (from another case, Case IV) illustrates the same tendency in diffuse atrophy. Again a section is chosen from tissue which is no longer undergoing active neuroglia proliferation, so that the preservation of numerous large elements is manifest together with a loss of many smaller elements. This appears to be true throughout all the layers; but the outer layers have suffered maximally. Notably in the middle of the layer of moderatesized pyramids, in the midst of a general destruction of all other nervous elements, a single nerve cell of good size remains. The Benda preparation from the adjacent section shows this self-same isolated cell surrounded by the fibrillar neuroglia of the little infarct in which it lies. We cannot doubt both that this cell has lost touch with innumerable streams of impulse from without and that also a new surface of separation has been provided for any impulses that may reach the cell.

Under such circumstances not only are the cells divorced from normal controls but they are placed under peculiarly good conditions for direct irritation or for activity engendered by direct pressure.

The details of these two cases follow:

CASE III.—G. C., male, born 1840, of average capacity, had a "sunstroke" in the Civil War, and about 1876, while working as customs inspector, had a severe attack of convulsions, which confined him to bed

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for two or three weeks. There were then no convulsions for several months: but then they recurred and increased in frequency, occurring both at night and during the day, until about 1902. Delirious episodes. Increasing dementia. Unruly. Sent to Soldier's Home, 1903. Incapacitated for work since 1886. Evidence of mental failure since about 1880. Admitted to hospital April 11, Died June 20, 1906. Marked insane heredity.

The autopsy (twelve hours after death) showed the following conditions: General arteriosclerosis (aortic, coronary, splenic, renal, cerebral, iliac, with some gross changes in all large arteries examined). Calcification in aorta and internal iliac arteries.

Chronic diffuse nephritis (arteriosclerotic).

Red marrow of femur.

Chronic splenitis.

Loss of cerebral substance in right temporal region, and in lingula, with sclerosis of adjacent white matter and hippocampal gyrus.

General cerebral and cerebellar sclerosis.

Sclerosis of dentate nuclei (maximal) and of olives.

Sclerosis of lumbar cord.

Atrophy of cerebral cortex of frontal poles and of superior vermis of cerebellum.

Chronic leptomeningitis (vertical, superior cerebellar, and local about loss of substance in right hemisphere).

Bronchopneumonia with acute fibrinous pleuritis of both lower lobes. Slight bruises of extremities.

Chronic periappendicitis.

Healed ulcers of stomach.

Chronic gastritis.

Chronic interstitial pancreatitis.

Chronic tympanitis.

Chronic adhesive pleuritis (right apex).

Following is a description of findings in the head:

Scalp normal. Calvarium dense, without diploe. Dura adherent to calvarium over vertex. Dural sinuses normal. Arachnoidal villi moderately thickened. Pia mater of vertex opaque and five or six times as thick as usual, so that the cerebral markings are quite effaced. The pial meshes are distended with clear liquid which stands out in sac-like accumulations over the atrophic frontal poles. The pial thickening is sharply marked off on the flanks of the brain, so that the temporal regions are spared on both sides. The pia mater of the temporal regions and of the base is a trifle more opaque and thicker than normal. The cerebellum and the substantia reticularis alba of Arnold show the greatest pial thickening found at the base. The pia mater covering porencephalic area in right posterior region is thick and cloudy. Large vessels with primary and secondary branches diffusely yellow and stiff with occasional short stretches of grossly normal tissue. Brain weight 1290 grams. Substance everywhere firm and elastic. Cerebellum notably firmer than cerebrum.

Cortex in superior vermis shows reduction in depth by one-half. Dentate nuclei of cerebellum cut with difficulty and have a leathery feel. Olives perhaps a trifle firmer than usual. Gray matter of frontal poles reduced one-half in depth and a trifle firmer than remainder of cerebrum. Extensive loss of substance in right hemisphere under floor of posterior cornua of lateral ventricle. Pia and ependyma here lie in apposition over a rounded oblong area 6.5×2 cm. in diameter, extending from the frontal plane posterior to the uncus to a frontal plane 2 cm. anterior to the occipital pole. The loss of substance involves the greater part of the cerebral tissue between the collateral, calcarine, and third temporal sulci. The white matter of the centrum semiovale anterior to this loss of substance is leathery. The hippocampal gyrus on the right is a third narrower and considerably firmer than that on the left. Basal ganglia a trifle firmer than usual. Pons firm, especially near periphery. Cord shows considerable increase of consistence especially of the posterior aspect in the lumbar region.

Middle cars: Free from exudate. Fibrous thickening of drum heads, particularly left.

CASE IV.—H. P., female, born 1820, of good heredity, at 72 years had a "shock" with cyanosis, convulsions, unconsciousness for some hours, and subsequent speech disturbance and muscular weakness. The convulsions continued at irregular intervals, sometimes several in a day, as a rule several a week, sometimes with remissions for weeks. Loss of memory, hallucinations, excitement, supervened at 74. Generalized convulsions at infrequent intervals, especially at night, followed by confusion, paraphasia, complete disorientation, and incapacity to name objects. Death at 76.

The autopsy (three and one-half hours after death) showed the following conditions:

Hemorrhagic infarction of left ventricle of heart.

Aortic, coronary and iliac arteriosclerosis with calcification.

Renal and cerebral arteriosclerosis without calcification, but involving small as well as large branches.

Mitral sclerosis.

Chronic fibrous myocarditis.

Chronic fibrous endocarditis.

Hypertrophy and dilatation of left ventricle of heart.

Chronic interstitial nephritis.

Bronchopneumonia of hypostatic distribution.

Cholelithiasis.

Congestion of diploe.

General cerebral atrophy (especially frontal and parietal).

Chronic fibrous leptomeningitis.

Compensatory edema of pia mater.

Small superficial area of yellow softening in left angular gyrus.

Following is a description of findings in the head:

Diploc deep and congested. Pio mater and sinuses not notable. Pia mater over frontal and parietal regions hazy, thickened and distended by considerable fluid. Slight haziness over basal cisternae. Vessels of circle of Willis and primary branches extensively sclerotic. Small cortical branches everywhere prominent. Marked sclerosis of pial vessels overlying small superficial area of yellow softening in region of left angular gyrus. The convolutions of the frontal and parietal regions are narrowed and in places present broad cupping of their surface together with shallow and wide sulci. The brain substance is of normal consistence. The ependyma of the ventricles is smooth.

I present in Plate XVI the cell appearances in the orbital region of a confirmed epileptic (Case V). The reduction in number of elements in the outer layers is striking (comparable to appearances in Plate XII and Plate XV). The atrophy is somewhat general but, as in numerous instances, the smaller elements suffer first. This section is only an example of what may be found in numerous regions of this case. Palpable sclerosis was confirmed to a part of the right central and frontal regions.

The details follow:

Case V.[•]—A. H., negress, born 1860. Convulsions appeared in the patient's early thirties and were frequent for a month. They returned again at 39 years, but occurred at rather infrequent intervals. Remarkable ophthalmoptosis, giving rise to the suspicion of brain tumor. Vision fairly well preserved. Ophthalmoscopic examination showed only swollen veins. Headache. Increasing weakness. Slight external strabisms (left). Left knee-jerk slightly brisker than right. Impairment of memory. Emaciation. Conjunctivitis. Hypopyon. Death in coma at the age of A No convulsions were noted during the last two months. Irregular comm movements of arms.

The autopsy (eleven hours after death) showed the following conditions:

Encephalomalacia and myelomalacia.

Early bronchopneumonia left lower lobe.

Sclerosis of middle two-thirds of right central convolutions and posterior part of right middle frontal convolution.

Atrophy of left optic nerve.

Conjunctivitis, keratitis and hypopyon of left eye. Left ophthalmoptosis.

General arteriosclerosis (aortic, coronary).

Slight mitral sclerosis.

Old infarct of kidney.

[•] Published more fully in a "Note on Cell-Findings in Soft Brains," by F. E. Southard and M. B. Hodskins, Am. Journ. Insanity, Vol. LXIV. p. 305.

Chronic external adhesive pachymeningitis.

Chronic adhesive pleuritis.

Chronic focal adhesive pericarditis.

Mural and subperitoneal fibromyomata of uterus.

Following is a description of findings in the head:

Scalp edematous anteriorly. Calvarium thick, with little diploe. Dura adherent to calvarium in bregmatic region. Sinuses normal. Pia mater edematous, without notable thickenings. Brain weight, 1055 grams. Substance remarkably and evenly reduced in consistence in both white and gray matter. Olives and dentate nuclei as soft as normal cortex cerebri. The appearances resemble those of many days post-mortem. The central convolutions of the right hemisphere are much firmer than the surrounding convolutions. The right ascending frontal convolution is firm throughout the arm area and for a portion of the face and leg areas. The right ascending parietal convolution is equally firm for a like distance. The sclerosis is sharply marked off by sulci, by the post-central sulci behind (so as to exclude the superior parietal and supramarginal regions) and by the anterior ramus of the inferior precentral sulcus and the superior frontal sulcus in front and above (so as to exclude the greater part of the middle frontal and the superior frontal gyri). There is no demonstrable atrophy or chronic pial reaction in relation with the sclerosis. The white matter beneath presents no change except the universal reduction in consistence.

Cord: Numerous calcified plaques in posterior fumbar pia.

Middle Ears: Left middle ear contains semi-liquid pus.

Retine removed from behind show left nerve-head reduced, about onethird in surface area. Vessels injected.

Plate XVII exhibits the right precentral (leg) area in an epileptic of long standing (Case VI). There is marked atrophy of the smaller elements with maintenance of the great motor cells intact. As the autopsy report shows, there was extensive sclerosis in many parts of the nervous system. Yet the motor cells remain, forming parts of an extremely simplified series of arcs.

CASE VI.—W. R., male, born in 1854, began to have convulsions at seven years of age, after whooping cough. The convulsions were severe, averaged one a month, and ceased to occur about 1884. About 1899 the convulsions reappeared and dementia became pronounced. The patient was admitted to hospital January 15, 1906. The left leg was found somewhat smaller than the right, whereas the arms were equal. The toes of the left foot were extended at the first joint and flexed at terminal joint. Instability in Romberg position. Left leg weaker than right. Vision of right eye diminished. Slight internal strabismus. Pupil reactions normal. Knee-jerks lively. Left knee-jerk and Achilles jerk more lively than right. Babinsky of left side. Stupid, untidy, grimacing, snarling and irritable. In February his mood changed to a laughing childish dementia. Convulsions appeared in April. Gradual failure. Death December 28, 1906.* The autopsy (twenty-three hours after death) showed the following conditions:

Occlusion of larynx.

Congestion and edema of lungs.

Chronic diffuse nephritis.

Congestion of kidneys.

Congestion of mesenteric veins.

Calvarium dense.

Chronic external adhesive pachymeningitis.

Chronic fibrous leptomeningitis over left superior parietal and left central gyri, hippocampal gyri, and superior vermis of cerebellum.

Sclerosis of dentate nuclei.

Sclerosis of pons.

Sclerosis of hippocampal gyri, of orbital regions, of precentral gyri, of post-central gyri, of posterior part of superior parietal lobules, of fusiform lobules (slight).

Sclerosis about posterior horns of lateral ventricles.

Anomalous fissuration of superior vermis of cerebellum.

Following is a description of findings in the head:

Hair short, streaked with gray, thin on top. Scalp normal. Calvarium shows no diploe. Dura adherent over occipital and superior parietal regions where, notably on the left side, there is a cluster of villi surrounded by moderately thickened pia mater. Pia mater thin and transparent everywhere except along lip of longitudinal fissure on left side in region of arachnoidal villi and over left central convolutions, along inner borders of both hippocampal gyri and over superior vermis of cerebellum especially in the region of the clivus monticuli. The posterior wall of the cerebellopontine cisternæ and the pia maters about the surrounding cisternæ in the region of the optic chiasm are moderately dense and suggest no notable degree of fibrosis. Vessels show nowhere any trace of sclerosis or lesion. The veins of the vertex are moderately injected but the small vessels over the surfaces of the gyri do not stand out prominently. Brain weight, 1290 grams. The brain substance shows striking varieties in consistence. The laminæ of the superior half of the cerebellum including the vermis show the best marked loss of consistence, anywhere shown; and this loss of consistence appears to be sharply limited posteriorly by the horizontal fissure. On section this loss of consistence proves to be superficial and the white matter of the arbor vitae is as firm as elsewhere. The dentate nuclei show an increase of consistence in both hemispheres. The posterior third of the pons is softer than the anterior two-thirds; the difference is probably due to gliosis of the anterior two-thirds. On section the pons appears to show some graving out

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^{*} I am obliged to Dr. H. W. Mitchell for these notes, drawn from the records of his Danvers service.

in the central regions superior to the pyramidal tracts. The central gray matter is far softer than the rest of the pons. The cerebral hemispheres show palpable indurations, (1) of both hippocampal gyri, (2) of both orbital regions for a space I cm. in diameter surrounding the olfactory bulbs, (3) the upper two-thirds of both precentral gyri, best marked on the left side where the induration extends a trifle posteriorly to include the post-central convolution, (4) both post-central gyri in less degree than in precentral, (5) both superior parietal gyri in their posterior halves, (6) in slight degree both fusiform lobules. The maximal palpable induration is found in the superior part of the left precentral gyrus and in the two cornua ammonis where they project into the ventricles. The dentate nuclei of the cerebellum are almost as firm as the regions just noted. The lateral verticles contain little fluid and show no ependymitis. There is slight induration of white matter surrounding the tips of both cornua. The basal ganglia show no evidence of lesion. The two optic thalami appear of nearly equal size; the left globus pallidus is slightly yellower than right. The cerebellum measures 10.8 cm. in greatest lateral diameter, the superior vermis measures 5 cm. to the cerebellar notch. The cerebellar notch appears a little deeper than usual on account of encroachment of fossa which hollows out the posterior half of the superior vermis, halving especially the clivus monticuli. This fossa is smooth walled and overlaid by a moderately thick layer of fibrous tissue. The fissural markings of the left lobus clivi do not run concentrically about into their fellows of the right lobus clivi. The left lobus clivi is divided into three sets of folia separated by deep fissures. The superior set of folia clivi dips sharply upward in the hollow of the anomalous fossa of the clivus monticuli so as to become continuous with the middle set of folia in the right lobus clivi. The appearance is thus presented of sharp termination of the superior set of folia in the right lobus clivi internal. Sagittal sections show a corresponding disturbance of the fissuration. A section slightly to the left of the median line shows that the folia usually exhibited in the clivus monticuli are replaced in a small area not over I cm. in diameter by the flat nonfoliated tissue. Adjacent sections rapidly regain the normal fissure appearance. This lesion may be interpreted as a loss of substance of long standing. The overlying fibrosis may perhaps be interpreted as a reaction to the original injury. Spinal cord: Fairly firm. Cervical region softer than usual. Lumbar portion firmer than usual. Middle ear: Normal. Pituitary body congested.

Plate XVIII is also derived from Case VI, but may be considered together with Plate XIX from Case III, as showing similar phenomena. Attention is here directed to remarkable gaps of an atrophic character in the closely set cells of the stratum granulosum of the cornu ammonis. The lesion in Case VI was nowhere found related with vessels. The focus shown in Plate XIX (Case III), like foci in other sections from the case, seems related to the presence of a vessel. These atrophic foci are a adjacent sections stained by the Benda method demonstrate. attended by considerable gliosis.

Such changes are by no means confined to the cornu ammons in cases of epilepsy, but in the close search of his cases made by a worker in epilepsy such changes are not rarely found. The archipallium is thus the scene of certain lesions of the receptor apparatus whose meaning we cannot yet make out. In the archipallium, although we have to do with similar (in the sense of less coordinated, less inhibitory) mechanisms, we also have to do with more compact structures in which small lesions may bring about relatively more irritation than lesions of the same volume set anywhere in the higher apparatus. This may serve as a suggestion why cornu ammonis lesions are relatively so apt to the production of powerful irritations. In Case I we dealt with an effective epileptogenic focus of small diameter; but it is possible that other cases might yield still smaller foci were methods of examination fine enough.

In the above selection of cases I have brought out certain points with undue clearness with the object of supporting certain contentions of a general character. Whether or not the detail of these inductions is in all ways accurate, I hope that it is plain that the classical fiber-tract studies will not solve the problem. I have, however, steered clear of making any inductions from neurofibril preparations, because, as is well known positive pictures of neurofibrils have far more convincing power than negative pictures. The problem, I believe, rather resembles that of multiple disseminated sclerosis than any other with which I am acquainted. The natural history of gliosis, were it completed, would go far to settle many problems, but particularly these.

I have, therefore, employed for the nerve cells the best general method for their demonstration that I know—the original method of Nissl (with very few and quite inessential modifications)—and have obtained an adequate picture of the neurogia *in adjacent sections* by the Benda method for neurogia (after alcohol fixation). In this way it is possible to attain a better conception of mechanical conditions surrounding cell-groups than by any other methods known to me. Moreover, these methods

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are quite simple and repeatable. The Nissl method is not precarious or capricious. The Benda method, though perhaps inferior to the Weigert and the Mallory methods under the best conditions, is wholly adequate for pathological neuroglia in most cases, and has the tremendous advantage of being *applicable to sections adjacent to the Nissl sections*. Nevertheless, I believe the important points of the present paper could probably all be made with far simpler methods, with any method which stains cells well and preserves the stratigraphy of the cerebral cortex.

SUMMARY.

The theory of epilepsy expounded in the present paper is founded mainly upon structural considerations. The histological data have been interpreted largely from a functional point of view. The theory lays claim to some originality in two directions, in setting forth, namely, the properties of a typical epileptogenic focus in the cerebral cortex, and the nature of that change in cortical tissue which favors epileptic discharges. The characteristic feature of a typical prime focus is described as the separation of a normal cell-group from its normal control by other cell-groups and the impact upon the receptive surfaces of these normal cells of a steady, intimate, abnormal pressure-both segregation and compression effected by neuroglia overgrowth. That feature of cortical tissue which favors the spread of epileptic discharges is described as due to a simplification of cell arrangements, arising in the destruction of controlling elements with maintenance of motor elements. In the production of both prime focus and the abnormal tissue which permits uncontrolled discharge, the neuroglia tissue plays a characteristic part-exerting an active continued pressure in the first instance, and readily permitting lateral discharges and the activation of great groups of motor cells in the second instance. In the former case we see a fresh example of the irritative property of heightened tension -only here exhibited guite in miniature. In the latter instance we are dealing with conditions of still greater theoretical interest. approximating, though with diverse outcome, the loss of insulation seen in foci of disseminated sclerosis. The findings suggest the widely different effects upon nervous tissues of active and of quiescent gliosis.

From a review of pertinent literature, it appears that physiological interest is converging upon the field here considered. Fiber-tract studies have failed to cope with other problems than those of linear transmission along well-insulated paths. Only in the case of multiple disseminated sclerosis and certain studies in interstitial neuritis, have the occurrence and nature of lateral discharge from fiber to fiber and the effects of intimate fiber pressure been considered. And in these instances it may well be proposed that a fresh abnormal type of synaptic tissue has been provided. Physiological interest is now levelled upon the synaptic tissues in general. And, if a synapse is a physical surface of separation between neurones, it is serviceable to inquire what are the conditions which can readily modify the synapse. The neuroglia tissue, formerly regarded as purely supportive in function, here rises to a high scale of importance. The present essay points out two effects of gliosis upon synaptic tissues, the one an active irritative one, the other a passive effect. A review of the fundamental views of Hughlings Jackson serves to demonstrate the perfect generality of epileptic phenomena at all levels, and makes clear why the writer sought knowledge about epilepsy in organic cases. If the writer advances a case in which the prime epileptogenic focus consists in an active gliosis within a space of one cubic centimeter in the cornu ammonis, he cannot be charged with holding that all cases of epilepsy are so brought about. He describes what he regards as a typical prime focus. He conceives fundamentally that similarly forcible and lasting stimulation of a receptive surface, standing in important relations to the motor system, might produce epileptic convulsions just as effectively as the gliosis he describes. In this sense complex emotions or intestinal worms might conceivably stand in as effective a relation to the nervous system as the intimate pressure of early gliosis upon the expansions of elements whose currents eventually play upon the muscular system.

Wholly distinct from these considerations about epileptogenic foci are those points which are developed concerning tissues facilitating discharge. A review of various authors discovered much difference of opinion and considerable interpretation of phenomena as secondary. The phenomenon of gliosis has not escaped numerous observers, among them the very observers that

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have emphasized the alterations of the second cortical layer as important in epilepsy. But this gliosis has been regarded as secondary, and our attention has been diverted rather to certain cell and nuclear characters which are looked upon as specific. The writer has been tempted to regard these nerve-cell changes as vegetative and at any rate as not further analyzable, but to accept them as examples of a lesion which will interfere with normal control of muscular elements. The cases presented here go far to prove that the nerve cells of the outer layers are the first to disappear in cases of atrophy and even along the edges of ischemic areas. The tendency to the formation of tissue favorable to epileptic discharge is, according to this view, a somewhat general tendency in cerebral tissue, so long as the destroying forces stop short of the motor elements and permit any communication, however slight, between the motor elements and the receptive side of the body. A reduction or simplification of the system through destruction of the smaller elements of the cerebral cortex procures new reflex arcs with fresh surfaces of separation which are perhaps even simpler and more automatic than the spinal arcs and synapses. The peculiar features of the epileptic discharge depend upon the inertia of currents travelling in simplified arcs, and upon the lack of energy-absorbents en route. The cerebral arcs normally escape automatism through a multitude of synaptic connections; under epileptic conditions the cerebral mechanism approaches in fatality the spinal mechanism. Under this conception epilepsy and phenomena like clonus are readily perceived to belong to a single logical group.

The phenomenon of epilepsy, in short, requires the intactness and even the normality of some well-defined route from stimulus to muscles. If we conceive the stadia of this route set end to end with the cerebral synaptic tissue in the middle, we perceive that toward the two ends of the linear series it becomes increasingly difficult to provide conditions which will produce generalized and spreading convulsions. Destruction of elements at any point in the route should at first sight exclude the production of epilepsy. And so, in most cases, the destruction of the efferent paths will exclude epilepsy. In the afferent paths, however, the very process of destruction often constructs new and potent surfaces of stimulation which act as epileptogenic foci; and, in the cerebral synaptic tissue, the strata are so constructed that the loss of smaller, central, modifying, and inhibitory elements is effected prior to the loss of the major elements which are essential to the intactness of the great route. And these major efferent elements can themselves be subject from time to time to stimulation afforded by the contractile energies of growing neuroglia. Epileptogenic stimuli are applied in all cases to those elements having a forward direction, so that the reaction is in most cases, if not necessarily a sensorimotor reaction in Hughlings Jackson's sense.

What are the applications of this theory to the phenomena of idiopathic epilepsy? In certain cases of idiopathic epilepsy there seems to be grave doubt whether any adequate epileptogenic for can be discovered. There is more hope that *tissues favorable* is *epileptic discharge* shall be discovered, if the proper methods are employed.

We can see some reason for the absence of effective focime hereditary cases, particularly if we bear in mind the epilepic offspring of Brown-Séquard's injured guinea-pigs. With the onset of topographic and stratigraphic knowledge of the cerebral cortex, we shall approach more nearly to a definition of tissue suitable for the propagation of epileptic discharges. So far it seems that such synaptic tissues are characterized by abnormally simplified arcs whose impulses are the more automatic through the lack of countercurrents from surrounding cells. Whether we are to look in inherited serum properties for the production of such conditions, the future will decide. Destroying agents of moderate power tend to alter tissues in this direction.

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PLATES.

All the photographs, except Plate X, have a magnification 1:45, Plate X, 1:40. All the sections, except those photographed for Plate X, were prepared and stained according to the method of Nissl (without essential modification). The sections photographed for Plate X were prepared from blocks fixed in Zenker's fluid and were stained according to Mallory's phosphotungstic acid hematein method for neuroglia. I am indebted to Mr. L. S. Brown of the Massachusetts General Hospital for most of the accompanying photographs.

PLATE X.

FOCAL SCLEROSES IN (A) PLEXIFORM LAYER; (B) PERIVAS-CULAR REGION FROM PRECENTRAL CORTEX IN A CASE OF ORGANIC EPILEPSY ARISING IN OLD AGE. Such scleroses, though frequent in certain cases of epilepsy, are not regarded as bearing in an important way upon the problem of epileptic discharges.

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F1G. 1.

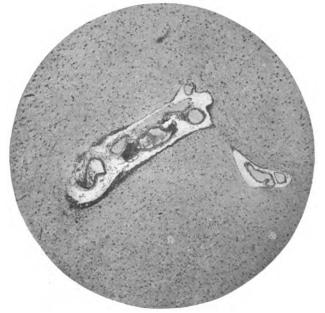


FIG. 2.

PLATE XI.

ACUTE ENCEPHALITIS FOCAL IN ONE CORNU AMMONIS IN A CASE OF EPILEPSY LASTING NINE WEEKS AND TERMINATING IN STATUS. The great nerve cells are still intact, but between the nerve cells are great numbers of proliferating neuroglia cells, amounting externally to a dense black zone. As a bit of intact nervous apparatus under abnormal pressure conditions, the cells of this area—nowhere greater than 1 cm. in diameter—are capable of acting as an EPILEPTOGENIC FOCUS. A severer lesion might destroy the focus either directly or by cutting off the transmission of impulses toward the motor apparatus.

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PLATE XII.

DIFFERENTIAL ATROPHIC PROCESS INVOLVING SUPERIOR TEM-PORAL GYRUS IN A CASE OF ANEURYSM OF ANTERIOR CHOROID ARTERY, PROBABLY OF SIXTEEN YEARS' DURATION. Other gyri in both hemispheres showed evidence of similar differential atrophy. The SECOND CORTICAL LAYER is cut by a lane of sclerosis at the left hand. But two appreciable islets of large cells remain in the LAYER OF LARGE EXTERNAL PYRAMIDS. The inner layers are fairly well preserved. Compare particularly Plates XVI and XVII for similar reductions of a differential character in other gyri and other cases. Compare Plates XIII and XIV for theoretically similar reductions in cases of multiple miliary infarctions of the cortex.

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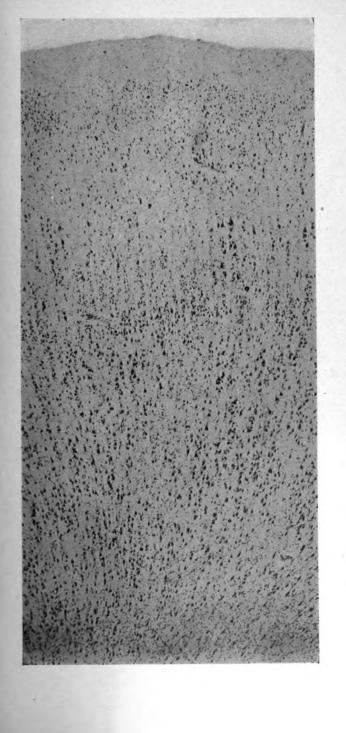


PLATE XIII.

SMALL OLD INFARCT OF PRECENTRAL CORTEX (trunk area) IN CASE OF ORGANIC EPILEPSY. Characteristic differential destruction of layers in which the SECOND AND THIRD CORTICAL LAYERS SUFFER MAXIMALLY. The larger cells appear more resistant. (Compare particularly Plate XVII for a theoretically analogous loss of smaller elements with maintenance of great motor cells of the leg area in a case of generalized atrophy.) The denuded area is filled with neuroglia tissue, containing relatively few nuclei and no longer exerting active pressure upon nervous elements. Synaptic tissue such as here shown possesses fewer modifying or inhibitory small elements than normal and is a tissue appropriate for epileptic discharges just in so far as the preserved elements have a "forward direction" of impulse (musclewards).



PLATE XIV.

(Same case as shown in Plate XIII.)

EARLY INFARCT of occipital cortex with denuded area filled with neuroglia cell nuclei. The preservation of many large cells at the borders of the infarct is noteworthy (compare Plate XIII). The infarct is still capable of exerting active pressure upon the neighboring nerve cells, and this pressure is theoretically capable of serving as epileptogenic agent after the manner of the lesion shown in Plate X. The neuronic links having "forward direction" toward the motor region must, however, remain intact. The combination of such active (pressure-exerting) foci of sclerosis with older foci (like that in Plate XIII), which have destroyed much of the inhibitory apparatus, must favor epilepsy.

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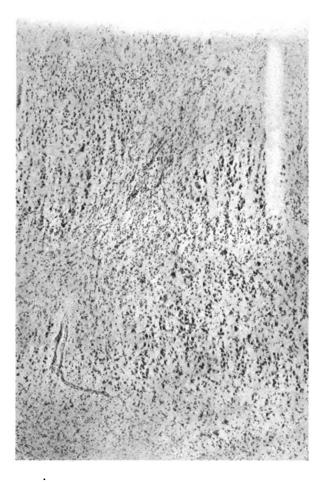


PLATE XV.

A SECOND CASE OF EPILEPSY SHOWING MULTIPLE SMALL IN-FARCTIONS, illustrating similar considerations to those of Plates XII and XIII.

1. Atrophy more marked in outer layers.

2. Maintenance of larger cell within borders of a small oval infarct.

The Benda preparation of an adjacent section showed this *normal cell imbedded* in *fibullar neuroglia*. Here is offered the theoretical possibility of impulses of an epileptogenic character set up directly in efferent elements. The more frequent finding of epileptogenic foci in "sensory" or receptive parts of the central mechanism is perhaps due to the greater extent of these mechanisms.



PLATE XVI.

ORBITAL CORTEX IN A CONFIRMED EPILEPTIC WITH MENTAL SYMPTOMS (epilepsy over ten years in duration). This area in common with numerous other cortical types showed a diffuse atrophy affecting most markedly the outer cell layers. (Compare Plates XII, XV, XVII.)

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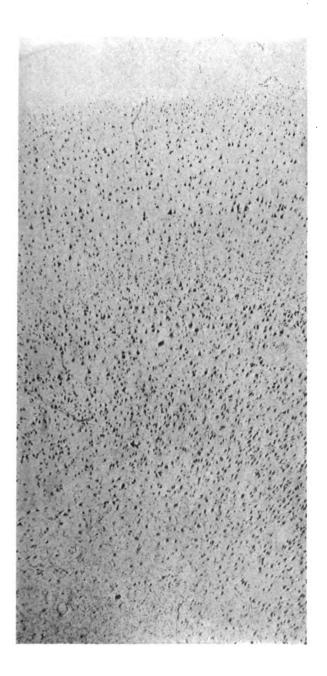
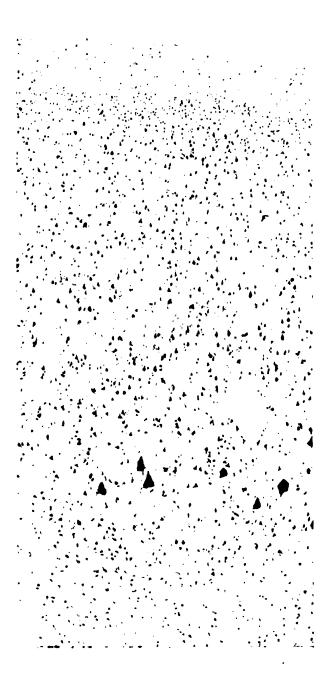


PLATE XVII.

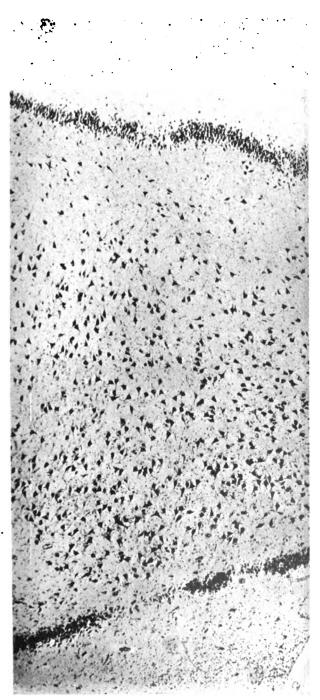
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LATES X TH AND XIX.

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THE DEVELOPMENT OF THE MODERN CARE AND TREATMENT OF THE INSANE, AS ILLUSTRATED BY THE STATE HOSPITAL SYSTEM OF NEW YORK.¹

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Delegate from United States Government to the International Congress of Neurology, Psychiatry, Psychology and Care of the Insane, Amsterdam, Holland, September 2-7, 1907, and Chairman of American Delegation to the Congress.

The subject of my remarks on this occasion-the development of the modern care and treatment of the insane, as illustrated by the State Hospital system of New York-is naturally suggested by one of the principal objects for which this body of distinguished representatives of medical science are assembled in international congress, namely, the advancement of psychiatry, of which branch of medicine the care and treatment of the mentally afflicted is an integral part. The pertinence of my theme was further suggested by recollections based on personal observations and experiences since I entered upon the work of caring for the insane, in 1870, during which time it was my privilege to witness the progress and to participate to some extent in the efforts made in my country to reform the methods of caring for the insane, especially as regards the use of mechanical restraints and punishments of various kinds, and the abolition of a barbarous system of so-called " county care " and the substitution therefor of the modern hospital for the insane.

Among the many serious problems with which States and communities are confronted to-day, there is probably none that rivals

¹ An address delivered before the International Congress of Neurology, Psychiatry, Psychology and Care of the Insane, Amsterdam, Holland, September 7, 1907; also, in part, before the New York Academy of Medicine, February 20, 1908.

in importance, whether viewed from a medical, social, conunit or philanthropic standpoint, that of securing, at a minimum cost. proper care and treatment to the vast army of dependent sufferers from that most serious, most dangerous and most far-raching in effect of all diseases known to medical science-insanity. But above and beyond all this, the great fact remains that, in considering the subject of the care and treatment of the insane, the highest place should be given to its humane aspect. Aside from its humane aspects, however, which must always be regarded as of primary importance, since the claims of suffering humanity the precedence of merely material or pecuniary policies, the financial side of the problem, involving, as it does, even under the most economical methods, the expenditure of vast sums of money for lands and buildings, with their equipment and furniture, besides an enormous annual outlay for maintenance, repairs, renewals and enlargements, may well command the most serious attention and co-operation of the legislator, the political economist, the taxpayer and the humanitarian.

It need hardly be said that in the consideration of this question humanity should have the first place, but it must also be admitted that its economy must have a prominent place. Hence, it follows that that policy ought to be pursued which will, first of all, secure everything that is essential to proper care and treatment, and, at the same time, limit the cost to such sums as the truest economy for the State would suggest. In other words, the dictates of humanity demand that the insane shall be amply provided with everything which medical science has determined to be essential to the recovery of those who are recoverable, as well as for the proper care, comfort, and amelioration of those who remain mrecovered. In fact, no system for the care and treatment of the dependent insane can be successfully administered which is not sustained in its ordinary operations by the highest order of human emotions; no system can be fairly regarded as good which directly or indirectly relies upon a low order of these emotions. Cupidity and self-interest should have no sway where suffering humanity is concerned.

Turning for a moment to a consideration of the humane side of the question, it will be conceded that of all diseases which affict mankind, insanity is by far the most frequent, most widely preva-

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lent, and most far-reaching in its effects, whether as regards the interests of the afflicted individual, or of his family, or of the commonwealth; that a vast majority of its victims must, during its existence, be deprived of personal liberty and removed from their homes, to be cared for in institutions established and maintained at public expense; that among the dependent insane are to be found numerous representatives of all professions, trades, and occupations, whose financial, social, and intellectual status may have been of a high order, and most of whom were respectable, self-supporting citizens—many of them taxpayers—prior to the onset of their disease; that the commonwealth is in duty bound to provide these dependent sufferers with suitable shelter, food and raiment, together with means of occupation and diversion, and competent medical care and supervision.

In support of the claim here indicated respecting the importance of mental as compared with other diseases, mention may be made of the trite facts that insanity is a disease which invades all classes of society, and one from which no one can claim exemption; that it involves to its victims, to his immediate friends, and to the community, a wider range of interests than any other disease. To the individual it involves a loss or perversion of reason; also, in most cases, a loss of personal liberty, the loss of control of his property and affairs, a disturbance or destruction of his social and business relations, enforced separation from his family, and, if his disease happens to take an unhappy form, it involves great mental anguish and suffering, and, possibly, the loss of his life through self-destruction or exhaustion; or, if the case fails of recovery, it may involve in addition to these, a prolonged and often weary existence, which might properly be termed a "living death." To the individual's family it involves great anxiety and distress, occasioned by the sad spectacle of a loved one with reason dethroned and the putting of this loved one away in the care of strangers; it also involves the stigma which society unfortunately and wrongfully attaches to the taint of insanity, and which is usually regarded by the relatives of the sufferer as something akin to shame and disgrace. It involves, frequently, a cutting off of the source of income, especially if the afflicted one be the breadwinner of the family; also the added expense of commitment to and maintenance in a hospital for the

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insane; and, finally, it involves exposure of the lives and property of the family to danger from the ofttimes violent and destructive tendencies of the patient. To the community it involves great danger to life and property from the acts of homicidal and dangerous lunatics; also a large loss to the body politic by the withdrawal from the ranks of its wage earners of the earning capacity of many thousands of individuals-substantially all of the insane being adults and, for the most part, in the active and most productive stage of life; and last, though by no means least, it devolves upon the community an enormous burden of taxation incident to providing and maintaining hospitals for the custody and care of a vast army of insane people, there being to-day in the State of New York alone more than 28,000 certified lunatics, not to mention the large number of unapprehended, unrecognized and so-called "borderland cases" in all communities that are liable at any time to require medical care and attention.

With respect to its bearing upon the importance of the subject from a pecuniary standpoint, mention may be made of the fact that in the development of the wealth of the State the life of each adult unit of a community has an estimated value of \$200 per annum, whereas, the average duration of insane life is about twelve years and the average annual cost of properly caring for an insane person in a public institution, including interest on investment, is, in the United States, about \$200. This would indicate a loss to the State of approximately \$400 for each year that a patient remains under care as a public charge. In other words, if the average life of the insane is twelve years and the annual per-capita cost of maintenance is \$200, each insane person who fails of recovery during this period represents a loss to the State of \$2400; whereas, a sane person for a like period of time would represent a gain of \$2400. But even though the individual contribute nothing to the wealth of the State when sane, it would still be in the interest of economy to provide for him when he becomes insane, such environment and such treatment as will insure every opportunity of restoring him to the ranks of the wageearners, or at least of enabling him to return to his home, and thus relieve the public of the burden of his support. By restoring a sick man to health we not only enable him to resume the support of his family, which otherwise might become a public burden,

but we pave the way for him to again become an industrial unit in the community, whereby he may contribute his portion to the public weal.

At the present time there are in the State of New York fifteen State hospitals for the insane—thirteen for the ordinary insane and two for insane criminals—and twenty-three licensed private institutions for the insane. The whole number of committed insane in the public and private hospitals of the State of New York at the end of the fiscal year, September 30, 1906, was 28,302, divided as follows: men, 13,548; women, 14,754. The whole number of insane in the State hospitals, including two hospitals for insane criminals (960) on September 30, 1906, was 27,317. The whole number of insane in licensed private institutions was 985. The net increase for the year in all institutions was 895; in the State hospitals, including the criminal asylums, the net increase was 896. The number of resident medical and other officers in State hospitals is about 150, and of attendants, nurses and other subordinate employees, 5000.

The cost of the State hospitals, for lands, buildings, equipments and furniture, represents a permanent investment of more than \$26,000,000, while the average annual expenditure for their maintenance, exclusive of cost of repairs, renewals and enlargements, is about \$5,000,000. The average weekly per capita cost of maintenance for the last fiscal year being three dollars and fifty-three cents. This weekly rate is somewhat higher than the average for the whole United States, in which the number of insane is roughly estimated at 200,000.

If we estimate, even approximately, the cost of providing for and supporting the insane of the entire civilized world upon this basis, or even on a much lower one for some countries, the magnitude and importance of the subject at once becomes apparent.

The foregoing statement of facts and figures is here presented merely for the purpose of calling attention by way of introduction to the magnitude and importance of the disease under consideration and as suggestive of the wide range of interests it involves, whether viewed from a professional, sociological or economical standpoint.

The first attempt on the part of the State of New York to provide State care for her insane was made nearly sixty years ago

when, in 1836, the Legislature, in response to a memorial from the Medical Society of the State of New York, praying for the establishment of a suitable State asylum for the insane, created the State Lunatic Asylum at Utica, now the Utica State Hospital. The institution, however, was not opened for the reception of patients until January, 1843. The establishment of this asylum was the first recognition by the State of New York of the principle of State care. Prior to that time the insane poor, both acute and chronic, were mostly cared for in county or town poorhouses or in jails, there being substantially no other provision for them. Provision was made in the original charter of the Utica Asylum whereby patients who failed to recover after a certain period of time, or who should be pronounced incurable, might be removed to the county poorhouse, upon the superintendent's certificate that the patient was "incurable " or " not likely to be benefitted by further treatment, and could probably be made comfortable in the poorhouse." This was a most inhumane provision, and one that was continued in operation under certain modifications, though with practically the same results, until the creation of the State Commission in Lunacy in 1889, and the subsequent passage of the State Care Act in 1890. So that, while the establishment of the State Lunatic Asylum in Utica in 1836, was a practical recognition on the part of the people of the State of New York of the principle of State care, its beneficence extended only to State care for the acute or recent insane, while at the same time it countenanced, or at least tolerated, a system of county or poorhouse care in its worst form by permitting the superintendent of the State asylum, in his discretion, to transfer to county houses, under the guise of incurability, the friendless, the violent and destructive, the filthy and infirm, and the feeble and helpless-the very classes which, above all others, most need the fostering care and protection of the State. This pernicious system continued for a period of more than forty years, during which time the poorhouses became filled to overflowing with mentally afflicted human beings, who were accorded only the merest pretence of custodial care and maintained in a spirit of parsimony, whose chief apparent ambition was to see on how small a pittance body and soul could be kept together. The keeper of one county asylum stated to the writer with evident pride in 1889-the year the State Com1908]

mission in Lunacy was created—that he maintained the insane of his county at a cost of ninety cents a week, per capita, or less than thirteen cents per day.

This accumulation of the insane in the county poorhouses and in so-called "county asylums" which, excepting those in urban districts, were destitute even of a nominal medical head, resulted in their being treated as ordinary paupers, the character of their malady being ignored or unappreciated, and they received no more care or attention than was accorded to the sane paupers. In other words, the insane were pauperized in the matter of food, clothing, shelter and environment, as well as of proper medical care and treatment. Experienced observers of mental disease, and of the natural tendencies of its victims, will readily imagine what, under such circumstances, the condition of the insane in the State of New York must have been at that time, a condition best described by the terms, misery, degradation, squalor, wretchedness and neglect.

The standard of care in the State of New York at that time, and its resultant conditions, are graphically portrayed in the following extract from a report made to the Legislature in 1864 by the late Dr. Sylvester D. Willard, secretary of the New York State Medical Society, who, although not an alienist, was a humanitarian, and personally investigated the conditions of the insane poor in the various poorhouses, county insane asylums and other institutions where the insane poor were kept:

"In some of these buildings the insane are kept in cages and cells, dark and prison-like, as if they were convicts, instead of the life-weary, deprived of reason. They are in numerous instances left to sleep on straw, like animals, without other bedding, and there are scores who endure the piercing cold and frost of winter without either shoes or stockings being provided for them; they are pauper lunatics, and shut out from the charity of the world where they could at least beg shoes. Insane, in a narrow cell, perhaps without clothing, sleeping on straw or in a bunk, receiving air and light and warmth only through a rough, prison-like door; bereft of sympathy and of social life, except it be with a fellowlunatic, without a cheering influence or a bright hope for the future! The violent have only to rave and become more violent, and pace in madness their miserable apartments. These institu-

tions afford no possible means for the various grades of the insane; the old and the young, the timid and the brazen, the sick, the feeble and the violent, are herded together without distinction as to the character or degree of their madness, and the natural tendency is for all to become irretrievably worse. In some violent cases the clothing is torn and strewed about the apartments, and the lunatics continue to exist in wretched nakedness, having no clothing and sleeping upon straw wet and filthy with excrement, and unchanged for several days. . . . Can any picture be more dismal? and yet it is not overdrawn."

The publication of this report aroused public sentiment and resulted in a second spasmodic effort on the part of the Legislature to provide for State care of the insane by the establishment, in 1865, of the Willard Asylum for the Chronic Insane, now the Willard State Hospital, and subsequently, in 1870, the Binghamton Asylum for Chronic Insane, now the Binghamton State Hospital, to which it was proposed to transfer all of the insane from the county poorhouse asylum where they had accumulated in large numbers. This second era in lunacy legislation for State care largely failed of its object through delay on the part of the State in providing sufficient accommodations for this class, notwithstanding the fact that in the period from 1865 to 1889 seven State asylums-five for acute and two for chronic cases-had been &tablished. Owing to this lack of accommodation, the State asylums for the acute insane were permitted by law to continue the pernicious practice of returning their unrecovered patients to the county poorhouses, some of which were called "county asylums" The inhumane practice of removing these unfortunates from State asylum to poorhouse, usually at the end of one year, continued for upward of half a century, until the creation of the State Commission in Lunacy in 1889, and the enactment of the State Care law in 1890. Thus, while the State had recognized the principle and, at least theoretically, adopted the policy of State care for its dependent insane, it had fostered a system of county care in its worst form and one which pauperized substantially every patient who failed of recovery after a year's residence in a State asylum.

It should be borne in mind that a large majority of the dependent insane, of which the great bulk of our hospital population is composed, are not paupers in any proper sense of the term. A pauper is one who was a pauper and a public charge before he became insane, whereas, the great mass of the inmates of our State hospitals are persons who were self-supporting, respectable citizens when overtaken by disease and as such they are clearly entitled to receive the highest standard of care and treatment, to the end that as many as possible may be restored to lives of usefulness and to the ranks of the bread-winners.

Another evil which sprang up in connection with this wretched county care system, and which had become an integral part of it, was a practice of receiving recent and presumably recoverable cases directly from their homes, which was not only a violation of law, but a great moral wrong.

This deplorable condition of the insane in poorhouses and county asylums at last became so acute that it attracted the attention of certain philanthropic people and especially of a charitable organization known as the State Charities' Aid Association, a voluntary body, which in its visitation of county asylums and poorhouses by local committees had become familiar with the existing evils.

This association, although without legal authority to correct the abuses which its local visitors reported, under the leadership of the chairman of its Committee on the Insane, Miss Louisa Lee Schuyler, began a reform agitation, through the public press, and by personal appeals to legislators, to the medical profession and to other influential public-spirited citizens. This agitation, continued in the face of powerful opposition, gradually gained force until it culminated, after two unsuccessful efforts, in the enactment of the State Care law in 1890. Meanwhile, the Legislature, having become convinced of the futility of enacting laws for the improvement of the condition of the insane without providing adequate legal machinery to enforce the same, passed a law, in 1889, creating a State Commission in Lunacy and clothing it with practically plenary power in respect to the insane and the management of institutions for the insane, both public and private.

This commission, over whose deliberations I had the honor of presiding during the first seven years of its existence, consists of three members, with the following required qualifications: A physician of at least ten years' experience in the care and treat-

ment of the insane and in the management of institutions for the insane; a reputable lawyer of at least ten years' practice, and a layman of good repute, all to be appointed by the Governor of the State, with the concurrence of the Senate. My associate commissioners were Hon. Goodwin Brown, a lawyer, and Hon. Henry A. Reeves, citizen, both of whom, together with the secretary of the commission, Mr. T. E. McGarr, rendered invaluable service in organizing the work of the commission and putting the State care law into successful operation. The creation of this commission gave a powerful impetus to the State care movement. It promptly joined hands with the State Charities' Aid Association and others in their efforts in behalf of State care and in the first year of its existence (1889) it made a thorough examination of the comp institutions for the insane, twenty-one in all, in many of which the conditions were found to be nearly as bad as those so vividly partraved in Dr. Willard's report. Most of the buildings were found to be utterly unsuited to their purpose, both as regards their strutural arrangement and equipment. They also were woefully bding in respect to sanitary appliances, furniture, bedding, clothing. food supplies, order and cleanliness, facilities for diversion and amusement, religious worship, nursing and competent medici supervision. In several instances disturbed and violent insur women were cared for by male keepers who were devoid of any proper training or experience in nursing the insane. Crock methods of mechanical restraint and other forceful means of m pression were commonly resorted to to quell the violence and m bulence which existed on every hand, and which, coupled with it general conditions of confusion, disorder and untidiness that pr vailed, served to render some of these institutions veritable bet lams. Indeed, so glaring were the defects found by the comme sion on its first inspection of these institutions that it immediate issued an order declining to grant any further permission ¹⁰ county officials to care for their insane. In its first report to # Legislature the commission disclosed the wretched condition a these institutions and their inmates and recommended the abolitie of the county care system and the transfer of all of the inmated such institutions to State hospitals, there to be maintained sole the expense of the State. This report, which attracted wide and tion through the medical and secular press, it is generally co

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ceded, gave the death-blow to county care of the insane in the State of New York. In response to the recommendation of the commission, and despite an organized, vigorous and determined opposition on the part of county officials and their numerous sympathizers, the Legislature, in 1800, passed and the Governor approved an act, known as the State Care Act, which annihilated the county care system and provided that all of the dependent insane of the State shall be treated in hospitals established, maintained and governed by the State. Of this law the AMERICAN JOURNAL OF INSANITY for April, 1890, speaks in the following language: "The State Care Bill, providing State care for all the dependent insane in the State of New York, became a law April 15, 1890. By signing this bill Governor Hill consummated one of the most signal triumphs ever achieved by humanity in the State of New York. All honor to those good men and women who have labored zealously day in and day out for the past three years to bring about this happy result. In the general rejoicing there will be no caviling as to who is entitled to the lion's share of the credit, though all must recognize the important part played in this great reform by the State Commission in Lunacy." In this connection it should be said that the commission was sustained by the medical profession as a whole and by the unremitting efforts of the State Charities' Aid Association.

By the adoption of the State Care Act, the State of New York not only emphatically reaffirmed its policy of State care, which began in 1836, and which was extended in a half-hearted way in 1865, but unequivocally committed itself to the extreme and logical limit of the principle, in fact as well as in theory, that the dependent insane are the wards of the State, and that the interests and maintenance of the insane should be confided exclusively to the State; while the terms of the act render it easily workable and susceptible of unlimited extension to meet the increasing demands which may from time to time be made upon it.

The important features of the State Care Act (Chap. 126, Laws of 1890), and of acts supplementary thereto, may be briefly summarized as follows: The abolition of separate institutions for the *chronic* insane; the designation of all the public institutions for the insane as State hospitals; the division of the State into hospital districts, and requiring that each hospital shall receive all of the

dependent insane, both acute and chronic, within its district; providing for the erection on the grounds of the State hospitals of additional buildings to accommodate the inmates of county asylums, then numbering nearly 2300; also requiring the commission, whenever deemed necessary to prevent overcrowding. to enlarge existing hospitals or to recommend the establishment of additional hospitals in such parts of the State as in its judgment will best meet the requirements; requiring county superintendents of the poor and other officials of similar jurisdiction to properly prepare patients for removal to hospitals, by seeing that they are in a state of bodily cleanliness and comfortably clad in new clothing throughout and adapted to the season of the year, in accordance with regulations made by the commission; providing that the removal of public patients from their homes or from poorhouses shall be done by nurses sent from the hospitals, and that female patients, unless accompanied by relatives, must be removed by female attendants, the cost of removal in all cases to be borne by the hospital; that after such patients have been delivered into the custody of the hospital the care and control of them by county authorities shall cease; that thereafter no insane person shall be permitted to remain under county or municipal care, but all such shall be transferred to State hospitals without unnecessary delay. there to be regarded and known as the wards of the State; also prohibiting absolutely the return of any insane person from a State hospital to the care of county officials; also providing that no moneys shall be expended by the managers of a hospital for additional buildings or for extraordinary repairs or improvements except upon plans and specifications approved by the commission: also, that no expenditure for any other purpose shall be made by the hospitals except upon itemized estimates approved by the commission; requiring the hospitals to submit to the commission bimonthly, itemized estimates for their current expenditures, these estimates to be revised by it as to quantities, quality and cost of supplies; requiring the commission to classify the salaries and wages of officers and employees of the hospitals on a basis of uniformity for similar ranks and grades of employment; requiring uniformity in all official records and forms used by the hospitals; providing for the establishment of a Pathologic Institute to be maintained for the benefit of all the hospitals, the director

of the institute to be appointed by the commission after a special civil service examination, thus centralizing in one department the scientific investigation of all the hospitals in the yet obscure domains of the pathology and etiology of insanity and correlated fields of research.

Having thus cursorily outlined the legislation for the insane in the State of New York since the creation of the Commission in Lunacy in 1889, it is pertinent to inquire into the results of this legislation, both as regards the welfare of the insane and the pecuniary interests of the people. In other words, what improvements, if any, have been made in the general care and treatment of the insane and in the methods of management and condition of the hospitals? Also what pecuniary benefits have the people derived from the substitution of State for county care for their dependent insane?

Among the more important improvements as regards methods and conditions which have accrued to the institutions for the insane and their government, under the new order of things, may be mentioned the following:

I. A codification of the laws of the State relative to the insane into one comprehensive statue, known as the "Insanity Law," thus bringing the hospitals into unison, under one charter, and placing them all on an equal footing in the matter of organization, administration and finances.

2. A complete registration in the office of the commission of all qualified examiners in lunacy; in the State of New York only qualified examiners in lunacy may certify to the insanity of a person for the purpose of commitment. To become an examiner one must be a reputable and duly licensed physician of at least three years' standing. These qualifications must be certified to by a judge of a court of record and the certificate filed in the office of the Lunacy Commission.

3. A complete registration in the office of the commission of all persons committed to institutions for the insane, both public and private. This registration already embraces about 75,000 cases of insanity, from which valuable deductions and comparisons may be made. This information, which heretofore could not be obtained from any single source, nor without great difficulty, is thus made readily available. The collection of this information has

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been greatly facilitated by the adoption of a uniform system of records and statistical returns for all the hospitals.

4. Provision for the transfer by order of the commission of patients from one institution to another without recommitment. This elastic feature of the State Care Law enables the commission to locate patients in hospitals which are most accessible to their friends; also to equalize the pressure for accommodations in the State hospital system.

5. The removal of patients from their homes or elsewhere by trained attendants sent from the hospitals, women patients, in all cases, to be accompanied by a woman attendant or nurse. Also, it the patient is violent or greatly disturbed, a medical officer from the hospital accompanies the nurse. The observation of this rule insures both decency and humanity in bringing patients to the hospitals. Formerly it was customary for male officers to escor. female patients to the hospitals, even though it might be necessary, as was frequently the case, to stop over night en roott. Again such patients were frequently required to travel long distances in smoking cars set apart for men, grossly improper practices which, happily, are now a thing of the past.

6. Removal of the legal distinction between acute and chronic insanity by designating each State institution for the insan # "hospital" instead of "asylum," and organizing them all was curative basis, thus inculcating the hospital idea. While it is man that the State Asylums for the chronic insane, as they were in designated, served a useful purpose, inasmuch as they afford asylum, not hospital, care, for a large number of patients otherwise would have been consigned to the poorhouses. was a feeling in the community, and especially among the tients themselves and their friends, that patients sent to Willard Asylum were thereafter to be regarded as hopeless incurable, and the transfer of patients thereto from the soacute institutions of the State was the occasion of much anguish and suffering on the part of both patients and free Indeed, I have personally witnessed the sorrow and and which patients manifested when marshalled in the wards of Utica State Hospital for transfer to the Willard Asylum for Chronic Insane. Many of such patients, capable of appreciation their situation and surroundings, felt, when consigned w asylum for the chronic insane, that all interest in their welfare, and especially in their recovery, was lost. And it is a fact that in numerous instances when patients were so consigned their friends did lose interest in them and ceased to visit them. Furthermore, the abolition of this distinction has had a most beneficial effect upon the inmates of the institutions that formerly were set apart for the chronic insane, as well as upon the interest and zeal of their medical officers and nurses.

7. A regulation regarding the correspondence of the insane, which provides that any patient who desires to do so may write at least once in two weeks; letters, for any reason, not forwarded to destination, must be sent to the office of the commission for examination; letters addressed to the Governor of the State, the Lunacy Commission, to judges or to any official having jurisdiction in lunacy cases, must be forwarded unopened. This rule is designed to disarm the criticism that is so often made respecting alleged suppression of patients' correspondence by hospital officials, and at the same time to afford patients who regard themselves as illegally detained or ill-treated, an opportunity to communicate through proper channels with the outside world.

8. Provision for paroling patients, under certain conditions, for a period of thirty days, during which they may be returned to the hospital without recommitment. This affords opportunity for testing the fitness of certain patients for final discharge, and to others for occasional visits at home.

9. A regulation requiring that patients on admission to a hospital shall be informed of the nature of the institution and of the fact that they are detained under legal commitment.

10. Affording all patients the legal right of a hearing by the visiting commissioners, apart from any officer of the hospital.

11. A rule restricting the issuing of licenses to conduct private institutions for the insane to reputable physicians of at least five years' experience in the care and treatment of the insane.

12. Provision for the clinical teaching of insanity in the State hospitals, by admitting to the wards thereof, under proper restrictions, students of medical colleges situated in their vicinity, as well as practising physicians who may desire the opportunity of studying mental diseases clinically. Under this provision six medical colleges now avail themselves of the facilities offered by the hospitals for the clinical teaching of insanity.

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13. Provision for the appointment of medical internes in each of the State hospitals at a salary of \$600 per annum, in addition to the regular medical staff, thus providing a training school for medical officers from which the regular medical staff may be recruited.

14. A regulation requiring competitive civil service examinations for appointment of resident officers in State hospitals. This provision has resulted in divorcing the hospital service from partisan influences, and in opening the way for promotion, by merit, of experienced assistant physicians and other worthy officers. Only physicians who have had at least five years' experience in a hospital for the insane are eligible to examination for an appointment to the position of superintendent. This regulation has effectually barred the appointment to office of inexperienced and incompetent physicians through political or other influence, as was heretofore too frequently the case. It is believed that the letter and spirit of civil service requirements are more carefully observed in the State hospitals of New York than in any other department of the State government, and that under its operation the hospitals are as free from partisan influences, both in the matter of appointments and in the tenure of office during efficiency and fitness, as it is possible to have them under a republican form of government.

15. A material increase in the average rates of salaries and wages of all grades of service, also an increase in the ratio of medical officers, nurses, and attendants to patients including a woman physician, on the staff of each hospital. The schedule of salaries and wages provides, in nearly all cases, for promotion in pay at regular intervals, as a matter of right and independently of favoritism.

16. The establishment of training schools for nurses in all the hospitals. The adoption by the hospitals of a uniform dress for nurses' and attendants' wear. The introduction of women nurses on the men's wards, such nurses to be paid the same wages as men. Also a material extension of accommodations for nurses in detached buildings, or nurses' homes, and the employment of a corps of night nurses, especially in the care of disturbed and untidy patients. This arrangement insures a continuity of nursing service and enables the nurses, when off duty, to retire to their own, well-appointed, quiet apartments where they may obtain needed rest and relaxation.

17. The appointment of consulting boards for the hospitals, consisting of general practitioners, alienists and specialists in other branches of medicine and surgery.

18. Provision for the employment of dentists for patients whose teeth the medical officers may determine to be in need of attention, also for ophthalmological examination by eye specialists with a view to the correction of defects of vision, from which many patients suffer.

19. An annual allowance to each hospital for the purchase of medical books and journals, magazines and other periodicals, for the benefit of the medical staff and others.

20. The employment of a chef in each hospital, in addition to the ordinary corps of cooks, whose duty it shall be to generally supervise the cooking in the various kitchens and to instruct the subordinate cooks and nurses in the preparation of special diet.

21. The adoption of a schedule of food supplies, including a per diem ration allowance of each article. This schedule is designed to serve as a basis for the hospitals in estimating for commissary supplies, and also as a guide for the commission in its revision of such estimates.

22. A marked improvement in the methods of bathing, by the introduction of "rain" or "spray" baths and other hydrotherapy.

23. A requirement that, so far as may be deemed feasible, the hospitals shall enter into joint contracts for the purchase of staple articles of supply through competitive bids, the contracts to be let to the lowest responsible bidders.

24. The abolition of mechanical restraints in all the hospitals and the substitution therefor of useful occupations, diversions and amusements of various kinds. Prior to the enactment of the State care law the wards of substantially every asylum were supplied with camisoles, leathern muffs, belts and wristlets, protection sheets, etc., and many of them also with the "Utica Crib," so called from having been first used in the Utica Asylum. In addition to these forms of restraint the wards of the Auburn Asylum for Insane Criminals, when I became its superintendent in 1876, were equipped with an outfit of chains, shackles and handcuffs, many of which were in daily use. At that time, as a result

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of the teachings I had imbibed, I believed in the utility of mechanical restraints and would have regarded a failure to use them in certain cases as a dereliction of duty, and I so stated in my annual report for that year. Subsequently, however, on January 1, 1879, after careful study of the subject. I determined to discontinue the use of mechanical restraints in the institution absolutely and I accordingly issued an order therefore to take effect on that date. This, I believe, was the first instance in the United States of the absolute abolition of mechanical restraint in a public institution for the insane. This, at the time, seemed a long step in advance and one the propriety of which was seriously questioned by several of my fellow superintendents. But soon after the step was taken it was found that the need of these appliances had ceased to exist, and that under the beneficent influences of amusements, diversions and useful occupations, together with adornments of the wards and surroundings of the patients, quiet and order had soon supplanted the turbulence, confusion and violence which attended the old methods and which rendered the institution a veritable bedlam. In the days of restraint it was really dangerous for visitors to pass through certain of the "disturbed" wards of our public institutions for the insane, whereas, nowadays, visitors to these institutions not infrequently complain that they have not been shown the "worst cases," and they ask to see those who are in "padded cells" or "tied down," and when told that there are no such cases, or places, in the hospital, they are apt to look incredulous and doubting. So that, even to-day it is difficult for those who are unfamiliar with the subject to realize that the old conditions have entirely disappeared under modern methods of care and treatment.

25. The introduction in 1901, of tent life for the care of tuberculous patients, by the late Dr. A. E. Macdonald, superintendent of the Manhattan State Hospital, on Ward's Island, New York City, marks another important step in the progress of the care and treatment of the insane in New York which is worthy of special mention.

The pronounced success of Dr. Macdonald's experiment of treating tuberculous insane in canvas tents during the milder season, and which was subsequently extended to all seasons of the year, has led to the extension, with most beneficial results, of tent

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treatment to several other classes of patients, namely, the feeble and untidy, the convalescents, and, finally, to the acute insane, many of whom, confined to bed and suffering from various concurrent diseases, find in camp life an agreeable and beneficial change from the more confined surroundings and vitiated air of the hospital ward. Dr. William Mabon, the present superintendent of this hospital, in a recent paper states that the recovery rate of cases cared for in the open air is as high as 40 per cent., whereas, the death rate is "extremely low." The experience of this hospital during the past five years shows that the open air treatment is especially beneficial to the tuberculous, the feeble and untidy, the retarded convalescents and the acute insane in which the psychosis is associated with debility, delirium and insomnia.¹ Fully equipped camps for both sexes are now maintained at this hospital in which large numbers of patients receive the same general routine treatment that is given to indoor cases with the added benefit incident to life in the open air. This system of outdoor treatment of the insane is gradually being adopted by other hospitals, both in New York and in other States of the Union.

26. The systematic employment of patients at useful occupations, such as farm and garden work, in the various repair shops, bakeries, kitchens, laundries, tailor shops, sewing rooms, stables, etc. Also at various industrial occupations, such as the manufacture of clothing and foot wear, furniture, brooms and brushes of all kinds, hair mattresses, rugs, upholstering, chair caning, bookbinding, printing, etc., etc. The finished products of these industries are not sold in open market, but are disposed of at actual cost to other hospitals which may not manufacture or produce the particular article, thus avoiding direct competition with trades unions. For instance, one hospital roasts all the coffee, or manufactures all the brushes, or supplies all the printed blank forms that may be required by the other hospitals.

¹Those who may desire detailed information respecting the methods and results of tent treatment of the insane in New York are referred to the annual reports of Manhattan State Hospital (1901 to 1906); also to a paper on Tent Treatment for Tuberculous Insane (illustrated) by Dr. A. E. Macdonald, reprinted from "A Directory of Institutions and Societies Dealing with Tuberculosis in the United States and Canada," 1904; also "Open Air Psychiatry," by Dr. William Mabon, N. Y. *Medical Journal*, February 9, 1907.

27. The establishment of a Pathological Institute: Criticism having been made from time to time by eminent members of the medical profession, of the indifference and inattention of the hospitals for the insane generally throughout the United States to scientific investigation, the Lunacy Commission, after first securing the material welfare of the insane, as regards their proper housing and care, proceeded to establish a department of scientific investigation of mental diseases. This centre of scientific investigation in insanity and allied fields of research was designated the Pathological Institute of the State Hospitals, to indicate the preponderance, but not the exclusive application, of the study of pathology to problems of insanity. The plan in establishing the pathological institute was practically not to restrict its studies along any one exclusive line of science, but to make such investigation broad and comprehensive by the union of all branches of science which could be practically brought to bear upon the scientific study of mental disease. The great renaissance in our knowledge of the normal nervous system accomplished by the methods of Golgi and his followers, the great progress in the science of the cell structure, the progress of bacteriology, linked with physiological chemistry, the comprehension of the correlation of the nervous system with other portions of the body, the tendency to correlate all of these sciences so that they might be focused upon the problems of the physical basis of insanity. made the time ripe for establishing a central department for the scientific work of the State Hospitals, not as an experiment, but on a permanent basis, and one which would justify the expenditure of the considerable moneys which such an undertaking, to be successful, necessarily requires. As already intimated, such a conception of investigating the nervous system as a dependent part of the body in the broad light of the operation of the general laws of pathologic processes and by co-ordinating pathologic histology with its sister sciences was a distinct departure from the plans of working at these problems in the past. Furthermore. it was deemed wise, both from an economic and a scientific standpoint, to centralize the research work of the hospitals in a single institution, in order that unity of method in investigations might prevail and proper guidance and systematizing of the work by a master hand might be in order. In its eighth annual report to the Legislature (1897) the commission, referring to the Institute said:

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"The future progress of work of this kind, then, may be believed to justify much expectation in the investigation of the most subtle and difficult field of the causation of disease, namely, the morbid conditions of the nervous system, which give rise to and underlie the manifestations of insanity, and it is believed the people of the State will not fail to sanction the making of necessary expenditure for carrying on this most important work for which the time has only so recently been adequate. It is not too much to hope that in the comparatively near future such investigations will exhibit practical results both in the prevention and cure of insanity."

The Institute is divided into departments and the gentlemen in charge of these departments are designated associates in their respective branches, the whole being under a director, distinguished for his scientific attainments, Dr. Adolf Myer.

28. Another important step in the interests of the insane is the establishment, through the joint action of the commission, hospital superintendents and the State Charities' Aid Association, of a system of after-care of the insanc, the object of which is to extend, through private philanthropy, temporary assistance and friendly aid and counsel to needy or dependent persons at their homes or elsewhere on their discharge from the hospitals as recovered. It was believed that a little timely aid and encouragement given to such persons through the agency of an "After-Care Committee" in each hospital district would serve to prevent relapse in many cases and the results thus far reported fully justifies the opinion that the belief was well founded although the system is still in its infancy.

Respecting what has been accomplished in the direction of improvements to the hospitals, as well as in the promotion of the welfare and comfort of their inmates, as a direct result of the adoption of the policy of State care, a perusal of the annual reports of these institutions would show that their condition as regards structural improvements and equipments, sanitary condition, order and cleanliness, fire protection, furniture, clothing, food supplies, industrial and other occupations, means of diversion and amusements, discipline, nursing, medical service and organization, has been steadily progressive and that the standard of care is in all respects much higher than it was prior to the enact-

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ment of the State Care Law, while at the same time the cost of maintaining the hospitals has been greatly diminished. Prior to October I, 1893, at which time the commission was given supervision and control of the hospital finances, the average annual per capita cost for maintenance was \$222. The commission reduced this to \$184, while at the same time, materially raising the standard of care, thus effecting, in a single year, a saving of about three hundred thousand dollars.

It is the will of the people of the State of New York, that its hospital system shall be conducted on a plan that will afford every opportunity of recovery to recoverable cases and at the same time insure proper care and treatment to the chronic insane, to the end that their condition may be improved as far as possible, and that the most hopeless of these unfortunates may have the chance of possible recovery, under the best conditions and environments with which they can be surrounded. In other words, the people of this great commonwealth desire that in their standard of care and in their results their hospitals for the insane shall stand second to none in the world, and I believe they are abundantly able and willing to supply the necessary means to secure these conditions and results.

The progress and present status of the New York State hospital system, which I have endeavored to portray, may be regarded as a continuation, if not the full fruition, of the great reform movement in behalf of the insane, inaugurated more than a century ago, by Pinel in France, by Tuke in England, by Jacobi in Germany and by Rush in the United States.

This splendid system, begun in 1836 and consummated in 1890. representing a growth of more than half a century, is a living monument to unselfish effort for humanity and science. Its existence to-day marks a great and lasting triumph of philanthropy and humanity over ignorance and greed, in the march of civilization.

All honor to the Medical Society of the State of New York which, through its humane secretary, Dr. Willard, blazed the pathway of this great reform through a wilderness of ignorance and greed. All honor to those good men and women who later renewed the struggle, against fearful odds, and courageously bore the burden of conflict for the emancipation of these mentally afflicted fellow-beings to a successful issue. It is not claimed that the new system is, unlike other human agencies, without imperfections. It is claimed, however, that its already demonstrable advantages over the system which it superseded are so great as to convince even the most sceptical of its former opponents of its superiority, both in its humane and its financial aspects; also that the principle of State care founded on the broad basis of science and humanity, when intelligently applied, as it is in the State of New York to-day, stands for all that is best in our present knowledge of the care and treatment of the dependent insane.

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AN INSANE (?) MALINGERER.'

BY C. A. DREW, M. D.,

Medical Director, Massachusetts State Asylum for Insane Criminals.

On July 17, 1905, J. H., 35 years old, was committed to the State Asylum for Insane Criminals from the State Prison at Charlestown, where he was serving a life sentence for murder in the second degree.

The medical certificate signed by one of the committing physicians reads as follows:

CHARLESTOWN, June 13, 1905.

To His Excellency GOVERNOR WILLIAM L. DOUGLAS.

Sir.—I beg to submit the following report of the condition of J. H., born in India and committed for life to the State Prison, from Salem, for the crime of murder in the second degree.

As soon as he arrived at the prison it was remarked that he seemed not to realize the seriousness of his crime nor the severity of his sentence. His manner was indifferent, his answers to questions were given in rather a stupid way, and his attention was distracted by the noise or sounds about the prison. The impression I first formed of his mental condition has been strengthened by further observation, that is to say, I believe he is more or less of an imbecile. His actions, the questions he asks or answers, the peculiar manner or attitude he assumes when talking with him, leads one to believe he is controlled by suspicions that harm is to be done to him. For instance, about a week ago he was removed to a cell for "observation" purposes because he suddenly "broke loose" in the shop, and attempted or threatened to injure those about him who, he claimed, were "stool pigeons" of the officers, and were going to report him to the deputy, to have him locked up in solitary confinement. He was suspicious of me while I was examining him, and he refused to answer many of my questions, answering a few only after seemingly long deliberation, as if he thought his answers were to be used against him, and sometimes they were quite irrelevant.

Some of the prisoners have complained of him to the officers as they fear he will harm them as he has threatened to do, because of some act he

¹Read before the Boston Society of Psychiatry and Neurology, May 16, 1907.

fancied they had done or were going to do. He tells me he sleeps soundy at night, but from the officer of the wing, in which he sleeps, I learn that he does not sleep well and, because of his restlessness and noises he makes, disturbs the rest of prisoners in cells near him.

Although he pretends, or assumes, to be more "foolish" than he actually is, I think he is far below "par" mentally, and that the discipline of a prison cannot be properly maintained in his case. I therefore recommend that he be transferred to the Asylum for the Criminal Insane # Bridgewater.

The concurring certificate, signed by the other examining physician, reads:

When J. H. was first received he asked many questions that were uterly incongruous which were then thought to be attempts at feigning, but it was soon found that he was very simple-minded and was unable to do much work from sheer stupidity. He was continually going to sick call He has had syphilis. We examined him in April and felt that he was an imbecile, but wished to observe him longer. He has talked about a man in Tewksbury who talks from there to him in his cell. He seems to be incapable of learning any trade. The night officer frequently finds him awake and talking to himself. Says that the officer has awakened him and told him to sleep on his side and not on his back. When brought to the hospital he did not see what he had been put in punishment for, that he had done nothing. He has failed much in physical and mental condition and we advise that he be sent to the State Asylum for Insane Criminaks

J. H. was committed to prison January 9, 1905. "When first received he asked many questions that were utterly incongruous which were then thought to be attempts at feigning, but it was soon found that he was very simple-minded and unable to do much work from sheer stupidity."

We emphasize by repeating this quotation because it evidences that malingery had been fully considered. We gather from these certificates that apparent gross stupidity, extreme suspiciousness and bizarre conduct were leading symptoms upon which his commitment was based.

The asylum records show that on admission patient was of slender build, poorly developed and badly nourished. There were no heart murmurs, but a pronounced epigastric pulsation was present. Capillaries and veins of chest were enlarged. A few moist rales were heard low down in left axilla. Knee jerk was almost absent. No abnormality in muscular, pain or temperature sense were noted. Eye-sight, patient states, had been failing for six months. 1908]

Patient states that he was born in India, is thirty-five years old, married, and has four children. Parents died in Ireland at about the age of fifty-five from unknown causes. Father was a soldier and was doing duty in India when patient was born. Has one brother and one sister living. Two brothers and two sisters are dead; he does not know from what cause. J. H. said that his father was a drinking man, but that his mother was temperate. Denies epilepsy or insanity in family. Attended school in Ireland to age of fifteen, then came to the United States. After landing worked for a year in a stable and for the next year was a teamster. Came to Salem. Massachusetts, about that time and was between two and three years with an insurance company. Later was a year with a tea company, and then opened up a pool room of his own and kept it about two years when he sold out and followed bartending until arrested. Has drank some all his life but only for past two years to excess. Contracted syphilis in the latter part of 1903 and only had three or four months treatment. Says he had been keeping company with a woman who kept a restaurant and they had been drinking together. He spent considerable money with her and in a drunken brawl shot her, but professes to remember nothing about the affair. Says before he met that woman he had saved \$1100.00, and was a sober, steady fellow, attached to His only sickness was typhoid fever when young. his home. Was never seriously injured. This was his first arrest. Eye-sight began to fail about six months ago and at present is quite poor. Vision was apparently 15/100 in each eye as tested August 18. 1905, and could not be improved with spherical or cylindrical lenses.

On admission patient complained of pain and a tired feeling in his head. Said he had not slept well for several months, in fact since he went to prison. Denies any remembrance of his crime, and thinks it was the result of drink and worry over having contracted syphilis from the woman he shot. Said that the inmates, some of the officers and the doctor were down on him at State Prison. Several times he saw a white powder on his coffee or milk and would not drink it as he knew it was poison. He would not trust the inmates there as they had all sorts of powders and chemicals. He also hears voices in his head which call him a bastard and a murderer and prevent him from sleeping. He complained much

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ment. Orientation for the time and place was good and he seemed depressed and slightly emotional when speaking of his family, as would be natural for a man, not wholly depraved, in his situation.

On August 18, 1905, one month after admission, it is recorded:

Examined by staff. Nothing new to record. Irrational ideas like those of an imbecile. Very suspicious. Would as soon go back to prison except for "Dick Currier," a prisoner, who acts as dentist and doctor's assistant. Says, "I don't want to be experimented on by Currier any more." Tells of the white stuff he saw on his coffee. Thinks some one was trying to poison him. Claims he does not remember shooting the woman. Thinks he must have been drunk. Says he is gaining in weight and feels better for being out of doors. Thinks the medicine he is now taking agrees with him. One or two inmates have threatened to punch him here (not a delusion), but has had no fight and has no complaint to make. The voices in prison used to keep him awake by saying "the s- of a b- that killed a woman," but he does not hear such voices now. He says he remembers Drs. Mitchell, of Danvers, and Simpson, of Salem, but does not remember ever talking to Dr. Jelly or Dr. Cowles. Says several other physicians came with Drs. Mitchell and Simpson to the jail one day and asked him lots of questions, but he did not know their names and cannot tell who they were.

September 29, more than two months after admission, it is recorded:

Has gained 12 pounds in weight and is brighter than on admission. He still insists that "Dick Currier" tried to dope him because he made light of Dick's knowledge of medicine. He still thinks the man in "Tewksbury" (an open ward on the lower floor, so called because of its dormitory character) did call him vile names—"the s— of a b— who killed a woman," etc. His mental improvement has corresponded with his physical gain. He has had no trouble here. Denies that he has ever been insane and wants to go back to State Prison where he can learn something, when he gets his eye-sight and general health. His hair, which came out at the time he had an eruption on his body, is growing and the mucous patches in his mouth have healed while taking mixed treatment.

October 30, three months after admission, it is recorded:

Patient has not changed much. Is apparently very suspicious. Complains to attendants that the supervisor has put poison in his milk. At times he will change glasses of milk with a patient sitting by him at table. He does not make any trouble and admits that he is getting better. He complains to physicians that supervisor is following him up and that the night watch flashes his light into his room to annoy him. He is either a good deal demented or cleverly feigning. His vision is apparently some-

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what improved, but is still below 15/70 in each eye and can not be improved by lenses. Ophthalmoscope shows an apparent gray color of both optic disks seemingly outside of normal limits. Retinæ and vessels of ocular fundi seem otherwise normal. The pupils were not dilated and reacted moderately to light, which, in our opinion, would weigh against the idea of any high degree of optic-nerve degeneration. The apparent slight deviation from a normal appearance of the optic disks might mean a moderate degree of gray degeneration, as the writer was inclined to believe.

On November 20, four months after admission, it is recorded :

Patient wrote a letter to his wife yesterday asking her to send a doctor to examine him, as he did not think the doctors in the asylum understood anything about his eyes, and if they did, they would not give him glasses. Also complained in the same letter that poison was put in his milk. He knew it was poison because when he exchanged it with another patient the man was made violently sick. He complained of headache and disturbed digestion and wrote that he did not intend to take any more medicine. Patient has gained steadily in weight since admission. In July when received he weighed 124 pounds; in August, 132 pounds; in September, 136 pounds, and in October 137 pounds. Appears much brighter than when admitted, but is very suspicious and apparently delusional.

Subsequent records did not change the complexion of the clinical picture. He continued apparently very suspicious, irritable and hard to please. He refused a box of tobacco left by his wife because the tobacco was taken out of the tin box in which it came. (Tin boxes having been used to make keys by some clever locksmiths among our patients were proscribed from the wards.) He refused to sign a written permission for the medical officers to open his letters—a precautionary measure thought needful in caring for the convict class—to keep out morphine, small saws, money, etc., on the ground that we were trying to get him into some trap. He would give oral permission but declared he could "see through our little game" and refused to put his name to paper.

For the first two months that J. H. was under our care, the weight of evidence seemed to point to a dementing psychosis—a paranoid type of alcoholic dementia seeming best to fit his case. We were of this opinion in spite of the strongest proof that he was malingering at the time of his trial. The evidence kindly furnished from notes made by Drs. Cowles and Jelly, in consultation with Drs. Mitchell, Simpson and Atwood, while J. H. was waiting trial in Salem jail, was so strong that no doubt could be held but that he was playing insane at that time. I refrain from reading these notes, hoping to hear from those physicians present who examined J. H. previous to his sentence.

Before trial J. H. pretended to be so demented that he cond not write his name, he did not know where he was, could not me where he was born, could not taste sugar, salt or pepper nor sud ammonia. After sentence was pronounced on him, he prompty became his old self again, according to one who had known in personally for some years.

We are indebted to some intelligent citizens of Salem who had no personal bias or interest in the conviction of J. H. in a character sketch of our ex-patient, and the consensus of opinion seems to be that he was living on the same moral plane with the woman he shot. The report of W. B. P., an intelligent newspape man of Salem, harmonizes with information from other source and is so well expressed that I quote his report, including his inpression of prisoner's mental condition in full:

I had personally known J. H. for some years. He was in a sense some thing of a "character" of the city, selling policy slips, gambling, etc. of the sly. I never personally noticed anything unusual about his men condition and from what I knew of him regarded him as bright and shreet and with some characteristics which deservedly won for him the nick-see of " loe the Snake."

As a News reporter I interviewed J. H. in the cell at the Beverly point station the afternoon following the murder that morning. He had been drinking previous to his arrest and as I wrote in my story at that time. his appearance and talk indicated that he was either half drunk, share ming insanity, or else was really somewhat "daffy."

He recognized me, called me by name, and repeatedly spoke of "harms to fry in the chair for doing the job," etc., as will be seen by the published interview in the News at that time. My personal opinion was that he was not insane at that time, but just getting over the effects of the drink, 25 k acted "muddled," as semi-intoxicated persons will.

The next day he appeared in the district court. He was normal and appeared just the same as I had seen him for years. He recognized at and spoke to me, calling me by name, and as I was making a sketch of bs at the time for publication in the News, he admonished me to "make 4 good picture" of him.

The case was continued a few days and when he appeared in court some three or four days later, I saw him and spoke to him, but he would not answer. Instead, he sat like a statue, with fixed eyes staring straight



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ahead of him, apparently unseeing. His counsel at that time was Lawyer Blank. Confidentially it was believed by the reporters and many of the lawyers, that this appearance on H's part was assumed at the suggestion of his attorney. In fact several of us at the court openly joked the latter and told him that H. was "overdoing it," meaning that such a sudden change within those few days was rather too much of a "defence" to happen all at once.

I saw H. some weeks after that at the Salem Jail while he was waiting trial. H. sat in his cell with his eyes raised in a stony stare to the ceiling. I spoke to him, but he didn't move a muscle. I asked him what attracted his attention in the corner and he paid no attention whatever, but sat as rigid as a statue. One of the attendants told me that he always sat that way "when anybody was around." He said also that "they hadn't *caught* him acting normal." It was the expressed opinion of the attendants to me that H. was "shamming, but doing an elegant job at it."

The next time I saw H. was in the superior court when he was arraigned. He sat with his straight-away stare, and when called, his counsel, Hon. A. P. W., nudged him to get up, as H. showed no signs of having heard the call. H. stood up and the complaint was read, but he never turned a hair or made any move to change his position or stare. Mr. W. whispered to H., and then H. pleaded "guilty." He acted all through it the same as at the other times I had seen him after the first day's arraignment in the district court, when he was, as I said before, practically normal.

Sentence was pronounced on him in the superior court a few minutes after his plea of guilty, and from that instant he became what I would term "his old self" again. As he was led out he smiled at some friends and shook hands with several with a smile on his face and bade them good-bye in a perfectly normal way.

The court proceedings occupied a few minutes, and he was taken back to jail, I should say, about 10.30. Shortly after his arrival in jail he asked the attendants to send to the *News* office for me to come down and see him, giving my name. I went and had the interview which was published in the *News*.

To me the remarkable change in the man from one of stony stare and absolute indifference to his surroundings (as I had seen him at the jail before and in the court room) to his practically normal appearance on that last day, was significant, to say the least. He talked rapidly and with a perfect recollection of events and things, and I jokingly twitted him on *not* knowing me on my previous visit to the jail when he sat with eyes riveted in the corner, which caused him to smile rather "knowingly," I thought.

He went to State Prison that noon on the train, and I went in the car with him up into the yard a short distance, shook hands with him, and he was just the same careless, natural Joe that I had known about town before the murder. I realize that my opinion is doubtless worth nothing, but from what I saw of H., before and after the case, I am forced to the conclusion that his stony-stare business was adopted by him for the sole purpose of shamming insanity, and that when he found that his "bacos" was not to "fry and sizzle in the chair," as he put it, he gave up the trick. I will say this, that he certainly did an elegant job.

This report records the impressions of a layman and, as he states, his opinions may be counted of little worth by members of this Society. But the witness is an intelligent citizen, without prejudice, who has known J. H. for some years, and we feel that no apology is needed for introducing his testimony here. It may be worth nothing also that this layman's account fits in well with the observations of some alienists of good repute who are members of this Society, and that his conclusions were not very different from theirs.

For several months the writer and his medical colleagues, after repeated examinations, were agreed in the opinion that J. H. was suffering from a paranoid type of insanity, probably of alcoholic origin. We were sure that he had been simulating and believed he was yet simulating in some respects, but were inclined to agree with one of the committing physicians that, "although he pretends to be more foolish than he actually is, I think he is far below 'par' mentally and that prison discipline can not be properly maintained in his case."

On one occasion after J. H. had been under observation some five months he was led to talk of his experience as a bartender. Reminiscent mental pictures seemed to please him and to relax his guard—as he talked entertainingly of his some time patrons prominent in social and political circles. In response to a request for a formula of a favorite drink, patient's suspicions were again alert. "I guess you know how to make it all right," he said, after a searching look and a moment's pause. When J. H. began to believe that the request was honest, his expression reflected the humor of the situation, and in his tone were mingled pity and scorn as he replied: "You must be a hell of a doctor if you don't know how to make a mint-julep."

It was not the patness of his reply and lively sense of the fitness of things, alone, that seemed significant. There appeared to be a twinkle in his eye and a quizzical half-smile on his lips foreign to the egotistic expression of the paranoiac, entirely different from the colorless expression of the imbecile and impossible to one

deeply demented. At no previous examination had J. H. appeared so off his guard, and on each subsequent occasion when conversing with the physicians he appeared extremely suspicious and unreasonable. But when he did not know he was being observed by any physician he was apparently able to adjust himself readily to his environment. Although he seemed so extremely unreasonable when conversing with the medical staff, he was able to keep friendly with all the attendants and with other patients. Indeed, he was so friendly with one attendant who was suspected of being crooked that the evidence of a secret understanding between the two weighed against the hypothesis of a genuine dementia. When it was learned subsequently that this attendant was under an assumed name, that he had been discharged from Middletown and Northampton under other names, and was capable of almost any treachery for a consideration, our distrust of both patient and attendant was not lessened. (This attendant had made frequent reports concerning the demented conduct of J. H. which did not harmonize with the reports of other attendants.)

The evidence of simulation on the part of J. H. cumulated steadily and the writer advised that he be returned to State Prison and he was so returned in June, 1906, after being under observation nearly eleven months. Our final opinion that J. H. properly belonged in prison rather than in an asylum or hospital for the insane was reached reluctantly. The writer had expressed an opinion that the man was an insane malingerer. On one occasion J. H. was called from his bed at eleven o'clock at night to convince the somewhat skeptical chairman of the State Board of Insanity. After this it was not a reason for self gratulation to be obliged to reverse an expressed opinion and advise that the man be returned to prison.

For some years before the homicide J. H. had been called "crazy Joe" in his own city. Others called him "Joe the Snake." It seems he had acted as agent for the "Honduras National Lottery Company," apparently a branch of the "Louisiana State Lottery Company," as a side issue to his regular duties as a poolroom proprietor and presiding official at the bar. For some months we could not believe that this man who was so "simpleminded" at prison that he could not do much work "from sheer stupidity" could be a clever actor. His physiognomy did not

suggest marked histrionic talents, but the accumulated evidence finally forced us to the conviction that his simple-mindedness was

somewhat like that of "Ah Sin," Bret Harte's "heathen Chinese." Considered apart from its relation to other cases and from the great problem of properly classifying the different grades of criminals, the "deviates," the "degenerates," the "moral imbeciles " and the truly insane criminals, this case would offer little worthy the attention of this association of scientific men. But I cannot consider this case independently of other cases. With this case as a center, other cases crowd into the field of consciousness, In the margin of the field is the repulsive shadow of the gallows or electric chair and the associated thought of the execution of these peculiar people. In this case, fortunately, members of our profession did not take the position of strenuous partisans. There were several joint examinations and consultations by members of this Association engaged by State and defence and the aim, manifestly, was not so much to excel in partisan service as to serve State and accused by an honest effort to find and report the whole impartial truth. It is pleasant to indulge the hope that the methods employed in this case and other cases in New England within the past few years are tokens of a time to come when reputable physicians will no more discredit their profession in the esteem of the public by exhibitions of strenuous partisanship for a pecuniary consideration. We think it in a measure true that upon every thoughtful physician the responsibility of doing justice to these cases sometimes weighs heavily. We acknowledge that a man is not necessarily insane because his reactions vary somewhat widely from the average of his fellows. We assume that this Association would agree, in theory at least, with the revised version of the Declaration of Independence, that all men are created unequal and " are endowed by their Creator with the unalienable rights of life. liberty and the pursuit of happiness,"-so long as they respect the rights of their fellow men.

It sometimes seems as if we do not sufficiently consider the force of habit and bad education in its relation to conduct, when the course of a life time is rudely interrupted by law, nor the kind of reactions to expect when discipline is applied for the first time to one whose passions have never before been subject to discipline. When we find evidence of brain disease, we are practically agreed

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that the best hospital for the insane is none too good for the afflicted one. When there is evidence to justify the diagnosis of a recognized type of psychosis, our opinions are not likely to conflict about the disposition of the case. But when we come to that class of peculiar, headstrong people, marked by a deficient moral and altruistic sense and undisciplined temper or a seemingly inherent love for vice and crime,-then each case we think must be judged by itself. If the case is amendable by hospital methods, then we feel like giving the prisoner the benefit of every doubt, but if the prisoner clearly "fakes" for the evident purpose of being transferred to an asylum where the officers are not armed and where hospital methods is the ideal, at least, then we sometimes say the case is not amendable by hospital methods and is not a proper subject for hospital care,-even though he may be "below par" mentally. We hold it to be a truth almost self-evident that "it is better that asylum features be introduced into prisons than that hospital and asylum standards should be lowered by prison necessities." Indeed, we are inclined to think that every prison organization ought to allow for the fact that ordinary criminals are, and by right ought to be considered, "below par" mentally.

Some years ago in a northern New England village lived a school boy in his teens who had been the despair of his teachers for several years. Time and again the birch had been freely used in a vain effort to break him of the "balking" habit. If corrected when reading or reciting, he would stop short, set his teeth, and refuse to obey. His attitude being one of sullen silence. A new teacher decided that iron-clad rules of discipline did not fit the case. When Henry refused to read or recite, the question or the recitation was passed to the next and the sullen boy was entirely ignored for the balance of the day. It was a new experience to be neither coaxed nor punished and it proved to be the right medicine for the boy. After three days he did not " balk " again. was never brought into court as a stubborn child and did not become an inmate of a reformatory or a hospital for the insane. He is now counted among the solid men of a New England village and is liable to be drafted for jury duty at any time. The case of stubborn Henry is related to our subject in this respect. It was not a case of insanity but rather one of psychic variation, or "deviation," if you please to have it so expressed. When we shall have taken the fact to heart that there is a wide physiological range to the reactions of the human brain, we may better differentiate between insanity and the common psychic variations to which humanity is heir. We shall surely organize our punitive and reformatory institutions as educators are learning to organize our schools so that there shall be no iron-clad disciplinary measures applied to each and all regardless of mental variations.

We have had no authentic information concerning J. H. since his return to prison, but in a Boston daily of October 11, 1906. about three months after his return to prison.—we read that—

In an attempt to convince the authorities of the prison at Charlestown that he is insane, J. H., alias "Joe the Snake," made a sham attempt at hanging in his cell between II and I2 o'clock Tuesday night.If the attempt had been genuine, H. would have failed, for officer B. discorered him before he had been hanging more than two minutes, at once finding that this, like many of his previous actions, was only a ruse to persuade the prison officials that he was crazy. The officer found H. apparently hanging to his cell door by a piece of sheeting. It appeared to be tied fast about his neck. The officer reached in and gave the prisoner a push, and H. staggered back into his cell, the sheeting dropping loosely from his neck.

We may safely assume that this account in the daily press did not loose anything in the reporting, but we have reason to believe that there was a feeble attempt or a bluff at hanging.

In the Boston Medical and Surgical Journal for November 29, 1906, Dr. Stedman reviews the report and conclusions of Schott on two cases of suspected simulation of insanity. The conclusion from these two cases and the literature being, that "it seems questionable whether pure simulation of mental disturbance ever occurs in those who are mentally completely sound. At any rate it is extremely rare. Simulation of insanity is found most commonly in degenerate individuals and is to be regarded as an outcome of degeneration."

If we could settle on a clear definition of terms, I think we would fully agree with the conclusions of Dr. Schott. We would not quarrel with the stronger statement that it seems questionable whether there ever occurs an occasion for simulation of insanity in those who are mentally completely sound. The divergence of opinion is likely to hinge upon this: What is it to be a "degenerate," and what is it to be mentally completely sound?

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Happy is the man who combines clear insight and acute honor sense and moral enthusiasm; happy indeed is he "who has been so trained in his youth that his body is the ready servant of his will and does with ease and pleasure all the work that, as a mechanism, it is capable of; whose intellect is a clear cold logic engine with all its parts of equal strength and in smooth working order, ready like a steam engine to be turned to any kind of work, and spin the gossamers as well as forge the anchors of the mind; whose mind is stored with the great and fundamental truths of nature and of the laws of her operations; one, who no stunted ascetic, is full of life and fire, but whose passions are trained to come to heel by a vigorous will, the servant of a tender conscience; who has learned to love all beauty whether of nature or art, to hate all vileness and to respect others as himself." Such is the man whom Thomas Huxley credited with possessing a liberal education. Such is the man we would credit with being mentally completely sound. For such a man the simulation of insanity, we agree, would be well-nigh impossible.

On August 21, 1907, some three months after this paper was written, J. H. was recommitted to the State Asylum for Insane Criminals on the following medical certificate:

CHARLESTOWN, August 4, 1907.

To His Excellency, CURTIS GUILD, Jr., Governor of the Commonwealth of Massachusetts.

Sir.—We have examined J. A. H., 37 years of age, committed January 9, 1905, for "murder in the second degree," sentenced for life, and would respectfully report:

J. A. H. was sent to the State Asylum for Insane Criminals July 17, 1905, and was returned June 13, 1906, as "not now insane" and also a "clever malingerer." His work has been in the yard where an ordinary feeble-minded person could do the work acceptably, but H. has never done the very little required of him decently. He eats little and complains of pains in his stomach. This is not mentioned as a proof of mental disease, but for the sole purpose of accounting for his loss of flesh. He has not shown the slightest sign of being clever, and we believe, after several examinations, that he is an imbecile, and not a proper subject for the ordinary discipline of the prison. In addition a large knife was recently taken from him, and he has made serious threats.

We feel that J. A. H., in consequence of mental deficiency, can not be considered sane and therefore advise that he be sent to the State Asylum for Insane Criminals.

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I. H. was much emaciated on this second admission and evidently had been fasting. He volunteered the information that he knew he had tuberculosis and ought to have been sent to the prison camp for the tuberculous at Rutland. In the light of our previous acquaintance, the question was raised whether his fasting had been due to delusions about his food or a part of a plan to get transferred to the prison camp for the tuberculous near Rutland. It seemed to us significant that his symptoms at the State Prison all pointed to gross stupidity, imbecility or mental deficiency. The medical certificate, indeed, hardly mentioned a delusional state but laid emphasis on the fact that he "was very simple-minded and unable to work form sheer stupidity" and again "we feel that J. H., in consequence of mental deficiency, can not be considered sane and advised that he be sent to the State Asylum for Insane Criminals." This was all in marked contrast to his symptoms after his first few months at the asylum. At first he appeared very stupid or deeply demented. Later his symptoms shifted to those of a very delusional paranoiac. When he was returned to the prison he apparently became very stupid again. When he was returned to the asylum his stupidity all vanished and he again became a full-fledged paranoiac. It appeared as if he concluded to give up fasting when he found there was no chance of being sent to the Rutland camp, as he gained twenty-three pounds in the first three months after readmission to asylum. He was put on the hospital ward, asked for work after he had become fairly strong, and took care of the patient's clothes room as intelligently as any paid employee for two months.

Such are some of the facts which make us feel that J. H. did not "show the slightest sign of being clever" at the prison because it did not suit his purpose to show the slightest evidence of intelligence there. This man had apparently lived by his wits for years in the city of Salem. By profession a pool-room proprietor, bartender, and lottery ticket agent on the sly, he had carried on an illegal business without arrest at the expense of the gullible for years. We have the opinion of intelligent citizens of Salem, who knew him well, that he was "regarded as bright and shrewd, with some characteristics which deservedly won for him the nickname of ' Joe the Snake'." It seems unfortunate for the diagnosis

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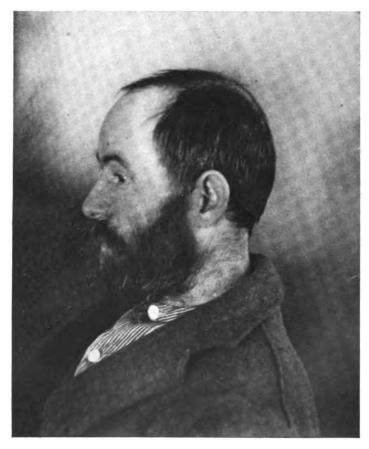
of imbecility that imbecility is a constitutional and fairly constant state.

In all the evidence it does not appear that he had a delusion regarding the woman he shot. She had jilted him for another and he acted under the impulse of jealous anger while partially intoxicated. This was the sum and substance of the motive for his act. While waiting trial he tried the imbecile act on Drs. Jelly, Cowles, Mitchell, Simpson and Atwood. He so overacted the part that each and all agreed that his symptoms were not consistent with any recognized form of mental disease. "And there was abundant evidence of his purpose to fabricate symptoms."

At the trial "he sat like a statue with fixed eyes staring straight ahead of him apparently unseeing." "Sentence was pronounced on him in the superior court a few minutes after the plea of guilty, and from that instant he became what I would call his old self again. . . . He went to the State Prison that noon on the train and I went on the car with him up into the yard a short distance, shook hands with him and he was just the same careless, natural Joe that I had known about town before the murder."

Apparently J. H. was not discouraged by his failure to properly impress the alienists who examined him in Salem jail, for we read, "when J. H. was first received (in prison) he asked many questions that were utterly incongruous which were then thought to be attempts at feigning, but it was soon found that he was very simple-minded and was unable to do much work from sheer stupidity." I wish here to disclaim any purpose of casting reflections on the judgment involved in any one of these quotations. They seem pertinent because they illustrate different points of view. A suspicious physician might have inquired whether this man had always been so stupid. He might have reasoned that imbecility, being a congenital condition, must have been in evidence as well before as after the shooting. Had he known how this man had earned his livelihood he might have wondered that such a stupid person could have prospered at the expense of the gullible through the lottery business worked on the sly. It is fair to assume, however, that the committing physicians did not have access to all the evidence, or that the weight of evidence presented to them outweighed the evidence which seems to us to establish the fact that J. H. has been a clever fabricator of mental symptoms from before the time of his trial to the present day. While we believe it to be true that all the symptoms mentioned in his commitment were feigned, yet the question of his entire responsibility is still an open one. He seems to us to be so much of a "degenerate," or so marked a "deviate," to use the more luminous term of Dr. Walton, of Boston, and so difficult to care for in prison, that the ends of justice and humanity may be as well served by making the asylum for "Joe the Snake," or "Joe the Fox," a permanent home.

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" JOE THE FOX."



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ALCOHOL AS AN ETIOLOGICAL FACTOR IN MENTAL DISEASE.

BY HENRY A. COTTON, M. D.,

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There is hardly any question to-day of such importance and interest to us as physicians caring for the insane, as that chosen for this discussion, and although this may be considered a sociological question, still our responsibility for its final solution can not be underestimated.

The progress in general medicine has been largely marked by discoveries of preventive measures and by their practical application, a notable decrease in certain diseases has been effected. So in our province the question of prophylaxis is of even greater importance than in general medicine and we must hope at present for more from this source than from curative measures. We will attempt to show that alcoholic excesses, and even moderate indulgences, are a large factor in producing the increasing ratio of insanity to-day. If we could make the public at large recognize this fact, much would be accomplished toward a solution of this problem. That this question, apart from its religious and moral aspect, has a direct bearing upon race hygiene can not be doubted; but that our counsels and warnings in this direction will be heeded is quite another question.

When it was proved that malaria and yellow fever were directly due to the bite of certain species of mosquito, how quick the public were to see their danger and follow the directions that would rid them of these diseases. The same can be said of smallpox and other diseases. But with the use and abuse of alcohol as in the case in venereal diseases the public as a whole pays little attention to the counsels of the medical profession and as a result we find a steady increase in the diseases the result of these vices.

White¹ who is always quoted in regard to this question says

¹ White: Alcohol and drug intoxication. Reference hand-book of the Medical Sciences, Vol. 5, p. 31.

"The causes of drinking are intimately varied and infinitely bound up in the heart of man—at once the expression of his strength and his weakness, his success and failures." And in view of this condition we see why it is that our counsels are not followed. Paton' remarks that there is no question to-day that is in greater need of being studied by sober minded individuals. Also that the public instruction has usually been based upon imperfect observation and that the facts are so distorted by fanatical enthusiasm that to say the least, little good thus far has been done.

However, one needs but to review the literature on the subject of alcoholism to see that a great deal of scientific work has been done both in this country and abroad, especially the latter. The opinions expressed are unanimous in regard to the harmful effects of alcohol on the body as well as the mind. In order to obtain some idea of the relation of alcohol to insanity, we must necessarily turn to statistics, which although questionable at times, are the only means we have of forming any opinion of this relation.

For convenience in considering this question, we can divide the etiological effects of alcohol into direct, indirect or accessory, and inherited effects. Under the head of direct, we will consider only the rôle of alcohol in causing distinctive psychoses, attributable to the abuse of this agent alone.

Under the indirect effects we will consider the influence of alcohol as an accessory cause in the production and modification of other psychoses. And under the inherited effects we will consider the effects of parental alcoholism on the offspring.

ALCOHOL AS A DIRECT CAUSE.

That alcohol is directly responsible for certain psychoses that go to make up a relatively large percentage of the admissions to insane hospitals at the present time, cannot be questioned. If one consults the statistics compiled in modern hospitals one is easily convinced that the above is true. That these statistics do not include all the alcoholics is plain, for a great many habitual drinkers, while not legally insane are as much a menace to public safety as those adjudged insane, yet they may never be committed.

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^a Paton : Psychiatry, p. 310.

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Also many cases of delirium tremens are treated outside of these hospitals and do not come into the statistics. Because of the above facts, these statistics would underestimate rather than overestimate the conditions as they exist. The proportion of alcoholic insanity to the total insane is placed by various observers from 13 to 30 per cent, according to the community from which they were taken.

Kraepelin[•] reviews the statistics of the Psychiatric Clinic at Munich for the year ending 1905. Among 1373 persons admitted, 30 per cent of the male patients were suffering from psychoses due directly to alcohol and 6 per cent of the female cases.

The majority of the alcoholic cases admitted were simple drunkenness, while the next largest group were those classed among the chronic types (31.5 per cent), and only 10 per cent of delirium tremens. This small percentage of cases of delirium tremens is explained by Kraepelin by the fact that many such cases are treated outside the clinic. The remainder, less than 20 per cent, were classified as subacute.

It is interesting to compare statistics from a beer-drinking community like Munich, with communities where the people use largely distilled liquors. Kraepelin found no difference in the psychoses caused by malt liquors and those caused by other forms of alcohol, although a great many of his cases indulged in whiskey as well as beer. Mitchell' gives statistics compiled from the admission to the Danvers Insane Hospital for five years ending with the fall of 1903. He finds that in 13.1 per cent of the male cases out of a total of 1129 admissions (males) alcohol was the direct factor in causing the psychoses. The dipsomaniacs are excluded from this number, as well as cases where alcohol was an accessory factor in producing other psychoses. The percentage of delirium tremens is nearly three times as large as the percentage of such cases admitted to the Munich clinic. This can be accounted for by the different habits of drinking in the two countries as well as by the fact that whiskey is used more freely here than in Germany.

^a Der Alcoholismus in München. Münchener Medicinische Wochenschrift, April 17, 1906.

⁴Types of Alcoholic Insanity. American Journal of Insanity, Vol. LXI, p. 251, October, 1904.

The small percentage of the alcoholic cases reported by Mitchell. is due to the fact that it is an average for five years. It is also true that our present number of alcoholic admissions come very near to the figures given by Kraepelin. That there is an increase in the cases of alcoholic insanity the following figures taken free the annual reports from 1903 to 1906 (Danvers Insane Hospitalwill show :

	Alcoholic	looholic male cases.		Both male and female.	
1903	19.8 ре	er cent.	12.6 per cent.		
1904	18.9	40	13	**	
1905	23	**	14	֥	
1906	25.6	**	15	64	

Here we see that the increase in cases for 1906 over 1903 is to per cent and over the average for a period of five years before that the increase is 12.6 per cent for the male. These tables are compiled carefully and can be taken as showing fairly accurately the percentage of alcoholic insanity for this period.

Alcohol as an Indirect Cause.

None the less important is the effect of alcohol as an accessory cause in other psychoses. And here we must again refer to Knepelin who has compiled so much in the work to which we have referred. He finds that in 44.0 per cent of psychoses not directly due to alcohol this agent was an important factor in producing the mental disturbance. When male cases alone are considered, the percentage reached 61.8. He further analyzes this percentage in the various psychoses.

Among the epileptics, in 65 per cent of the male cases and $\frac{2}{25}$ per cent of the female cases, alcohol could be held responsible for their commitment. It is notably true that in this class of cases alcohol is especially dangerous and directly causes a train of mpleasant symptoms—acts of violence, dreamy states, with tendency to homicide, suicide, and pyromania—besides producing a very unfavorable effect upon the convulsions. Among the psychopathic cases, alcohol played a very important rôle and Kraepein gives the percentage as 59 in the males and 46.2 in all cases. He considers that alcohol is almost entirely responsible for the mental disturbance in this large number of cases, especially in weakening the already weak and unstable will. In 42.9 per cent of the imbe-

ciles, alcohol appeared to be responsible for their admission to the clinic. In manic-depressive insanity alcohol was present in 45.5 per cent of the cases but often the abuse of alcohol can be considered as a symptom rather than a cause of this disease, although it modifies to some extent, the nature of the attacks. In traumatic neuroses alcohol also had an unfavorable effect upon the course of the disease, and in arteriosclerosis 64 per cent of the cases are alcoholic. This last refers only to arteriosclerosis as effecting the brain and does not show the percentage of the effects on other parts of the body.

Kraepelin's views on the influence of alcohol in producing general paralysis, while somewhat radical, seems to be based upon sound premises. In this class of cases it was found that in 51.9 per cent of males and in 33.9 per cent of females (46.6 per cent in all) alcoholic excesses were present, and he refers especially to early excesses and not the later excesses which may be classed as symptoms of the disease.

This large percentage of cases in which alcohol is present was considered by him as something more than accidental, especially when this is compared with cases of dementia praecox in which disease alcohol has little to do with the causation. In the latter class of cases only 14.4 per cent of the men and 4 per cent of the women were alcoholic. That this discrepancy is more marked in the case of the women, he considers of the utmost importance as showing the harmful effects of alcohol in people previously infected with syphilis. According to him alcohol is responsible for the large ratio of general paralysis in Munich. As a proof of this he cites the relative infrequency of general paralysis in countries where alcohol is but little used. As an example he mentions Java, where only one general paralytic was observed, and Turkey and Arabia. where the disease is almost unknown. The relative infrequency of general paralysis in women as compared to men in other countries, in some instances, only 1 to 17, he considers due to the protection of women from alcoholic abuses. Twenty-five years ago the proportion of female to male cases in Munich was I to 5, but at present it is I to 2, and he ascribes this increase partially to the use of alcohol. So strongly does Kraepelin feel on this subject that he is convinced that one-third of the cases of general paralysis could be avoided if people with syphilis would

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abstain from alcohol. And when it is taken into account that three-fourths of the infections by syphilis occur when the contracting party is intoxicated, it brings the total of possible prevention by abstinence from alcohol to 80 per cent.

INHERITED EFFECTS OF ALCOHOL.

The hereditary effects of alcohol are better understood when we consider that its harmful effects are transmitted directly to the germ plasm. Inherited alcoholism is believed in by many, meaning in a broad sense a predisposition toward drinking habits and inherited "tastes" for alcohol. If we subscribe to the dictum of biological science to-day, that acquired characters as such are not transmitted, we certainly must ascribe a different role of alcohol through heredity. We can more easily harmonize the view that alcoholism in the parents, especially at the time of conception, affects the germ plasm and thus injures it by its toxic effects. This is the conclusion arrived at by modern investigators who have had an opportunity of inquiring more minutely into this subject. Among those who support this view may be mentioned Kraepelin, Forel, and Bevan Lewis. The latter* discusses this subject at length and goes even deeper into the analysis of the effect of parental alcoholism on the germ plasm, and he believes in a separate and distinct effect in paternal and maternal transmission. According to him epilepsy, chorea, hysteria, moral and impulsive types of insanity are the direct results of paternal transmission. In contradistinction to these "explosive" forms the "quiet" forms such as congenital mental weakness, imbecility and idiocy are the results of maternal transmission. This view is upheld by other observers who based their opinions not only on the inherent nature of the male and female elements, but also upon facts gleaned from statistics.

That this matter of the transmission of the toxic effects of alcohol in injuring and interfering with the development of the foetus, is of more than theoretical importance, is easily seen when we consider the practical application of this theory. Forel[•] for ex-



^{*}Bevan Lewis. Alcohol, Crime, and Insanity. Journal of Mental Science, April, 1906.

^e Forel: Die Alcoholfrage. München, 1906.

ample found in some two thousand idiots in Switzerland, that a very large majority had alcoholic parents. He even goes further into his inquiries and finds in a large majority of these cases the date of conception could be definitely placed during carnival and "fest" seasons, at which times, as is well known, the people were accustomed to drink a great deal more than usual and become intoxicated. Many other authors could be cited as upholding this view but I think this is sufficient to arouse interest in this phase of the alcohol question. It is not difficult to believe that the germ plasm is thus affected materially when conception takes place under such unfavorable conditions. This may also explain the accidental occurrence of defective children in families where the other children are normal, and no other causes can be found for these accidents.

If we look at the matter from another point of view, we find that the progeny of habitual drinkers, suffers materially from the effects of alcoholism in the parents. Kraepelin quotes from the investigations of Plaut who observed 29 families in which the father and mother were habitual drinkers. The results found which can partially, at least, be ascribed to alcohol were as follows:

There were 33 miscarriages and 183 living children in these families: 60 or 32.7 per cent died in their first year, and of 98 children personally observed by Plaut, 58 (59 per cent) were abnormal; 35 being nervous and psychopathic, 8 epileptic, 12 imbeciles and 3 idiots. Among the 40 healthy children, 6 were weaklings and retarded in their development, 7 rachitic, 3 scrofulous and I tuberculous; and of the 23 mentally and physically normal, 8 showed distinct stigmata of degeneration. These figures will pretty well coincide with the findings of other investigators and when compared with the children of non-drinkers, the effects of the alcohol are readily seen.

Regarding miscarriages and still-births, it has been shown by various observers that the percentage in alcoholic families is greater than non-alcoholic. In 81 families with alcoholism in the parents, Arrive' found 5.2 per cent of still-births against 2.8 per cent in non-alcoholic families and 11.64 per cent of miscarriages

'Arrive: Quoted by Baer and Laquer. Die Trunksucht und ihre Abwehr, p. 89.

against 0.64 per cent in the latter. Bourneville' found in im and epileptic children that in 35 per cent the father was also and in only 3 per cent was the mother alcoholic. The effect alcoholic parentage in idiots and epileptics some observers give high as 85 per cent.

CONCLUSIONS.

We might go on indefinitely quoting statistics but they wold in the main, only substantiate the views based upon what we have already quoted; i. e., that alcohol accounts for an alarming merber of the commitments in the insane hospitals to-day both direchindirectly, and through inherited influences, and that this percentage is slowly but steadily increasing.

The statistics given by Kraepelin are noteworthy from the at that the Germans boast that alcohol (in the form of beer-diming) does not effect them as a nation. But these statistics would tend to refute that theory and I have no doubt that the statistic compiled from other communities, would coincide with those of Kraepelin. That a people can become immune to the effects of alcohol through generations of drinking habits, an often quoted theory by those who would uphold drinking in European comtries, has been entirely discredited. That they may be able m drink more without its affecting them, may be true, but there is no reason to believe that they are not subject to the same harmful effects of alcohol in both body and mind, as in those countries where habitual drinking has not been the order for centuries.

The problem as presented in this country and that abroad is distinctly different, in that the difficulties in the way of education are much greater abroad than here. This is partially true because of the difference in the traditions and habits regarding drinking that holds sway in the two countries. With us, although alcoholism is increasing, still drinking as such is frowned upon and the youth of the country from moral and religious reasons, are taught to abstain from alcohol, although they may depart from this teaching later. Contrast this state of affairs, with the conditions in Germany, for example, where not only is drinking upheld, but people from childhood on are taught that it is not only right but necessary to the life of the individual.

Bourneville : Recherches cliniques, etc. Paris, 1904.

Among the uneducated classes hardly a man can be found who does not believe that beer is as necessary to him as food and this belief is also shared to some extent by the better educated people. Coupled with these views is the custom of regularly giving children and even babies beer, so that the problem of education of the masses regarding alcohol is an extremely difficult one.

We certainly have no such education of the masses to undertake and hence the problem here though difficult enough, cannot be compared with that in Europe. We cannot but admire such men as Kraepelin and Forel who are leaders in the anti-alcohol agitation abroad, and at the risk of being considered fanatical by a large majority of the people, not only preach total abstinence but practice it as well. With them there is no middle ground for they believe that total abstinence is the only solution of their problem.

From the data presented in this brief communication, I think we are justified in concluding that the problem with us is serious enough and worthy of our thoughtful consideration.

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A COMPLICATED CASE OF BRAIN TUMOR.

By CHARLES RICKSHER, M. D., Assistant Physician, Danvers Insane Hospital;

WITH AN AUTOPSY REPORT

By E. E. SOUTHARD, M. D., Pathologist, Danvers Insane Hospital.

The following case is interesting both from the clinical and pathological sides by reason of the varied lesions and post-mortem findings:

The patient, L. W., was a married woman of 45 years and was admitted to the Danvers Insane Hospital on December 12, 1907. The history obtained from the husband is as follows:

Family history unknown. The patient was born in New Hampshire and, as far as is known, the early life was uneventful. She first married at about twenty years of age and had one child, a boy, who is living and is healthy. She married her present husband 16 years ago. There were no children by this union.

The husband describes her as a mild, even-tempered woman who took things as they came and did not worry over trifles. She attended to her duties as a house-wife in an exemplary manner up to the beginning of the present illness.

The menstrual periods became irregular about four years ago and she passed the menopause about two and one-half years ago. At this time she was nervous and anxious, restless and agitated. After the menses stopped she recovered and regained completely her former disposition.

About twelve years ago she had some womb trouble accompanied with vaginal discharge and pain in the lower abdominal region. This disturbance lasted about three months during which she was unable to do any work but she was not confined to bed. About five years ago she had a left otitis media which yielded to treatment. About two and one-half years ago she again had a discharge from the left ear which lasted several weeks. The discharge occurred for the third time in August 1907 but lass only a short time. The husband denies any venereal trouble.

The present illness began in December, 1906. At this time in patient was very nervous, had headaches, and felt anxious orcerning herself. The headaches are described as a feeling of a dull heavy pressure and seemed to extend from the forehead to the base of the brain and from which she seemed to gain rele by sleep. Change of position had no effect. She often spoke w her husband of becoming insane and wondered if she would have to go to a hospital. She was irritable and easily fatigued and when she exerted herself became very tired, out of breath and more irritable. She remained in this condition for three or im months and then the husband noticed he had some difficulty a understanding what she said. Her speech became quite indistin: and it would be necessary for her to repeat several times what se wished to say before her husband could understand her. She spoke as if she were tongue-tied. About this time the left side of the body became weak, especially the leg, although the weakness was also apparent in the arm. At times she would seen to give way on the left side. There was also some pain at the base of the brain. About June 1, on the advice of a physician. she moved to the country. After this there was an entire change. She became stupid and drowsy and slept most of the time. She became forgetful and could not remember little things about the house. She would ask her husband about her son sometimes twenty times in an evening without comprehending that she had asked him before. She did nothing on her own initiative but would undertake house-work if told to do it. The quality of the work was below her normal. She was dizzy and fell several Since August, 1907, she has taken no interest in any times. This conthing. She would sit and gaze at space for hours. tinued until November, 1907, when she became quite restless and would sleep only under the influence of a hypnotic. She was untidy in her habits and would wet and soil herself.

About three weeks before admission she began to experience visual hallucinations, she saw pink rats and other animals running about the floor, baby carriages, and, according to her husband. about everything imaginable. For the two weeks preceding admission she had been unable to move about by herself and fell

many times. She was very restless and would not stay in any place very long. The day before admission she failed to recognize her husband and asked who he was. At no time was there any nausea, vomiting or convulsive attacks.

On admission physical examination showed a well nourished woman. There was a marked ptosis of the left eyelid. The pupils were contracted, the left being larger than the right, both were central and slightly irregular in outline. It was extremely difficult to determine the light reflexes, but both pupils seemed to contract slightly to direct light and accommodation. There was a marked pyorrhoea. It was impossible to get the patient to protrude her tongue beyond her teeth. The heart sounds were clear and the radial arteries were not palpable.

The left leg was slightly atrophied and the patient was unable to move it. The left arm was somewhat smaller than the right and the patient was unable to flex the forearm on the arm. Muscle strength was less in the left arm than in the right. The left side of the face showed some paresis and the patient was unable to draw her mouth to the left.

The tendon reflexes were slight in the right arm and absent in the left. The knee jerks and patellar reflexes were active on the left side, they were slightly diminished on the right. Babinski's phenomenon was present on the left side, and not on the right. Schaefer's reflex, pressing the tendo Achilles between the thumb and index finger, cause a dorsal flexion of the great toe on the left side, a plantar flexion on the right.

As far as could be determined she could distinguish the head and point of a pin on both upper and lower extremities, on both sides. She was unable to use the left arm, there was no incoordination noticed in the right arm. Stereognosis for coins was good in both hands, the patient answering quickly and correctly. Several attempts were made to examine the eye grounds but the patient became nauseated and vomited at each attempt.

At no time during her stay in the hospital was there any evidence of hallucinations or illusions. Consciousness seemed to be clouded, the patient was quite apathetic and paid no attention to anything going on about her. Past events of a striking character were retained but there were many lapses. She gave the date as Friday, December 20, 1886, was unable to tell where she was and said she had been here one month. She was unable to answer correctly simple geographical and historical questions. She was able to perform simple problems in addition, but now in division.

The speech defect was quite noticeable. Only by close attention could one distinguish what she said and when asked a quetion she would repeat it several times before answering. The speech defect seemed to have two components, a stammering due to motor disturbance and an ommission of words due to be mental condition. The handwriting showed a marked coarse tremor.

There was some insight, the patient saying that the panhus followed a shock but she could not realize that the memeory we disturbed. There was a tendency to laugh or cry on very slight stimulus.

She remained in bed during her stay in the hospital and gradally became more drowsy and less restless. At times she would weep and attempt to talk but the speech defect increased to such an extent that she could not be understood. About noon on January 22, while her husband was visiting her, she began to have some difficulty in breathing and became somewhat cyanotic. The right eye was turned upwards and inwards and showed a marked nystagmus which did not affect the left eye The respiration became more difficult and she died at 245 p. m.

AUTOPSY FINDINGS.

The autopsy was performed seven hours after death by Drs. E. T. T. Richards and M. M. Canavan. Following is a summary of such findings as are of interest in the present connection. It is planned to present a fuller account from the histo-pathological side at a subsequent time.

The cause of death is in doubt. The left middle ear contained 1-2 cc. of greenish pus from which a bacillus of the colon group was recovered in pure culture. The bacillus was not fatal to guinea pigs on intraperitional inoculation. The pericardium showed a slight acute fibrinous exudation of recent date. The relation between the otitis media and the pericarditis is in doubt Culture from the heart's blood was negative, as also from the cerebro-spinal fluid. There was a mild acute degenerative nephritis superimposed upon a chronic interstitial nephritis.

The findings in the nervous system are probably more significant than those of the trunk. Both Gasserian ganglia showed somewhat recent chronic exudative processes of similar character, with giant cell formation and accumulation of lymphoid and plasma cells but without caseation or vascular lesions. Neither tubercle bacilli nor, by the Levaditi method after formalin fixation in one of the ganglia, spirochætæ, were demonstrable in these lesions of the ganglia.

The source and character of the Gasserian lesions are difficult problems. Possibly the left middle ear was the source of an infection with which these lesions are connected. Further work is in progress to find what relation the bacillus of the colon group, isolated from the ear, may have to the lesions. It is probable that the most reasonable hypothesis concerning the lesions is that they are tuberculous, despite the absence of bacilli in the sections. It is probable that the left-sided ptosis may be due to involvement of the third nerve in the chronic exudation, which can be demonstrated to be advancing beyond the capsule of the Gasserian ganglia.

The findings in the central nervous system were manifold:

(1) A dural endothelioma of the left side—the hemiplegic side in this subject—measuring $4 \times 3 \times 2.5$ cm. deep, occupying a position between the superior frontal, anterior ramus of inferior precentral, paramesial frontal, and middle frontal sulci (Quain's nomenclature). Study of the underlying cerebral cortex fails, to demonstrate more than a mild gliosis as a result, doubtless, of the very slow and gradual tissue absorption running *pari passu* with the tumor's development. It was supposed that the tumor might, in some way, be responsible for the homolateral hemiplegia, but further study disposed of this possibility.

(2) Arterio-sclerotic lesions. The basal arteries were smaller than normal and showed areas of sclerosis at points of branching. There was no gross demonstration of arterio-sclerosis in the smaller vessels. On section of the pons multiple small cysts of softening containing numerous endothelial cells were found on both sides of the median line. (a) At the level of the isthmus, the most prominent cyst of softening is on the left side, is of crescentric shape, measures 5×2 mm., and cuts some of the fibers of the pyramidal tract as well as some commissural fibers. (b) A second but smaller cyst cuts various pyramidal fibers on the right side at the level of the isthmus, together with many of the deep commissural fibers of the pons. (c) The left brackers pontis is interrupted by an oval cyst, I x 0.4 cm., running downwards and outwards almost to the pia-mater. (d) Smaller (755 and vacuolar perivascular spaces occur elsewhere in the pontine region but no particular description of these is made for the present communication.

The case is evidently complex anatomically. The striking dural tumor had actually little to do with the physiology of the patient. The pontine arterio-sclerosis must have had much more to do with pyramidal tract interference, although here again there is no massive destruction of either tract. The right-sided tracabove the decussation is obviously smaller than the left-sided tract.

An investigation by the Nissl method of the cell pictures of the precentral gyri shows that, in the blocks examined, the Betz cells are, with few exceptions, absent on the right side, and present, though reduced in numbers, on the left side. The preence of the tumor on the left side of the cerebrum has effected very little stratigraphic alteration of the underlying cortex. It is not possible to say what is the origin of the disappearance of the Betz cells from the right precentral gyrus. Possible factors seem to be toxic, from the meninges, arterio-sclerotic, or secondarily degenerative.

In view of the equivocal character of the various intracramil lesions, including: (1) alterations of the Gasserian ganglia. (2) chronic and subacute meningitis over various parts of the cerebrum, (3) dural tumor of the left frontal region, (4) multiple cysts of softening of the pons, (5) Betz cell atrophy more marked in the right precentral gyrus, it was hoped that the spinal cord findings would clear up the case. The spinal meninges, however, showed an extensive subacute inflammatory process with areas in which the lymphocytes have invaded the cord tissue. The areas of myelitis are chiefly in the periphery and are tolerably extensive in some levels, notable in the thoracic region of the left side. It is quite plain that the meningomyelitis, however recent it may have been, must have modified clinical symptoms through compression of the spinal roots.

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The pyramidal tract degenerations in their intraspinal course are about equal on the two sides, so far as can be made out in Wiegert preparations. In some levels, by means of neuroglia stains, it can be made out that the left pyramidal tract is traversed by more numerous neuroglia trabeculæ. The diagnosis of more extensive left-sided pyramidal tract lesion in the cord is based rather on neuroglia findings than on myelin sheath findings.

ANATOMICAL SUMMARY.

Acute and Subacute Lesions.

Acute fibrinous pericarditis. Acute degenerative nephritis.

Otitis media (bacillus of B. coli group).

Granulomata, possibly tuberculous, of Gasserian ganglia.

Subacute cerebrospinal leptomeningitis.

Focal encephalitis, by extension from meninges, especially beneath ependyma of posterior cornus of ventricles.

Focal myelitis, especially on the right side in the thoracic region.

Chronic Lesions.

Chronic interstitial nephritis, with atrophy of left kidney.

Slight arterio-sclerosis, especially pontine.

Multiple cysts of softening of pons.

Chronic cerebral leptomeningitis.

Betz cell atrophy of percentral gyri, especially right.

Dural endothelioma with lime deposits.

Slight focal cerebral atrophy underlying tumor.

General cerebral atrophy with compensatory oedema of piamater. Cystic septum lucidum.

CLINICAL SUMMARY.

It is extremely difficult to ascribe the various symptoms to definite lesions. The pontine lesions are of such a degree that they might easily modify any symptom which could ordinarily be ascribed to the tumor or the meningitis.

A tumor in the frontal region rarely, if ever, gives definite localizing symptoms. In this case the apathy and indifference to her surroundings and also the early headache may be due to it. Its position near Broca's convolution suggests some connection with the speech defect but it is more probable that the lesions in the pons have more to do with it.

The ptosis may be accounted for by the extension from the Gasserian ganglion but it seems very probable that there may have been a nuclear lesion. The visual hallucinations may be accounted for by the meningitis and the dulling of consciousnes following it and the tumor.

The lesions in the pyramidal tract explain the Babinski refer but there hardly seems to be enough difference in the two tract lesions to explain why it should exist on one side and not on the other. There was probably some focal lesion in the cervical ord which interfered with the reflex arc of the left arm and slightly with that of the right which could explain the arm reflexes.

The paralysis of the left side was due directly to the destruction of the Betz cells and this destruction can be accounted for $\frac{1}{20}$ toxic influences from the meninges or by pressure from the turner but one would be inclined to give more to the toxic hypothesis.

The case offers nothing new as far as localization is concerned but it does call attention to the vast changes which may be caused by arterio-sclerosis and also to the meningeal consequences of a chronic otitis media. In a large number of the cases which have come to autopsy in this Institution in the last six months pus has been found in the middle ear. Figures are lacking as w the presence of meningitis in these subjects but there is no doubt that the middle ear infection has in some at least influenced the clinical picture. The diagnosis of such cases is almost an impossibility as yet but it is worth while to keep such things in view especially as they influence so much the prognosis.

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VHAT ARE PELLAGRA AND PELLAGROUS INSAN-ITY? DOES SUCH A DISEASE EXIST IN SOUTH CAROLINA, AND WHAT ARE ITS CAUSES?

N INQUIRY AND A PRELIMINARY REPORT TO THE SOUTH CAROLINA STATE BOARD OF HEALTH.

STATE HOSPITAL FOR THE INSANE, COLUMBIA, S. C., Dec. 30, 1907.

ENTLEMEN:

The medical members of the board of regents and the medical taff of the State Hospital for the Insane beg respectfully to subnit to your attention the following report:

Introduction.—By way of introduction we wish to say that, like ther physicians of our acquaintance, we have from time to time een perplexed by the appearance of a disease presenting the menal symptoms of depression or mild delirium combined with an czematous condition of the exposed surfaces of the body, espeially of the hands and face, and usually the third symptom of an bostinate diarrhœa. Several of our cases have shown at home in ifferent parts of the State mental symptoms of such pronounced haracter as to require commitment to an asylum. Three outside ases have been seen in consultation.

The syndrome of skin, intestinal, and mental symptoms point owards a disease known in southern Europe as pellagra, but that isease has so rarely been suspected or recognized in this country hat we find that other physicians, like ourselves, in studying their ases, have excluded pellagra because most authorities deny its xistence in North America. This inquiry based largely upon linical evidence and a study of the few original papers on the ubject by Americans brings into question the truth of the last weeping statement. We are satisfied that we are dealing with onditions very similar to those presented by true pellagra as decribed by authors, but of the real nature of the disease, especially s to its etiology we are in doubt—hence this inquiry. The recent admission to our State Hospital for the Insue in three cases which present clinically the classical symptoms if pellagra has forced us to study them with especial care and a review the histories of cases previously observed besides looking up such literature as is available. We have also conferred with several experienced general practitioners in Columbia and Charker ton and from them have secured assistance and advice as well is the histories of outside cases included as part of this report.

It is the opinion of the older members of the staff that case presenting pellagrous symptoms have appeared among our patients for some years and that the real nature of the malady has not been fully recognized and determined, but that latterly it's becoming much more frequent among our patients. These patients have come from various parts of the State, being possibly somewhat more numerous from the Piedmont section.

Whatever its nature the disease is not infectious or communicable.

One of the objects of this paper, besides calling the attention of your board to what seems a distinct pathologic entity, is to ask your co-operation in directing the attention of general practition ers to its symptoms and occurrence, and thereby gain a fuller knowledge of its distribution, causation, and prevalence than is possible for isolated observers like ourselves.

PART I. GENERAL. WHAT ARE PELLAGRA AND PELLAGROUS INSANITY?

Definition and Description.—What then is pellagra? Van Harlingen (1) calls it "A complex disease characterized by three classes of symptoms:

I. A squamous erythema confined to those portions of the skin which are exposed to the action of heat and light.

2. A chronic inflammatory condition of the digestive passages shown chiefly by obstinate diarrhœa.

3. A more or less severe lesion of the nervous system, leading at times to mental alienation and paralysis. These various symptoms are at first insignificant, and in a certain way periodic—they begin or recur in spring, and diminish or disappear in winter. Later, they become persistent, more and more marked, and finally terminate fatally."

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Griesinger (2) in 1861, after seeing cases of pellagra in the asylums of northern Italy doubted the specific nature of the disease, but thought that in its final state it greatly resembled general paralysis of the insane.

In 1883 Spitzka (3), of New York, announced in his excellent treatise on insanity:

"Pellagrous insanity will not be discussed in this volume, as it does not occur in America, and is limited to such countries as Italy, where maize forms a staple article of diet and where the disease known as *pellagra*, which is attributed to the living on spoiled maize, occurs in an endemic form."

Says Manson (4) in 1907: "Indeed there are vast regions in which maize is extensively cultivated and much eaten, but in which pellagra is absolutely unknown. A most convincing example is that of the United States of America."

Says Tyson (5) in Ziemsen's Cyclopedia:

"Pellagra is a disease which is thought to be due to a fungus which infects maize or Indian corn. It occurs particularly in Lombardy, and is characterized by a scaly and wrinkled condition of the skin, especially of those parts exposed to the air. The strength and mental faculties are affected. Sensation is obtunded and cramps and convulsions supervene, much as in ergotism."

Macpherson (6) in 1899 expressed the opinion that:

"Pellagra is a disease of the nervous system accompanied by mental symptoms and followed often by degeneracy in the descendants. This transmitted degeneracy is characterized by mental and physical feebleness and a marked predisposition to the recurrence of the affection in the predisposed offspring. The disease is common in the southern parts of Europe, especially in Italy, and has been indubitably traced to the eating of immature and otherwise unwholesome maize."

From Mendel (7), of Berlin, we learn that:

Pellagra "shows in the prodromal stage general distress, fatigue easily brought on, disturbances of digestion, usually with areas of redness of the skin, which is chapped, cracked, and deprived of epithelium. The second stage is dominated by pathological phenomena of the intestinal tract, and the third stage shows, besides disturbances of the nervous system (weakness and pareses, paresthesias and anthesias, weakening of the cutanous reflexes and exaggeration of the tendon reflexes) a melancholic depression, which often passes to the stuporous form."

It will thus be seen that true pellagra appears to be akin on the one hand to ergotism and lathyrism and on the other to the paretic forms of insanity, while in some of its manifestations it is not unlike acute delirium.

History.—The earliest account of this malady as an endemix affection comes from Spain, where it was recognized in 1735. It appeared in Italy just prior to 1750, and was first scientifically investigated in 1771. It first appeared in southwest France in 1829. Its present distribution embraces the districts of Europe situated within a zone extending from 42° to 46° N. It is found also in Egypt and Asia Minor. Sandwith found it in 1900 among the colored lunatics on Robben Island (4).

The disease attacks males and females indiscriminately, and no age is exempt. Cases are on record of children of 14 months and 2½ years of age. Under sanitary and preventive management it is claimed that pellagra has almost disappeared from France, but there are in Italy 100,000 cases of the disease, that is, 10 per cent of the rural population. About 10 per cent of pallagrous cases be come insane. It is said that there are upwards of 50,000 cases of pellagra in Roumania.

There is a voluminous literature on the subject in Italian, French and German, as is shown by over eight pages of bibliography in Vol. XII, Second series, of the Index Catalogue of the library of the surgeon general's office in Washington. But in English, outside of short accounts or definitions of the disease in the text-books, articles are few and far between.

Although recognized now as existing in Yucatan and Campeche, as well as in Brazil and the Argentine Republic, pellagra has rarely been reported as being found in the United States.

In April, 1907, however, Dr. G. H. Searcy (8) read before the Alabama State Medical Association an account of an epidemic of acute pellagra in the State Hospital for Colored Insane at Mt. Vernon, Alabama. Since the opening of the hospital in 1901 three or four cases of a strange and fatal skin disease had occurred, but its true classification was not recognized. In the late summer and early fall of 1906 the epidemic appeared. In all 88 cases occurred

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with 57 deaths, a mortality of about 64 per cent. Since the observation of these cases among the colored insane patients some four or five others have been recognized among the white patients at the Tuscaloosa (Ala.) asylum.

In the report for 1907 of the Alabama insane hospitals by Dr. J. T. Searcy, superintendent, just received, it is stated that: "there was last fall (at the Mt. Vernon Hospital) an epidemic of pellagra, which was very fatal. This being a heretofore unknown disease in America, it was not recognized as such for some time. Cases have, since then, been brought into both hospitals from different parts of the State, showing that it occurs in this part of the country. There have been nine deaths at the Bryce Hospital during the past 12 months from pellagra, five of them were infected when they came."

A sporadic case diagnosed as pellagra was reported by T. C. Merrill, M. D. (9), of Colorado, Texas, in September, 1907.

Symptoms.—Usually the disease first manifests itself in the spring, the earlier symptoms pointing to the gastro-intestinal tract and the cutaneous structures, while the later and more advanced symptoms involve the cerebral and cerebro-spinal systems.

In his monograph (1903) Procopiu (10) gives this definition:

"Pellagra is a periodical disease, having remissions and exacerbations. It manifests itself in persons exposed to its invasion at the beginning of spring, becomes more aggravated until summer and then begins to lessen little by little to the point of giving during the winter the illusion of cure. It returns each year at the same season, so long as the cause persists, that is, the eating of the products of Indian corn."

Says Radcliffe-Crocker (11) in substance:

At first there is weakness and lassitude, giddiness, headache, articular pain, severe pain in back radiating to the limbs, especially the hands and feet; the tongue is furred, the epigastrium tense and painful, and the bowels are loose, sometimes with slight jaundice. The skin of the forearms, elbows, face, and neck are affected with dermatitis. The erythema may develop in 24 hours and last 10 to 18 days. It consists of a diffuse, dark or livid red erythema, which disappears on pressure unless hæmorrhagic. The skin is swollen, tense, and itches when exposed to the sun. After two weeks the erythema subsides; desquamation follows, leaving

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the skin thickened and pigmented. The nails and hair are unifected. After several attacks the skin dries, withers and wrinks. The skin manifestations thus present three stages: (1) Congetion; (2) thickening and pigmentation; (3) atrophic thinning.

Upon recrudescence after the first attack the patient become emaciated and weak, with headache and pain in back and tendeness on pressure near the dorsal vertebræ, the knee jerk is ever gerated. The tongue gets denuded, is red and dry; there is a burning sensation in the mouth, deglutition is painful, diarher increases to profuseness; all the cerebro-spinal symptoms, many of them meningeal, are aggravated, and the patient is delirious, sinks into a typhoid state and dies.

Mental Symptoms.—These usually assume the type of metacholia. The milder forms show merely a retardation of idea. disinclination for thought and activity or simple mental depression. Later the disease may advance to a profound melancholia, erem refusal of food, and suicidal tendencies manifesting themselves. Maniacal symptoms are rarer, but sudden outbursts of delirium or excitement may occur in cases of apparent stupor.

Clerici (12) (1855) described pellagrous insanity as consisting of "a vague, incoherent delirium, accompanied by stupor, loss of memory, and by loquacity without special disorder of intelligence or violent excitement."

Pellagrous insanity is divided by Procopiu (13) into acute and chronic delirium. The acute delirium may be associated with alcoholism, when it presents the symptoms of delirium tremens. Or acute delirium may manifest itself in the course of chronic delirium. In the latter case the patient who has been quiet and apathetic, becomes restive as if tormented by an obsession. The delirium may become furious, leading to suicide or murder. Intense religiousness may be a symptom or food may be refused. The chronic delirium has been divided into the melancholy, demented and stuporous types, but pellagrous patients usually suffer from melancholia of an anxious type. The termination is dementia.

"Pellagrous insanity," says Régis (14), "is one of the most grave varieties, not in itself, but because it is the expression. in the sphere of intelligence, of a general disease, progressive in its course, and inevitably ending in cachexia and death." Says Warnock (15): "The frequent early occurrence in pellagra of symptoms of dementia, with loss of memory and childishness points to organic brain disease, and reminds one of the mental condition of patients suffering from organic dementia due to gross brain lesions, and of the later stages of general paralysis. Indeed, the last stage of a general paralytic of the melancholic type and that of a pellagrous patient have many resemblances to one another."

Etiology.—Among the abandoned theories about the origin of pellagra may be cited those of its being an expression of leprosy, scurvy, syphilis, or alcoholism.

Tuczek (16) concludes that "pellagra is due to certain toxic substances developed in the course of the decomposition of Indian corn and, possibly, under the influence of epiphytes on the corn." "The maize cut before it is ripe, gathered in rainy seasons, stored away damp, sown from affected seed, all contribute to the engendering of some toxic development in the grain which forms the true pellagrous poison."

From the dermatologist's (17) side it may be cited:

"Pellagra is believed to be due to the consumption for long periods of time of damaged maize, this being the staple article of food in most of the countries where the disease is endemic. The eating of the grain harvested before it is fully ripened, particularly in regions where famine has existed, the harvests are poor, and the lower class of the rural population live in insalubrious conditions—is the chief factor in the production of the malady.

"Persons of both sexes and all ages are liable to contract the disease; heredity is supposed to exert an influence, especially when the nervous symptoms of the malady are predominant. The sporadic cases occurring where there has been no suspicion of the ingestion of improperly prepared food are believed to represent a 'pseudo-pellagra' having a wholly different etiological history."

A sample of the meal used at the Mt. Vernon (Alabama) Hospital (18), which was supposed to be the best western meal, was sent to the pathologist in charge of the Laboratory of Plant Pathology at Washington, and he reported that "the meal was wholly unfit for human use; that it was made of mouldy grain and con-

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tained quantities of bacteria and fungi of various sorts, some a which were identified."

Dr. Merrill (19) also referred some of the corn meal that had formed his patient's diet to the Laboratory of Plant Pathology & Washington. The pathologist reported that the meal was make for regular diet, being "unquestionably in bad condition and we rancid to eat, at least for a regular diet."

Radcliffe-Crocker (20) sums up the etiology alliteratively: peasant life, poverty, and polenta (a food made from maize).

"Pellagrous insanity," says Bianchi (21), is a "disease arising from intoxication of the nervous system," and further that "Cei and Besta concluded that both *Penicillium gloucum* and *Aspegillus fumigatus* play very important part in the etiology of pellagra, and that their action can be explained only by their demmining phenomena of progressive intoxication by means of the toxines they set free in the gastro-intestinal canal."

But after all that has been said and written upon the etiology of pellagra, there seems yet to be doubt as to the ultimate cause, as witness this extract from Novy (22) in Osler's Modern Medcine (1907):

"While there is no question as to the fact that the poisoning is due to corn, the actual cause, notwithstanding the numerous in vestigations which have been made, is by no means established. It is reasonable to believe that the specific toxuc products are formed by the action of some bacterium on the maize which has been cut while immature and stored in damp condition."

Diagnosis.—In cases (23) where the nervous symptoms are especially prominent, the diagnosis has to be made from neurasthenia and hysteria. Here we must consider etiology.

While the history, periodicity in the spring, and increased kneejerk will help distinguish between the affections, the exanthem may be absent, but when present without symptoms it must be distinguished from pure solar erythema. The condition of the tongue and intestinal tract will assist in the diagnosis. If the spinal symptoms primarily attract attention, the coincident mental disorder, the erythematous eruption, and the gastro-intestinal lesions will determine between pellagra and a pure neurosis.

Other diseases to be excluded are: Ergotism, lathyrism, beriberi, scurvy, eczema, lichen, uncinariasis (hook-worm disease)

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1908] PELLAGRA AND PELLAGROUS INSANITY

acute delirium, alcoholism, syphilis, and paresis. In brief *pellagra* may be said to present a triad of symptoms: Dermatitis, diarrhœa, and depression. The more prominent skin symptoms are erythema, dessication, and desquamation; those of the digestive system: salivation, dyspepsia, and diarrhœa; and of the nervous symptoms: headache, backache, spasms, paralysis of legs and melancholia. In our colored patients the dermatitis, diarrhœa, and consequent emaciation, as well as the dementia and paresis, have been strikingly well marked. The disease is said sometimes to exist without the eruption—a condition called "pellagra sine pellagra."

Pseudo-pellagra.—Occurs in chronic alcoholism with peripheral neuritis, and is said sometimes to appear in asylums among the demented and general paralytics. In the latter case it is more likely a pseudo-general paralysis, since true paresis does not present the skin or intestinal lesions of pellagra. "The disease is pellagra when it fits in with the orthodox theory and when it can be connected in any way with maize, but when this is not possible, the disease becomes 'a pseudo-pellagra." (Manson (24).)

Ergotism.—History of diet (usually rye), headache, vertigo, mild delirium, blindness, deafness, anæsthesia, cramps, convulsions, and gangrene.

Lathyrism.—History of diet (vetch); pains in the kidneys and lower extremities, spastic paralysis, possibly paraplegia, increased knee-jerk, ankle clonus. Intelligence clear.

Scurvy.—History of food conditions, earthy complexion or jaundice, depression both nervous and mental: pain in limbs and joints, indurations and ecchymoses, visceral hæmorrhages, stomatitis.

Beriberi (24).—Peripheral multiple neuritis, sometimes ascribed to a diet of rice, œdema, or emaciation, severe effusions, slight hydrothorax, general dropsý, ataxia, partial paralysis, great muscular weakness; knee-jerk lost or impaired, ankle-drop, palpitation, precordial distress; pericardial effusion, systolic bruits, violent carotid throb; anæsthesia in pretibial region and hyperesthesia in calf and other groups of muscles. General health good; may be dyspepsia, but tongue clean and bowels fairly regular. Urine may be scanty but otherwise normal. No fever. Intellect not involved. Filaria, anchylostomum, and other worms are very commonly

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found in beriberi. Manson concludes that beriberi is a germ disease, but probably not communicable from man to man.

Lichen.—Roundish papules, small or large, chronic in course, and appears on anterior surfaces of arms above wrists, lower part of abdomen, calves of legs, and around knee. It may appear on palms of hands and soles of feet. Hair and nails unaffected. General nutrition never affected in L. planus. Prognosis favorable with tendency to spontaneous recovery.

Eczema.—The common symptoms of infiltration and thickening of the skin with exudation and itching which characterize this disease are not associated with the conditions of the gastro-intestinal and central nervous systems which make up the clinical picture of pellagra.

Acute Delirium.—Fever, delirium, great motor excitement, and rapid exhaustion, ending frequently in coma and death. Duration from 10 days to 3 weeks. No cutaneous or intestinal lesions.

Hook-worm.*—More or less pronounced anæmia followed by rapid exhaustion. Tallow-like skin in which you seem to see through the upper into the lower layer. There is an absence of perspiration which is frequently complete. The skin and hair are dry. The heart is found to be enlarged, with the apex beat displaced. Hæmic murmurs are common, as are also cervical pulsations. There is usually considerable abdominal tenderness shown by even slight pressure on the epigastric region. This tenderness has the decided tendency to continue, on palpation towards the right, but disappears toward the left side.

About 60 per cent of the cases show scars on the skin with the history of sores of long standing. About 85 to 95 per cent give history of "ground itch." In cases in which the anæmia began before puberty there may be total absence of hair in axillary and suprapubic regions. In affected females the menses are retarded and irregular, and rarely accelerated.

The symptom of "pot-belly" is common, though not as common as usually supposed. The pupils are usually dilated, even when facing a strong light. If not dilated, they dilate very readily when looking into the observer's eye, and sometimes even when

* Diagnostic symptoms as dictated by Dr. Ch. Wardell Stiles, of the U. S. Public Health and Marine-Hospital Service.

acing a strong electric light. The most pronounced mental sympom as a diagnostic aid is a low grade of mentality, or rather of ullness or stupidity, as indicated by repeating a question or askig that it be repeated. This is exceedingly common. This dulless, however, is cleared up in a striking manner after the exhiition of thymol. The tendency is to constipation rather than to iarrhœa, though some cases have diarrhœa. The seasonal peridicity shows an acceleration in summer and fall. The disease is uch more common among people in sandy regions than in clay egions. Usually if one case occurs in a family, several others are bund infected.

Pellagra, or at least pellagrous symptoms, may be associated ith some of the above mentioned diseases as well as with malaria, iberculosis, traumatism, and the eruptive fevers such as typhoid r diphtheria. Here the diagnosis is to be made only after careful xclusion.

The diagnostic symptoms of the other more common diseases nentioned need not be introduced here.

Prognosis.—The disease may run an acutely fatal course or an xtremely slow one. (Searcy.) Our experience has been that fter admission to the asylum the duration of cases will scarcely verage six months. Cases having severe diarrhœa, emaciation, nd delirium run a rapidly fatal course in spite of the usual treatnent. In Europe, it is said, pellagra may run through 10 or 15 ears. Recovery can be expected only when the patient has passed rough one or two annual spring attacks, is removed from the ause, and is placed in hygienic surroundings. If the disease is ar advanced, the prognosis is unfavorable, as it is also when pernanent nervous lesions appear, such as chronic insanity, or motor aresis.

PATHOLOGY.

General.—Wasting of adipose and muscular tissues, fragilitas ssium, degeneration of the cardiac muscular tissue, fatty degeneation and atrophy with slight degree of sclerosis of the liver, pleen, and kidneys.

Constant.—(a) Intestinal: atrophy, of muscular coat, with ccasional hyperemia and ulceration of lower part of tract.

(b) Abnormal pigmentation (like senility) of ganglionic cells uscles of the heart, the hepatic cells, and the spleen.

(c) Changes of nervous system. By far the most important and constant post mortem signs: Hyperemia, anemia, œdema of central nervous system, pacchymeningitis, cerebral and spinal leptomeningitis, obliteration of spinal canal.

Most noteworthy and constant: Degeneration and secondary proliferation of the lateral columns of spinal cord in dorsal region but also of posterior columns in cervical and dorsal regions.

Treatment.—The questions of prophylaxis and treatment, although of highest importance do not properly come within the scope of this inquiry, but may be summed up in the fundamental principle of discovering and removing the cause.

In Europe the usual method is to prohibit corn in any shape and form as food, or, if this is impossible, permit the use of only such grain as is ripe to perfection, is well dried, and stored, and which is the result of sowing of good quality. The cultivation and use of other cereals is to be encouraged.

The nervous symptoms of the disease are treated according to general therapeutic indications. There is no specific. If hookworms are found associated with pellagra they should be removed by thymol.

Before taking up the consideration of our cases this paragraph taken from Warnock's (26) paper on "Pellagrous Insanity" will prove interesting:

"Pellagra is never uncomplicated in the stage seen here (the Cairo, Egypt, Asylum). Every patient suffers from parasitic diseases. Favus, often producing complete baldness, is frequently present. The anchylostomum worms are always present, and the resulting extreme anæmia accounts partly for the great prostration of these cases. Other intestinal worms often occur. Bilharziosis of the rectum or bladder affects many cases and further aids the development of the anæmia and exhaustion. In fact, it is a matter for astonishment that an individual preyed on by so many kinds of parasites is able to survive so long. Many of these patients have a dried-up wizened look, suggesting that of a mummy."

Furthermore, as to the likelihood of erroneous conclusions by reason of the secondary or accidental association with hook-worms this quotation from Manson's (27) "Tropical Diseases" in regard to beriberi is pertinent:

"The novice in tropical medicine will be greatly puzzled for a

ne over these cases. . . . If he examine the blood of these tients, possibly in a proportion of them, he will find filaria nocrna or some other blood worms; very likely he will then think at the cases are forms of filariasis, and he may construct theories

explain how the filaria produces the symptoms. Or if he exnines the feces, very probably in over 50 per cent of the cases, in some countries in nearly all the cases, he will find the ova of ichylostomum duodenale, and, probably those of trichocephalus spar also. On this evidence he may conclude that these are uses of anchylostomiasis. He had better, however, not commit mself to such a diagnosis, until he has ascertained how it fares ith the rest of the population as regards these parasites, for he ill find that the filaria, the anchylostomum, and the trichocephais are quite as prevalent outside as inside the hospital, and in the ealthy as well as in the sick."

In 1902 Dr. Harris, of Georgia, reported a case of anchylostomisis, presenting the symptoms of pellagra:

A farmer first seen March 8, 1902, unmarried, aged 29 years, native and esident of Georgia. The patient had been reared in unusual poverty, the read constituting his principal diet from infancy being always of Indian orn produced at home. When first seen his health had been bad in pring and summer for 15 years, being manifested by malaise, loss of ppetite, thirst, melancholia and weakness and anæthesia of legs. Later kin over hands, arms, and dorsal surfaces of feet became inflamed, blisered, and covered with scabs. He was constipated. Examination dislosed decided cachexia. Anchylostomum worms were found and a large umber expelled by thymol. Later examination showed their absence. Patient reported that he was at first improved but later that he was no wetter than before treatment.

Dr. Harris writes that having lost sight of this patient he can give no subsequent history.

PART II. LOCAL. DOES SUCH A DISEASE EXIST IN SOUTH CAROLINA AND WHAT ARE ITS CAUSES?

CASE I.—M. C., admitted to State Hospital December 9, 1907, white, female, American, housekeeper, age 30 years, married 11 years, 3 children, no miscarriages. In this State one year. Previously for three years in Cleveland County, N. C.

Previous History.—Family very poor, but patient was healthy up to five years ago when menses ceased. In spring three years ago rash appeared on back of hands like sunburn, which spread in spite of treatment. Got better in cold weather, but never entirely healed. Family produced all the corn they used. None of family or neighbors have had "ecrema," he family physician said he had had a similar case. Patient developed symtoms of mental depression about two years ago, which subsequently have been continuous. Bowels have been constipated with occasional diarther, the latter having been constant and severe for three months before atmassion. (See Plate I.)

On Admission.—Extreme adynamia, stupid appearance, reluctance p exertion. Sat with bowed head and spoke in monosyllables and only when spoken to. Muscular system fairly preserved. Axillary and supraphic hair present. Poor appetite but intense thirst. Temperature 97 degres: pulse 80, regular and full. Respiration 20. Urine normal, as shown by repeated examinations. Blood examination showed a relative increase if lymphocytes and a moderate degree of anzemia.

Gastro-intestinal.—Abdomen flat. Exhausting diarrhea, sometimes ε many as twenty stools a day, light yellow to copper color. Hook work and eggs found by several observers.

Skin.—Slightly jaundiced; eczematous condition covered forehead als alæ nasi, malar bones and chin, as well as dorsal surfaces of hands and feet; very scaly and rough on exterior surface of elbows and kness. No sores or scars. Most of these regions were chapped and fissued. Anamic and puffy about eyes.

Mowth.—Foul breath; tongue deep red and clean, straight and ax tremulous.

Lungs.-Normal. Heart, accentuated aortic second sound.

Nervous and Mental.—Tendon reflexes exaggerated; tabetic gait; stifness of muscles; dull and melancholy; suspicious about food; occasionalymildly excited. Pupils react to accommodation and slightly to light.

Has slightly lost ground physically and mentally since admission. Hx become more and more paretic, so that she had to be put to bed. Temperature varies from 96 degrees to 99 degrees. January 1, 1908, she was given thymol grains 15. Thymol repeated January 12. Has made wassault upon an old woman sleeping in room with her.

After studying this case Dr. Stiles's comment was: "If this is hook-worm disease, its symptoms are entirely different from those I am familiar with, and without microscopic examination i should place her in the doubtful class as regards uncinariasis."

CASE II.—R. P., admitted to State Hospital, December 2, 1907, colored male, age 30 years. History meager. Mother is said to have died of od age. Mental symptoms developed slowly. History of apoplectiform serures. At times was incoherent and profane. Mind ran much on religion Diarrhoea for three months, and eruption appeared on hands three months before admission. (See Plate II.)

Physical Examination.—Patient very emaciated and anzemic. Deep reflexes somewhat exaggerated. Heart, at times soft, blowing systolic per mur, normal in size and position. Lungs negative. Abdominal organs normal, except a slight enlargement of the spleen. Some slight tenderness non palpation over abdomen. Cervical and inguinal glands somewhat mlarged.

Skin.—Of the forehead and face and especially over malar bones and he back of the hands presents an erythemato-squamous eruption, cracked ind fissued.

Mental Symptoms.—Those of depression and apathy; a marked indisvosition to exert himself.

Temperature.—Either normal or slightly subnormal. Pulse average, 76. Respirations, 20. Appetite poor. Sleep normal. Very persistent diarrhoza, not yielding at all to the usual modes of treatment. Tongue and buceal avity red, but with no tendency to hæmorrhage.

Died from exhaustion December 22, 1907.

CASE III.—L. D., admitted to State Hospital October 1, 1907, colored roman.

Previous History.—Married 20 years. Eight children. No miscarriages. n poor health six years. Worried over death of two brothers. Erupon appeared on face and hands two months before admission. No diarnea then. Mind affected two weeks before admission. Ten in family, but one of them had skin trouble; but woman neighbor had similar trouble om which she died. Produce the corn they use, except a little grits. In admission extremely weak. Paretic symptoms, increased knee-jerks. Iuscular wasting. Heart: Systolic murmur at base. Lungs negative. kin: Forehead, nose, malar prominences, and chin covered with an eczeiatous eruption. Dorsal surfaces of hands and feet and of elbows and nees, much thickened, darkened, chapped, and fissued. Obstinate and chausting diarrhœa. Died of exhaustion December 26, 1907. (See Plate I.)

The spinal cords of Cases II and III were examined by Dr. F. . Mallory, Associate Professor of Pathology in the Harvard ledical School and reported as "negative."

CASE IV.—Mrs. D. R. C., white. Seen in consultation with Dr. J. J. 'atson April, 1906. Age 46 years, married, no children. No specific story.

In good health until 18 months previously. Then she became sleepless id "nervous" contrary to her habit. Soon afterwards she noticed a neral weakness and an erythema appeared on the backs of her hands, tending from the metacarpo-phalangeal articulation to three or four ches above the wrist. No eruption on face, forehead, neck, or feet. camination showed heart, lungs, and other organs normal, and this conision was confirmed by careful and repeated examinations. Pulse pertently between 90 and 100. Temperature, a. m., 97; p. m., 98 to 99.2. in on dorsal surfaces of hands extending above wrists showed a pigmented harsh and scaly condition. Patellar reflex exaggerated. Tendeness over spinal column in mid-dorsal region. Right pupil dilated.

Nervous Symptoms.—Persistent dull vertical headache. Was neuratheric hypochondriacal and melancholy. No diarrhoza, bowels regule. Under best hygienic and medical treatment for eight weeks, she did an improve. Since then she has been lost sight of.

Dr. D. S. Pope, of Columbia, recalls these cases, the records ai which have been lost:

"About 15 years ago I had under my care at the South Carolina Penitentiary a case presenting this history:

CASE V.—White man, 40 years old, developed a crimson rash on the forehead and dorsal aspects of the hands. It was thought he had eryspelas, but it yielded very slowly to the usual treatment. The next spring the eruption returned in the exposed surfaces and extended to the checks, but it became of a squamous nature. He at this time developed an obsinate diarrhora and the mental symptoms of melancholia. All treatment including stimulation proved of no avail. He became gradually exhausted and died during the late spring.

CASE VI.—About the same time I saw in private practice a white woman about 50 years of age, who had a scaly eruption on checks, backs of hands and neck, and a severe intractible form of diarrhoea. She was restless and delirious, and for this reason I was called in by the family to decide whether she was properly a subject for commitment to the asylum. We got a nurse and kept her at home, but she died from an exhausting diarrhoea about two years from the time the eruption was first observed."

The appended histories and observations are furnished us by L. K. Philpot, M. D., of Columbia, physician to the Epworth Orphanage, an institution located in the suburbs of Columbia, and having an average of 150 white inmates, who come from every portion of the State.

"I hand you herewith reports of some interesting cases of what clinically might be termed ' eczema,' but which also present symptoms of other pathological conditions:

CASE VII.—Lilian M., age 6 years. History was that of a healthy child, quiet, and of average intelligence.

Father died at 50 years of age, of unknown cause; otherwise no family history obtained.

Clinical History.—An eczema with reddish base appeared upon the dorsal aspects of feet, ankles, hands, wrists, forehead, cheeks, and neck. The portions of the body covered with clothing were not eczematous. This condition continued for several months, when she developed diarrhoe and

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began to lose flesh and strength. Shortly afterwards she began to show nervous and mental symptoms not unlike those of spinal meningitis. Whue sitting up she would gradually go forward until her head reached the floor or she would fall from the chair. Varied treatment, including specific remedies, produced no effect. Finally, hook-worms being found in her stools, she was given thymol and made a complete recovery.

CASE VIII.—Avery J., aged 10 years. Father and mother living and healthy. This child was well developed, both physically and mentally. A red scaly eczema appeared on the dorsum of both feet and hands, the ankles, wrists, forehead, cheeks and neck. No skin lesion on parts protected by clothing. He developed a diarrhœa, lost strength and flesh until he became a living skeleton. His condition did not yield to any treatment, either local or general. At this time hook-worms were found in very large quantity, but he was too feeble to take the usual treatment. He developed mental symptoms of a stuporous type and died of exhaustion.

CASE IX.—Morris L., aged 9 years. A rather delicate child, with no history. She, too, developed a scaly red eczema of the feet, hands, forehead, cheeks, and neck. Lost strength and flesh. After some months she developed violent insanity, with symptoms of a spinal meningitis, and died.

"Until within a few days of the death of Cases VIII and IX I did not know how to find the hook-worms, nor did I suspect that this parasite was the cause of the condition of my patients. At this time I met Dr. Ch. Wardell Stiles, of the U. S. Public Health and Marine-Hospital Service, and had him examine all the children at the orphanage. In 25 showing signs of eczema the hookworm was found. By the exhibition of thymol the children were relieved not only of hook-worms, but of eczema also. They have since been in good health.

"The clinical histories of the three cases above cited, presenting the combined symptoms of eczema (ground-itch), exhausting diarrhœa, and delirium, show, to my mind, what would have been the fate of the other 25 but for the timely eradication of the hookworm."

We have had accounts of similar cases from other physicians, but have not been able to obtain their histories in time for this paper. We have had besides other cases in the State Hospital which help to give us a clearer clinical picture of the disease, but the records of them are not complete enough to be included.

We are aware that the histories and notes on our cases are not

as full as we should like, but we feel justified in making a preliminary inquiry and incomplete report at this time in order that it may be presented to your board, so as to be included in your transactions for 1907.

We also recognize that we are standing upon debatable ground and that while the questions we are raising may be somewhat novel in America, yet the problem of the origin and existence of pellagra as a pathological entity is an old or even a trite question in certain European countries.

Finally, answering the queries at the heading of this paper we feel justified in concluding from the evidence presented:

I. That true pellagra is a disease long known in southern Europe, due to eating defective Indian corn and manifesting itself in the spring by intestinal, skin, and nervous symptoms.

2. That pellagrous insanity is a mental condition usually of the melancholy type, developing in patients already suffering from pellagra, as shown by the pre-existing skin and intestinal lesions.

3. That we are satisfied that a pellagroid disease occurs in South Carolina, but whether it is the true pellagra of Italy remains to be proven, as our observations, though suggestive, are as yet too few for a final opinion.

4. That while the conditions described do not harmonize entirely with the descriptions of Italian and French pellagra—especially as regards the season of the year—yet at least they very closely resemble Egyptian pellagra even to the association with the anchylostomum worm.

5. That the condition we are dealing with is not the form of pseudo-pellagra sometimes described since it does not stop at the erythematous stage, but presents the triad of symptoms—dermatitis, diarrhoea, and depression.

6. That a form of mental disease has come under our observation that in its clinical aspects is identical with pellagrous insanity.

7. That the discovery of the hook-worm in some of our cases is a most interesting association with the disease, but whether etiological or not demands further inquiry.

8. That the probable occurrence of such a disease in South Carolina having been established further clinical and pathological research is called for.



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9. That the relationship between mental symptoms and hookworm disease (uncinariasis or anchylostomiasis)* and kindred liseases, especially in the southern States, should also be a sublect of further investigation (29).

In justice to ourselves we may be permitted to state that we had arrived at the diagnosis of probable pellagra for our cases beore we learned of the contributions of Searcy and of Merrill pubished in the Journal of the American Medical Association of this rear. That is, we had been working at the problem independently and did not know of the observation of probable pellagra in the United States until we had completed our own observations, arrived at the above conclusions and reported them orally to your president and secretary, and were arranging them in their present form when our attention was called to the recent papers above referred to and now quoted from in this paper. The paper of Dr. Harris, of Georgia, is of especial interest because of the association with hook-worms. The report of the Alabama hospitals came as our paper was going to press. To all of these we acknowledge our indebtedness as strengthening the position we have taken in conluding that pellagra has existed, unrecognized, for some time in our State.

Through the courtesy of Dr. E. N. Brush, superintendent, Sheppard and Enoch Pratt Hospital, we have been enabled to look up the following additional references to supposed cases of pellagrous insanity in America as well as to obtain abstracts from the reviews in English of some articles and monographs appearing in Italian upon some of the phases of the pellagra problem.

In the American Journal of Insanity for October, 1864, Dr. John P. Gray of the State Lunatic Asylum, Utica, N. Y., reported 1 "Case of Pellagra of the Insane":

Male, age 31, enjoyed good health during childhood and adolescence and was mentally normal. Four years before admission he had an attack of

^{*} As this article is going to press a paper on "Uncinariasis," by Dr. William Weston, of Columbia, appeared in the December number of *The Iournal of the South Carolina Medical Association*, in which a case is described, showing such mental symptoms that lunacy commitment papers were being taken out, but hook-worms being found, commitment was delayed. On the removal of the hook-worms the mental symptoms completely disappeared.

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"acute rheumatism" and since then has suffered from pain in back in head, shoulders, and back. Shortly afterwards suffered from weakness i arms and general lassitude. Subsequently symptoms of indigestion set a Appetite was capricious and thirst was marked. Showed bad judgments selling form and became suspicious of his neighbors. Under delising left home and wandered in woods for ten days. On return was emacizin and exhausted. Melancholia being recognized, he was committed to any lum, September 10, 1863. Soon after admission erythema appeared a hands and face. Examination disclosed scaly eruption over whole inc. arms from elbows downwards, and legs from knees down. His bowls were at first costive, but with the appearance of the eruption diarrhoast in. Later face deepened in hue and began to swell. He complained at intense pain in back of head, the skin became dark purple, parchment-lin. and was cracked in places. Vesicles appeared, which exuded a yellowish The hands and feet continue to swell, deepen in coin. white serum. crack and form vesicles, one crop succeeding another. He complained if intense itching and burning heat. All his joints appeared stiffened so that any motion gave intense pain.

He gradually improved under Fowler's solution and good nourishment. The patient had never eaten maize to any extent. When constipated, the redness increased, but was relieved of both by an aperient.

In October, 1864, the physical and mental symptoms reappeared

In the discussion, Dr. Tyler of the McLean Asylum, Somerville, Mass., said he had had for five or six years under observation a case which he had been unable to classify but which he recognized from Dr. Gray's description as pellagra. Dr. Pliny Earle said he had seen a similar vesicular disease at the Milan Insane Asylum 25 years before and reported them in Hays' Journal of 1840.

In reviewing this case (The Journal of Mental Science, April, 1866, p. 117) Arlidge was indisposed to regard it as a genuine instance of pellagra. Because "experience has shown ofttimes on an extensive scale the production of scaly and other eruptions on the skin in company with profound cachexia, and even mental disturbance as the result of improper food; but the maladies so engendered though etiologically allied to pellagra, could not be referred to as examples of that disease. For instance, Rayer has pointed out the relation between pellagra and the morbid consequences of eating spurred rye, and between that disease and the epidemic prevailing in Paris in 1828 and then described as acrodynia."

In the Journal of Mental Science, October, 1863, p. 353, ^{Dr.} James De Wolff, superintendent of the Hospital for the Insue,

alifax, Nova Scotia, reports "A short Note on Some Cases of ellagra," describing an epidemic in which 15 patients or about ie-tenth of the household were affected with a disease presenting e symptoms of swelling and itching of both hands, of deep-blue lor, fissures across the knuckles in a few instances. The color as too deep and persistent for erysipelas and too localized for irpura or scorbutus. Except for a certain degree of lassitude no nstitutional symptoms presented themselves. No cause for the idemic was discovered in diet or surroundings. Dr. De Wolff's per was communicated by Dr. W. A. F. Browne, Commissioner Lunacy for Scotland, who does not commit himself as to diagsis but says that various observers have described a condition culiar to the insane confined in asylums and regarded by them a variety of pellagra, if not as the typical affection. It is charterized by emaciation, weakness, diarrhoea and in a more adanced stage by an erythema of different colors, but generally red r dusky, which follows exposure and covers the back of the ands, the arms, feet, neck, there being concomitantly an earthy r bronzed tinge of the skin, which is dry and rough. The erupons may be vesicular, papular, squamous or furunculoid."

Lombroso's "Clinical and Experimental Studies on the Nature, ause and Treatment of Pellagra" (Bologna, 1869) is reviewed 1 the *Journal of Mental Science*, January, 1872, p. 579, by J. R. iasquet and these abstracts are made therefrom:

Dr. Lombroso proves pellagra to be a well-defined disease, roduced by a special poison and that the mental phenomena, which are a part of its complete evolution, are very interesting in hemselves. The disease is proved to be due to the use of Indian orn, associated with *penicillium glaucum*. The symptoms vary n different parts of Italy. Lombroso studied 472 cases in several places. He classes them under these varieties: the worst, and arest, is a rapidly-progressing urinæmia, depending upon atrophy or degeneration of the kidneys; in another class of cases rapid and "xtraordinary emaciation occurs; in others irritation of the uriuary, genital or digestive organs is the most prominent symptom.

Among the skin affections, patches of chloasma and maculæ seem to be the earliest; sometimes the whole surface of the body becomes darkened; erythema, herpes, and eczema are also observed; but all of these are not so common as most persons who merely read pellagra in books might suppose.

In many cases the nervous system is the chief sufferer. Sometimes without any other morbid symptoms, patients suffer from constant vertigo and considerable muscular weakness. Partial chorea, epileptiform convulsions, tremor and paraplegia are seen in apparently well-nourished patients. A feeling of heat in the hands and feet is common; pruritus and formication or numbness are frequently complained of. Violent unilateral headache with dilatation of pupil on same side is very common. Deafness and ptosis are not uncommon. Retinal disease is observed in twothirds of the cases. Great mental impressionability or irritability of temper is characteristic, occasionally ordinary melancholia, more rarely monomania occurs. A real or apparent stupidity, an obstinate mutism, is tolerably common. Many patients complain of hallucinations, evidently connected with their morbid visceral states. But as a rule their insanity is of a misty, ill-defined, contradictory character, like that produced by old age or by anæmia, and differing in this point from general peralysis. Refusal of food is a particularly common symptom. A fondness for getting into or seeing water is characteristic and is called "hydromania." But the very opposite may occur-a profound dislike for the sight or touch of water, due to a vertigo that water produces. Suicide by drowning is very common.

We wish especially to express our obligations to Doctors J. J. Watson, D. S. Pope, and L. K. Philpot, of Columbia, and to Doctors Robert Wilson, Jr., chairman, and C. P. Williams, secretary of your board, for advice and assistance regarding our problem, as well as in determining upon the best method of laying the matter before the profession of our State. Dr. Ch. Wardell Stiles, of the U. S. Public Health and Marine-Hospital Service, also studied one of our cases and encouraged us in the work we were trying to do.

Our thanks are also due to Dr. G. T. Tuttle, superintendent McLean Hospital, Waverley, Mass., Dr. F. B. Mallory, of the Harvard Medical School, Boston; Dr. W. H. Doughty, Jr., of Augusta, Ga., and to Drs. Walter D. McGaw and Robert Fletcher and Mr. H. C. Hall, of the Army Medical Museum and Library, 1908]

Surgeon General's Office, Washington, for their courtesy in lending valuable books and securing information not otherwise obtainable by us.

Respectfully submitted,

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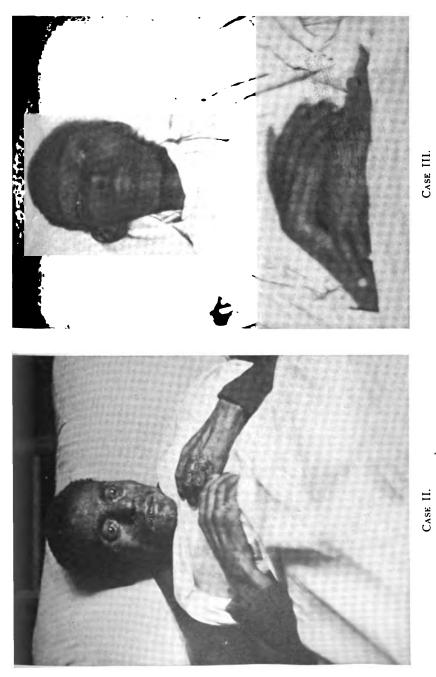
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RESENTATION OF A PORTRAIT OF DR. JOHN B. CHAPIN TO THE WILLARD STATE HOSPITAL.

On February 6, 1908, the Willard State Hospital was presented ith a portrait in oil of its founder, Dr. John B. Chapin, now perintendent of the Department for the Insane of the Pennsylvaa Hospital, Philadelphia. In addition to Dr. and Mrs. Chapin, r. Edward N. Brush of the Sheppard and Enoch Pratt Hospital ar Baltimore, members of the Board of Managers, and the resient officers of the hospital, there were present about seventy-five vited guests. Dr. Robert M. Elliott, superintendent of the hostal, presided, and in opening the proceedings said:

Ladies and Gentlemen: The happy occasion which brings us together -day is a sequel of the dinner which was given in honor of Dr. John B. hapin, the founder of this hospital, by his professional brethren all over e United States and Canada and which took place in the city of Philaelphia a little over three years ago. That event marked the completion of ver fifty years continuous service on the part of Dr. Chapin in the interests f the insane. We are to have presented to us to-day a portrait in oil of le Doctor, but I shall leave it for another speaker to explain the circumances which led to the hospital coming into possession of that treasure. lad as we are to have this portrait, we are still more delighted by the fact at we have present with us Dr. Chapin himself and Mrs. Chapin, (Aplause.) I think many of you know that the law establishing the Willard Iospital was enacted by the State Legislature in 1865, and I believe I am orrect in saying that Dr. Chapin took a very active part in drafting that aw. As soon as it was passed he was appointed on the Building Comnission, and it devolved very largely upon him to prepare plans for the ospital. After he had formulated his ideas and prepared the plans he ubmitted them at a meeting of what is now known as the American Medico-Psychological Association, an association which was comprised xclusively in those days of physicians engaged in hospital work. Accordng to the reports of those meetings in that time, as they appear in the AMERICAN JOURNAL OF INSANITY, the plans as presented met with a great leal of opposition. The idea of building a hospital so large, and on the regregation or cottage plan was entirely new. It was original with Dr. Chapin, but he had practically no supporters in that national association, with the exception, perhaps, of his friend and associate, the late Dr. Cook, who was with him at Brigham Hall, Canandaigua. However, notwithstanding the opposition he met with from his confreres, the authorities of this

State accepted the plans and the hospital was built according to his idea This was the initial step in a movement which had for its object State can for all the dependent insane. Up to that time there had been only one insane hospital-the Utica State Hospital-a comparatively small instintion with a capacity of not more than five hundred. And although Willard was, from the first, intended to accommodate some two thousand patients. it was soon found it could only take care of part of the dependent insate in the various county-houses throughout the State, and it was not mil the passage of what is known as the State Care Act in 1890, that all of the dependent insane in the State were finally provided for. It is interesting to mention in this connection that the bill, which is now known as the State Care Act of 1800, was introduced in the Assembly by Mr. Milo H. Acker of Hornell, whose wife is with us to-day as a member of our Board of Managers. (Applause.) The number of insane in New York State bas increased very rapidly in the last twenty years, especially in the last fiten years, and as a result of this a number of other hospitals have grown on various parts of the State-large institutions-and I should have mentioned that at the time Willard was established it was the opinion of the National Association that no institution should be built to accommodate more than six hundred. That was one objection they raised to Willard, that it was going to be far too large, but in order to accomplish the ends in view it was necessary to build a large institution and depart from the established order of things, and this is what Dr. Chapin did. So to-day we have thirteen State Hospitals in this State which accommodate something like 27,000 insane persons. Most of these institutions were established long after Willard, and several of them are even larger than Willard; there are three. I believe, which accommodate more patients than Willard does. Now what I wish to bring out is this: Where does Willard stand to-day in comparison to these other hospitals, some of which have been built in very recent years, and, as the saying goes, according to modern ideas? About eighteen months ago when Dr. Charles W. Pilgrim, a former superintendent of this hospital, was the President of the New York State Commission in Lunacy, he visited Willard in his official capacity as Commissioner, and in company with myself made a very thorough inspection of all the buildings (of course he was thoroughly familiar with them anyway because he had been superintendent here for four years back in the early nineties). and after we got through he turned to me and said: " Doctor, why is not Willard the best arranged and best planned hospital in this State to-day?" I replied that in my opinion it is the best hospital in the State, and he said "Well, I think so too." (Applause.) When Dr. Ferris, the present Presdent of the Lunacy Commission, made his first official visit here some three months ago, after making a similar inspection he remarked: "Dr. Chapin must have had prophetic vision." There seems to be no difference of opinion among men who are qualified to be judges, that Willard to-day is second to none in this great State, and it is a far cry from 1865 to 1908 Dr. Chapin was appointed Medical Superintendent of Willard in 1869 in which position he continued until 1884; and he achieved for himself. I

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night say, a world-wide distinction. Men came from all over the United biates and Canada and from Europe to see the institution. Dr. Chapin was elected an honorary member of a number of leading medical societies in lifferent European countries. His name will have an imperishable place longside the most illustrious in his profession and among the noblest enefactors of humanity. That he still lives to see the triumph of his vork is a joy to us all, and may he and Mrs. Chapin be spared to come mong us for many years more. (Applause.) I will now ask the Doctor o speak to us.

Dr. Chapin, who was received with loud applause, gave an iddress on the history of the Willard State Hospital which was as ollows :

Ladies and Gentlemen: In the year 1904 it was permitted me by a graious Providence to pass the fiftieth anniversary of hospital service in the are and treatment of the insane. Nothing noteworthy on my part had ccurred or was attempted to attract special attention to such an event, alhough somewhat unusual in this country. Perhaps there had been a conciousness that the days marking the ending and beginnings of years cemed to move with unusual rapidity. Possibly it is an experience common o all as they advance in life that less note of events is taken that mark ime, and we stick a bit closer to the beaten track.

A number of friends, however, deemed it appropriate to mark the event y coming together to offer congratulations and to present to my family portrait.

Dr. Brush, the indefatigable and disinterested chairman of the large comnittee of 1904, is here to tell us the object of his presence in fulfillment of is instructions. I cannot sufficiently express my grateful acknowledgnents to Dr. Brush and his associates for what I have understood they proose to do. I have to thank the Board of Managers, the medical superntendent of this hospital, the medical staff and friends who are in attenance for the honor of their presence. To me their action in coming toether on such an occasion seems a gratifying recognition of the accomlishment of results worked out at this hospital, which have had in my pinion a far-reaching influence for the welfare and betterment of the conition of the insane in this and other States.

Dr. Elliott kindly extended me a cordial invitation to be present on this ccasion and make some contribution to the exercises and has promised nlimited time, but he offered no guaranty that your patience would surive an experimental inquiry in this direction which I am not interested in taking. Colonel Alexander Biddle, one of the Managers of the Pennsylania Hospital, who commanded a brigade at the three-days' battle of tettysburg, said to me that he was directed at its close to make a written eport. After struggling with a blank sheet of paper before him for everal hours he wrote the following brief report, "that he went with his pmmand to the points where he was ordered and remained till the close 730

of the engagement." From such terse, expressive, moderate language might be learned the spirit of persistence which won for the nation its critical battle, but it did not require one-half a minute to read the summary of the part borne by this officer. The same spirit of persistence in the line of duty as it has come to others has won its victories, even though of moderate importance.

Whoever would learn intelligently of the movement for the establishment of the Willard State Hospital would hardly commence the study with the date of the organic act which was 1865. The State Hospital at Utica was opened in 1843 and the law under which it was administered embodied a lunacy code which continued with modifications until the adoption of the present codification. In 1855 the State Hospital at Utica had been in operation twelve years and contained 296 pauper patients, and there were in fify-three county poor-houses 1352 insane persons. No special movement had been made for a whole decennial period calculated to furnish relief. During this year a convention of superintendents of the county poor was held in Utica, New York, to consider the improved care of the insane, and necessity of enlarged accommodations. The convention gave expression of its opinions in resolutions and appointed a committee, of which C. F. D. Jones of Utica was chairman, to memorialize and petition the legislature upon the subject. It fell to my lot to prepare the report and petition. With some patience I collected and classified the histories of 757 insane persons then confined in county poor-houses. The work was new and interesting and it has always been a conviction that the preparation of that report and memorial, and the study of the subject, had much to do with the formation of plans which were subsequently materialized in the plans at Willard.

The memorial of the superintendents of the poor was made the subject of special investigation by a committee of the Senate which spent five months in examination of poor-houses and all State institutions. The report of the Senate Committee was presented to the legislature of 1857. It was pains-taking and thorough and recommended two additional State Asylums in accordance with the law governing the Utica State Hospital. All the recommendations of the Commission referring to the insane in poor-houses failed, however, from various causes, principally over a contention about location and the appointment of locating-commissioners. The recommendation of the Commission to establish an asylum for insane convicts was approved, and it was erected on the grounds of Auburn Prison. (Senate Doc. No. 17, 1856, Senate Doc. No. 8, 1857.)

It is not to be supposed that the effect of the exposure of abuses and defects of the prevailing system of administration was wholly lost. Abuses and defects of a system may exist for a considerable period when the public conscience is in suspense, but they do not flourish when it is aroused by publicity and exposure. No further concerted effort for increased and improved accommodations occurred for the ensuing decennial period ending 1864. The operation of the State lunacy laws was, however, the subject of closer observation and frequent criticism. It was still a confirmed conviction that many of the evils of the lunacy system complained of were

directly traceable to the imperfection of the lunacy law and its administration. Under this law it was not compulsory to send any one (a criminal excepted) to the State Asylum. Patients in the asylum for a limited period and not making progress toward recovery could be and were constantly transferred to county poor-houses for the reason that they were chronic and not likely to be benefited by further treatment. It was within the province of the Board of Supervisors to determine whether and where they would provide care for any or for all of their county insane. It was as legal to commit and care for an acute and curable case of insanity in a county house, irrespective of treatment as in the State Asylum. It was as legal then to have sixty and more systems of care for the insane in the several counties of the State as it is now to have one. Imperceptibly and by implication there had been an actual division of the insane of the State into two classes, the probably curable in the single State Asylum, and the chronics and incurables distributed among the sixty or more houses under the care of so-called keepers, chosen because they were too often political "heelers" or "workers," rather than physicians for disorders of the mind and body. The system of county care of the insane had become so thoroughly entrenched by usage and patronage that it survived two public exposures, but was now (1864) destined to undergo another examination-again to have the public gaze focused upon it for the fourth time-then to be shattered, to shrivel and eventually to end forever.

The counts of the indictment against the county system alleged the existence of abuses, deficiencies and neglect. The early necessity of makng some house accommodation was in the nature of an emergency to be net by every town or county of the State. The same house for the poor received the honest and the vicious poor, orphan and abandoned children, diots, degenerates, and divided the care of the insane too often with the county jail. The plans did not permit a classification and there was often in association and mingling of the sexes; the admission of recent and curable cases without any attempt to provide a medical or nursing service; the ise of inhumane methods of restraints as hand-cuffs, leg-locks, chains for ong periods; the prolonged seclusion in rooms without windows properly alled cells, in out-houses, the remains perhaps of some shack erected at a emote period. To all of which abuses and deficiencies should be added the ack of any approved system of administration or supervision in the sixty counties and municipalities or even an inspection except such as might be rranted by the great court sitting at Albany. This power was now to be nvoked by a Committee of the State Medical Society appointed for the surpose by this representative body of the physicians of the State of New l'ork.

On February 4, 1864, the State Society, in approving of a recommendaion for the appointment of a commissioner to visit all poor-houses and asyums where the insane are confined, resolved to appoint a committee to conier with the medical committee of the Senate and Assembly and present come recommendations for improving the condition of the insane confined here. This resolution was formulated by Dr. Charles A. Lee and Dr. George Cook, of Canandaigua. The president, Dr. Thomas Hun, appointed as a committee to confer with the legislative committees Dr. Charles A Lee, Dr. S. D. Willard and Dr. George Cook. The joint committee formalated a bill which became a law April 30, 1864, directing the county judges of every county of the State to appoint a physician to examine the condition of the insane in the county-houses and to make answer in writing to each one of the questions propounded. The replies were directed to be returned to Dr. Willard, secretary of the State Medical Society. These various sub-reports formed the basis of a report to the legislature by Dr. Willard which was presented February 8, 1865. On or about this date Dr. Wm H. Richardson, by request, presented a bill for erection of two State Asylums to be administered in accordance with the law creating the Utica State Asylum including the portions of it considered objectionable. The number in poor-houses, excluding New York and Kings, was 1345. Dr. Richardson submitted the bill he had introduced to Dr. Willard and Dr. Cook with the remark that the bill he had introduced by request did not meet the wants of the class of the insane for which relief was desired nor was it in accordance with the recommendations of Governor Fenton in his message. He requested Dr. Willard and Dr. Cook to draw a bill which would reach the class for which relief was desired, bring it to him and he would substitute it for the one already on the files of the Assembly. The "Willard bill" was drawn in Canandaigua and received its final correction and shaping at the hands of Hon. Charles J. Folger and was then presented to Dr. Richardson of the Assembly and substituted for the bill first introduced. It was placed on its final passage April 8, 1865. It was first proposed to call the new asylum the "Beck Asylum." Subsequently the name was changed to "Fenton Asylum" and Dr. Willard dying in March, his name is perpetuated in connection with the hospital to this day.

It might at this day be a subject to excite surprise that any proposition aiming to improve the deplorable condition of the insane in county poorhouses after the revelations that had been made would meet with opposition, yet as a matter of fact the method proposed created intense opposition on the part of county officers and politicians whose vested interests might in some way be jeopardized. In that part of the medical profession engaged in the care of the insane in hospitals there arose an acute contention amounting almost to bitterness. Professional opinions at home and abroad, and resolutions of the American Medico-Psychological Association (two votes dissenting) were invoked in opposition to the passage of the bill I have had the charity to believe that the opposition from the professional side arose wholly from a misrepresentation of the nature of the bill. It was entitled an "Act to authorize the establishment of a State Asylum for the chronic insane and for the better care of the insane poor." It was alleged that a distinction was to be made among the insane. They were to be divided into two classes, the curable and incurable, and to be placed in one or the other institution; that the asylum for incurable would soon degenerate to the standard of care in the county-house, ignoring absolutely the fact that for twenty-two years a practical separation had already been made

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in sending the curables in the Utica State Asylum and placing the balance in fifty-three county institutions; ignoring also the fact that the managers of the Willard State Hospital were to possess precisely the same powers and duties as were given to the managers of the Utica Hospital. Truly it was a strange and remarkable combination, that of county-house officers, county politicians and physicians engaged in the care of the insane, but the unholy alliance did not prevail! The testimony of fifty-three physicans of the conditions in their several counties was evidence that had to be reckoned with. In presenting the bill to the Senate that knightly leader, Charles J. Folger, the steadfast friend of this Hospital from its inception, quoted from the report of Dr. Willard. He was interrupted by the Senator from the Sullivan County district by a commentary on the conditions alleged to exist in a certain county, denouncing the situation as disgraceful to the locality and to the State which should be remedied at once and demanded that the name of the county be given to the Senate. Judge Folger replied that the description of the house he had read to the Senate was located in the district represented by the honorable Senator, and not far from his home. There were no more eager inquirers. The bill under the leadership of Judge Folger in the Senate and Dr. Richardson in the House, with the earnest support of Governor Fenton, passed with great unanimity. It was even proposed by the then editor of the JOURNAL OF INSANITY (not the present senior editor of that journal who sits with us to-day), that over the loorway of the new asylum should be inscribed the words, "All hope abandon, ye who enter here," unmindful of the fact that of the population of any hospital on any certain day scarcely seven per cent can be reckoned is curable while more than ninety per cent are chronics-surely if the najority rule is to prevail all hospitals are in a sense institutions for the chronics and would deserve to be placed in the same category.

In all my intercourse with those connected with the Willard movement I lever heard the expression of any sentiment that contemplated a lowering of the standard of care, but on the other hand there was a purpose to elerate it. It was the declared intention also to modify the plans usually folowed and to introduce innovations. At all events the buildings are all sere and have been seen of all men. Of the main hospital structure it can >c stated it was constructed on plans in advance of any State hospital of our country at that date. The radical innovations were the groups of deached buildings. In respect to these buildings there was no hospital tructure elsewhere to furnish suggestions. All the plans except the modiication of the old Agricultural College building and the men's infirmary, he erection of which I recommended in my last report to the Board of Frustees were made by myself in detail and placed in the hands of the rchitect to put in shape for the builder. As time passed and experience vas gained after occupation it was my judgment that the main hospital tructure was at least one-third to one-half larger than was necessary, or n other words a greater number could have been provided for more comortably and in a less expensive manner on other plans. Our Commission, owever, was a body of mixed opinions in some respects and concessions

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were necessary all around. The word "detached building" was used because in itself it was meaningless. It was stated that we proposed to erect "Cottages which would be vineclad" for the use of paupers, which created some prejudice. It was a period just at the close of the war when a decided reaction occurred in the direction of radical economy in public expenditure, many features in plans were omitted from actual necessity, such as verandas and balconies, and the colonial ideas had not been revived in construction. On the whole the idea of segregation of the insane, instead of congregation of large numbers in one great structure, was the controlling dominant sentiment and purpose however the details might be carried out. The problem is still before you to work out a better means of classification, more individuality in treatment of recent cases. It is a fair question to submit to you of New York State how much the scheme of caring for your insane in detached buildings, cottages, blocks, by whatever name known, which was evolved here on the shores of the Seneca amid tribulation and cross-purposes, has contributed to the success of the present State Care law. That problem was too great to be solved by any other plans. They have also had their influence in the construction of other institutions as houses of refuge, of correction, orphan asylums and even schools.

Lest it be overlooked I wish to emphasize on this occasion the importance of two sections of the original Willard organic law in which I have always felt a peculiar satisfaction in the fact that they were proposed by myself, accepted in the preparation of the bill in Canandaigua, and were adopted almost in the identical language in which they were originally drawn. They constituted the very essence of the bill. I refer to sections IO and II. In the IOth section it was made the duty of the county superintendents of the poor to send all chronic insane paupers (the word chronic was intended to apply to those who had been insane more than one year) to the Willard Asylum, as well as those chronic cases discharged from the State Lunatic Asylum not recovered. Section II required county judges and superintendents of poor in every county of the State (with certain exceptions named) to send all indigent and pauper insane coming under their jurisdiction who shall have been insane less than one year to the State Lunatic Asylum.

The scope of this law was very comprehensive. It enacted a new principle, that all the insane of the State under county care should be placed under State care, and that the State *in loco parentis* was to assume the medical and physical charge of every insane person. If at one time the insane of this State could be legally placed in a jail and afterwards it was made an illegal place of detention, so now the time had arrived for another advance when the only legal place of detention for an insane dependant was designated to be a State institution—a principle similar to that recognized in the exercise of the State's supreme power of control over the estates and persons of orphans, destitute children, imbeciles and idiots, indeed to elevate their care and condition of absolute helplessness from a lower to a higher plane of existence, for whatever might be said of them they were God's creatures. While a law is not expected to enforce itself

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and its execution will depend mainly upon the officers and people affected by it, there is no doubt about the uplifting influence and educating power of wholesome legislation as public sentiment will surely and rapidly come into accord. If any one can announce a good principle; can evolve from his mentalization some new idea calculated to improve or to contribute even a mite to the welfare of his fellows there need be no concern but that it will find lodgment and not be lost. The principles of State Care ingrafted in the original Willard law and the plans of construction substituting segregation for congregation have had a part in the lunacy history of this State

which cannot be undone. The adoption of the two principles of the Willard law constituted the thin edge of the wedge that was destined to over-

throw the county system of care. It is not to be supposed that the selection of the grounds of the State Agricultural College was made only after other sites had been visited. The Willard law directed that if the college site was suitable the hospital should be located here because the State held a lien upon the property for money loaned. There had also been many subscriptions made to the college, the amount and nature of which are unknown. The Commission proceeded to declare the site a suitable one and notified the holder of the first mortgage that the Commission would appear on the day of sale and make a bid not exceeding the mortgage, interest, and costs and no more. It was a subject of rumor that on the day of sale the persons who had made voluntary subscriptions would raise the bid so as to include these. The amount of money subscribed for the college I never knew, but it was referred to vaguely as reaching several thousands. The Commission did not feel authorized to alter the limit of their bid in view of the fact that the City of Buffalo had made a tender of a site for the new hospital as a gift. On the day of sale a large delegation of Seneca County citizens attempted to reach Waterloo, the place of sale, but owing to a delay of steamer and trains they did not reach their destination until after the sale was consummated. The State took title to property for the establishment of the Willard Hospital and the State Agricultural College came to an end. This disposition of the property had the effect to remove many legal and technical obstacles to the claim of Cornell University to lands partitioned among the States for the creation or encouragement of agricultural colleges.

It has seemed that what should be stated on the occasion that has called us together might properly have its limitations to a reference to the motives for undertaking the work that was begun here. I have gone over this ground briefly, trespassing perhaps on your patience, and will ask your indulgence but a few minutes more. The work of construction of one great building or hospital is not wholly unlike that attending other similar operations. Owing to the isolation of the locality and other similar embarrassments, which need not be recalled here, there seemed to be almost unsurmountable difficulties to be overcome. When announcement was made that the hospital would open October 12, (1869) the first section of the north and south wings were partly finished. The center was far from being in a habitable condition. The center hall was reached by walking up a

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plank to the front door. The second story had no stairs, but was reached by a ladder. The doors were not hung. The little group composing the staff assembled at a small house, once occupied by the carpenters, three times daily for their meals. The heating and water supply were in an experimental stage. All nurses, employees, and even the medical staff had some things to learn, but they had a good spirit, were co-operative, and ready for a training for service as it might come. Five hundred applications were made for the two hundred and fifty beds. On October 13, 1869, three patients were received and the thin and forlorn procession hitherwards has continued to this day, amounting altogether to more than eleven thousand

Many of you have heard of the revolution in the treatment of the insam in Paris in 1793 when Pinel released from chains about fifty patients, yet it may be hard to believe at this day that in 1870 Dr. Hoyt, secretary of the Board of State Charities, reported over two hundred insame persons restrained in chains in the poor-houses of the State of New York.

All of the early admissions were patients of the chronic class, very in promising from their appearance and history any prospect of recovery. It became a question what was to constitute the success of the institution as it could not be expected the annual report would show a large percentage of recoveries and even one cure would be some encouragement. The one prominent test of success in my own mind involving even the question of the life of the hospital was to depend upon the willingness of the people to submit to a larger tax for the support of the indigent insame of the incurable class provided a fair equivalent was rendered in a higher standard of care. Any one who beholds this splendid plant and the generous comprehensive system of State care for all can see how this question has been answered.

Providentially my life, of all those who were participants on the early administration of the hospital, has been spared to present their motives and to be also a witness of the splendid results that have followed their labors. It must not be supposed that he who addresses you would convey an impression that he was the chief factor in what was here accomplished. I was, it is true, the executive officer with duties defined by law, with a Board of Trustees who were in the largest sense the resolute, wise, persistent advisers who held my hands to guide and make a firm foundation on which the feet could rest. No one could go astray or falter, or lose hope in the future where such courage, such a conviction of duty, such a singlemindedness existed, and where no cross-purposes entered to weaken. On the contrary all influences were exerted to strengthen. What the influences of a loyal Board of Managers may do to strengthen the hands of a medical superintendent I have had the good fortune to experience. I could have no better wish for any medical officer of a hospital than that he may find in his board some or all to whom he may go in confidence and expect they will strengthen him for the performance of his duties by a sympathetic word and encouraging counsel.

Neither could I fail at this time to recall the loyal staff associated with me. Of the whole number, but one, Dr. Carson, is present, while the

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najority, including that model officer Steward M. J. Gilbert, have passed o the life beyond. Wells, Allison, Wise, Sylvester and Carson left Willard o take higher positions for which they made ample preparation here. Wilard has been a good place for others to come and to leave to accept what hey considered promotion to other responsible positions. In recalling rarious elements that contributed to our orderly administration I would ail in my duty not to recognize the services of the long roll on the nursing taff in the personal care of patients. If we did not have a training school of the highest grade, we had a school of adversity and a training for serice. We learned for ourselves how by substituting nurses for physical neans of restraint, mechanical means of restraint could be and were absoutely abolished.

More than twenty-three years have elapsed since I closed a service of ineteen years at Willard. The roots had struck deep and I had expended he best strength and life force I had to give. I did not seek or desire a hange, but it came about. From time to time I have returned as a tranient visitor might return to some favored spot made interesting by arlier trials and associations to find the work so auspiciously begun coninued, enlarged and improved. As I have visited at lengthening intervals t has been quite natural to inquire of the welfare of many of those I had mown at the hospital and in the vicinity only to learn they had passed way. I sometimes sympathized with the experience of Rip Van Winkle who, you remember, after awaking from his sleep of twenty years to ind all his friends dead asked: "Is any one living?" The familiar buildngs are all here enlarged and improved; the trees and shrubs, everyone of which I had personally located with a stake, have grown and developed to seautify the grounds. Walks and roads have been improved and added. No one can fail to be impressed with the beauty of the natural environment, ts quiet, its opportunities for occupation, and diversion conducing to the composure and contentment of the insane, making the plant in this respect he most attractive of all within the domain of your State. It was always pleasure and restful to look upon the beautiful lake and beyond upon the zentle slopes and homes of the lakeside, and upon the distant hills of rates County and the golden glow of sunsets as the sun passed behind the uills of the towns of Italy and Jerusalem; to listen to the music of the waves upon the shore of the lake; the rustle of the wind through the reedles of the pines; the songs of the birds that annually found a retreat n the groves. I sometimes wonder whether the cooing of the turtle dove or the note of the oriole are still heard about the trees near the present nouse of the superintendent where they often attracted an unobtrusive istener.

But the familiar faces, the forms and the voices of those who walked the vards and were seen and heard in their accustomed places, and those of he great array of friends who stood by us in the early days are not with 15 to-day, except perhaps in spirit. Men come and go as the leaves of 10 utumn fall. Using the language of another may we not say of them:

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"Oh! happy beings! who have gone to hear 'Well done, ye faithful servants' sounding clear; How easy all your virtues to admire! How hard, alas! To copy and aspire. Servants of God, well done! They serve God well Who serve His creatures."

DR. ELLIOTT: I have now the pleasure of introducing to you Dr. Edward N. Brush, superintendent of the Sheppard and Enoch Pratt Hospital for the Insane, near Baltimore. Dr. Brush is a New York man. He commenced service at the Utica State Hospital and subsequently joined Dr. Chapin at the Insane Department of the Pennsylvania Hospital, Philadelphia. After several years' guidance by Dr. Chapin he was promoted to the superintendency of the institution near Baltimore. It was stated some five or six years ago by a well-known neurologist in New York City, during a discussion on psychiatry at the Academy of Medicine, that there was only one institution in the United States that was doing any scientific work and that was the Sheppard and Enoch Pratt Hospital near Baltimore. While I do not doubt that there is some scientific work being done there, at the same time I believe there is some being done in the State of New York and whatever Dr. Brush may be doing of a scientific nature, in his hospital, it doubtless emanates from the training he received under Dr. Chapin. He will formally present the Hospital with Dr. Chapin's portrait.

DR. BRUSH: Dr. Elliott, Mr. Chairman and Members of the Board of Managers, Ladies and Gentlemen: I feel very much embarrassed by the kind of introduction Dr. Elliott has given me. I should feel less embarrassed probably, you know I would, of course, after what he has said, if I came here to speak upon some of the work we are doing at Sheppard. Coming to speak to you as I do, concerning one so well known here at Willard, I am positively at a loss to adequately meet the requirements of the occasion. I confess, however, that it gives me very much pleasure to be here, pleasure first in being back again in my own State, pleasure secondly in again visiting this noble institution, and especially in being here with Dr. Chapin, and particularly does it give me pleasure to be able to come on the errand which brings me here.

Dr. Elliott and Dr. Chapin have both briefly referred to the picture which I propose shortly to unveil before you, but a brief reference to that picture, to what brought it about, may not be undesirable. Several years ago, six or seven I think it is, some friends of Dr. Chapin asked me to find out if it would be agreeable to him to have his friends present to him ÷

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on his seventieth birthday, his portrait as a token of their affection and esteem in celebration of that event. The Doctor told me that he felt very much flattered, naturally, by the kindly wishes of his friends, but that he was approaching a period in the history of his work which he thought might be with greater reason taken note of than the mere completion of three score years and ten, the Psalmist's allotted period of life, and that was the completion of fifty years' work in hospitals for the insane. I reported his reception of my suggestion to the committee, and it was decided to defer the presentation of the portrait until the completion of fifty years' service in hospitals for the insane, which occurred in the fall of 1904. On December 1, 1904, over seventy-five of Dr. Chapin's friends assembled at a dinner at the Bellevue-Stratford, in Philadelphia, and after listening to the responses to various toasts and to a notable address by Dr. Chapin, Dr. Hurd, of the Johns Hopkins Hospital, on behalf of over one hundred and fifty friends of Doctor Chapin, presented his portrait to him and his family. I have been referred to as the chairman of that committee, and it also became my duty to be secretary and treasurer. Not fearing a financial panic, we put by a certain surplus, after paying for the dinner and the portrait, which accumulated in time so that now we are able to present the Willard Hospital, where Dr. Chapin did so much, and the Pennsylvania Hospital, where he has since done such notable work, each a copy of the portrait.

Some reference has been made in Dr. Chapin's remarks and in those of Dr. Elliott, to the way in which the Willard idea was received by those who were actively engaged in the care of the insane in this State and elsewhere, and Dr. Chapin has called your attention to the care of the insane in almshouses to the fact that their condition was undoubtedly made worse by their very surroundings. He has reminded us that it was said by the critics of the Willard idea that one must write up over the door, "All hope abandon, ye who enter here." I remember saying at that dinner in Philadelphia that that was not the motto by any means that should be written over that door, but that the Willard Asylum opened a door of hope to those unfortunate people when it removed them from the misery, squalor, abuses, neglect, starvation, hunger and cold of the country almshouse to the sweetness and light which Dr. Chapin and his associates had prepared here at the Willard Asylum.

It was not alone at the time they were first proposed that Dr. Chapin's ideas and ideals met with opposition and criticism. There have been some since who, professing, possibly believing, that they had arrived at perfection or something nearly approaching it in matters psychiatrical, referred to the attempt here made and successfully made, to care for the chronic insane, and asserted that the idea was "conceived in ignorance" and was the outgrowth of "unenlightened selfishness." Unenlightened selfishness! Rather call it enlightened philanthropy of the highest sort an enlightenment which has illuminated many similar problems since that day, and which made the adoption of State care more easy and certain. I remember my first visit to Willard. I was, perhaps, imbued a little with the ideas of those in opposition to the Willard idea. I had sat at the fert of a great teacher—say what you may about him, he was a great teacher as well as a great organizer—at Utica, and I had necessarily imbibed some of the ideas of that institution as regards Willard. I was not received as a man from an enemy's country, but as a friend, and as one among friends. I was shown about the hospital and had freely explained to me the methods of care and treatment here pursued. I said, when I returned to my associates, "It would be well for you to visit Willard, you will learn something."

I began to do some thinking, and when an opportunity came for me to go to Philadelphia and join Dr. Chapin, I was glad to go. Not by any means that I was glad to leave Utica, but I was glad to have an opportunity to work under Dr. Chapin. I wonder whether you recall the words of Mr. Garfield, I think it was, in regard to Mark Hopkins, the great presdent of Wilhiams College, of which Dr. Chapin is an alumnus: "Web Mark Hopkins on one end, a log is a university." Dr. Chapin before his library fire is a university of psychiatry. I know it because I have su there with him, and in the years since I have left Dr. Chapin, there have been few very trying incidents in my work that I have not thought, "What would Dr. Chapin say or do under these circumstances?" and when I could arrive at something approaching to what I thought he would do, I found it came pretty near solving the problem as it should be solved.

I have been, like many of you, I trust, fortunate in the teachers with whom I have come in contact. Fortunate, first, in the dear lady who taught me my letters, in the one who taught me the value of books and how to use them, and then in the men and women who afterward took up the course of my education. But of all my teachers, and I have a very warm and affectionate memory for many of them, none of them have done more for me than has Dr. Chapin. If I had gone to the hospital where I now am fresh from a public hospital, with the ideas then in vogue in a public hospital, I should have made many more mistakes than I have made.

Coming down on the train yesterday I heard him say something to some one about the loyalty with which his staff had always supported him. cannot imagine a man being anything else but loyal to Dr. Chapin. The are some men who, by the very constitution of their character, compet loyalty of those who come in contact with them, and Dr. Chapin is one those men.

It now becomes my duty, Mr. Chairman of the Board of Managers, present to you for the Willard Hospital, on behalf of Dr. Chapin's frien this portrait. There is an inscription under it which has a brief referent to Dr. Chapin's connection with the Hospital and his work here, but simply records the dates. I wish there could also be written under the trait, as describing the man, the lines which I quoted when I had pleasure of introducing Dr. Chapin at that dinner four years ago. The are singularly applicable:

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"Formed on the good old plan, A true and brave and downright honest man, Loathing pretense, he *did* with cheerful will What others talked of, while their hands were still."

ou remember what was written by the Persian poet:

"The moving finger writes, and having writ Moves on; nor all your Piety nor Wit Shall lure it back to cancel half a Line, Nor all your tears wash out a Word of it."

he record of Dr. Chapin's work at Willard has been written here; e are no tears to be shed to wash out one word. There is no desire to cel a single line, and as long as this hospital lasts may this portrait be to stimulate by what it stands for, those who may come after. Dr. ott and Dr. Elliott's successors can point to it as the face of the man builded here far better than was known, who here set an example and blished a standard which has attained world-wide reputation.

DR. ELLIOTT: I will call upon Mr. A. S. Stothoff of Watkins, President of our Board of Managers, to formally accept this endid portrait in the name of the Hospital, and in doing so I ght to mention a rather interesting coincidence, which is, that . Stothoff became associated with this hospital as a manager year that Dr. Chapin left, in 1884. He was not here during Chapin's time, his appointment came just a month or two er Dr. Chapin's resignation took effect; he has continued in that acity ever since and two weeks ago was reappointed for ther seven-year period.

R STOTHOFF: Ladies and Gentlemen: On behalf of the Willard State pital we accept with great pleasure this beautiful portrait of Dr. pin. We all felt it a great sorrow when he left us; everything around lard, every building, every improvement, was so connected with Dr. pin's work that he was credited with it all. When Dr. Wise was d to Ogdensburg I asked him what he expected to gain by leaving ard. He replied that if he built Ogdensburg Hospital he would get it in the State of New York for what he did; here everything was ted to Dr. Chapin's work, and always would be. A generation has had iss before the neighbors have stopped calling it Dr. Chapin's asylum. pice that this portrait has been painted and received while Dr. Chapin be and with us, and I thank the gentlemen who conceived the idea of cond portrait and of giving it to the Willard State Hospital. I was member of the Willard board during Dr. Chapin's tenure of office, visited Willard many times during his administration, being appointed cember, '84 after he left in October, and have now been a member of

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the board for twenty-three years. I have had many associates, appointed by different governors, who have now passed out of my life. Of the old friends, Senator Hammond and Diedrick Willers are still living, but are very aged and in poor health and I never expect to see them again. To me this meeting brings many tender remembrances, thinking of the dear old friends who were connected with Dr. Chapin and Willard—Hadley, Mason, Wells, Magee and Gilbert were a few of my dear friends, all gone never to return.

Hotes and Comment.

THE VIENNA NEUROLOGIC INSTITUTE.—This institution recently celebrated the twenty-fifth anniversary of its founding by a jubilee and by the publication of a Festschrift which forms volumes XV and XVI of the Arbeiten aus dem Neurologischen Institute an der Wiener Universität. These contain about forty papers by various present and former pupils, which are chiefly of neurologic interest, but a few are on psychiatric subjects. The first volume has as a frontispiece an excellent photogravure of the Director, Prof. Heinrich Obersteiner, and a brief account of the founding of the institute. The fact that Prof. Obersteiner was sixty years old just ten days before the jubilee was made the occasion of special comment and various speakers at the jubilee reviewed his contributions to the anatomy, physiology, and pathology of the nervous system, which have been numerous and important. Obersteiner has presented the institute with a library and has also endowed it with a sufficient sum for the support of the library and museum.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.—The sixtyfourth annual meeting of the American Medico-Psychological Association will be held in Cincinnati, Ohio, Tuesday, Wednesday, Thursday, and Friday, May 12, 13, 14, and 15, 1908. The following is a preliminary statement of the program:

- Psychiatry as a Part of Preventive Medicine. By HENRY M. HURD, M. D., Baltimore, Md.
- Insanity Increases. By CARLOS F. MACDONALD, M. D., New York, N. Y.
- Etiology of Paresis. By H. C. EYMAN, M. D., or JOHN D. O'BRIEN, M. D., Massillon, Ohio.
- The Bacteriology of One Hundred Autopsied Cases of Mental Disease together with brief Clinical, Anatomical, and Histological Correlations. By F. P. GAY, M. D.; E. T. F. RICHARDS, M. D., and E. E. SOUTHARD, M. D., Hathorne, Mass.
- The Need of Reform in Expert Testimony. By WALTER CHANNING, M. D., Brookline, Mass.

- The Indianal Vision By Walton E. Franklik M.D. Visioner, Jack
- Transmire Venera Paress especially is its Medice-Legal Bearings By E. Thilling (Leasaway, A. T. Manarima), Jun
- The Dimensions of Posterior Endersoy and Alfred Hysterical States is the Anti-Alfred Hysterical Antiparty with Ministeriory Cases. By Gener Vitte 177 The A. D. Limpine Fronte, Que.
- Entropy Br. Hymner Flam, M. T., Parmer Mass.
- TELET TEMPERATURE and Instants By Alasta Walnut Frank M.D.
- Plate in sectors of Source Instance Participas Department. By Statistic D Wears, In The Art Horse, N. Y.
- BATT INTO
- Some Luiz in Fourieries in Instants' in the Raral Distincts. By Balls' T. S. Asaros, M. D. Angelsta, Me.
- The Policy of Contract Line to Instanty By Maryan Camput M.D. Reported. Thus
- Theory ostern Br N. Enchange Factor, M. D., West Newton, Mass.
- Non-mattice Varias in the Jeneral Episodals. By Dossata Camera Not tass A. C. Contanti, Jan.
- normania de la Constante de Conferenciase. Ale
- Study & Some Praces of Family Psychoses. By Jones Grand Funany and N. T. Commun. One.
- Alle mille in Championerry By H. A. Transvision, M. D. S. Pose, Mar.
- Concerning Thermolectric and and the Thermolecthan Treatment of Onetrend. The Concernment Cases. By Hassin J. Bassian, M.D. Balemeric Act.
- manufacture in the Treatment of the Instance. By Games Stockness. In T. Chammans, Onta.
- Electrony in the Unstating of Normal Desease. By W. M. Karwanak, http://www.instating.htms.
- (10) N. D. Borthowski, T. Sonnals, Str. the Institute, By J. M. Konstan, N. D. K. Martowski, Journ.
- INSTRUMENTS AND A DE FITTE AND SOUTH DECASES. By E. E. SECTEMENTS, N. D. and H. & KUTUSKEL, M. D. Hathever, Mass.
- Sture Farm, Vess.
- Anner Powenses Bull & Hames M.D. Poughkeepse, N.Y.
- New Suit-struk Reithous in New York Same By Whittaw L Rossel So De Fragmerensee, N. Y.

Several other papers have been promised, but their tide have not been sent to the secretary.

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The headquarters of the Association at Cincinnati will be at the Hotel Sinton. Dr. F. W. Harmon, superintendent Longview Hospital, Carthage, Ohio, and Dr. F. W. Langdon, medical director The Cincinnati Sanitarium, 5 Garfield Place, Cincinnati, constitute the local committee of arrangements.

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IG. RANDILFH HARKSDALE

Atter a sing period of impaired physical health. Dr. Randolph Harnesmie dien at its home in Petersburg, Virginia, October 18, burt at the age of seventy-six, leaving a spotless name as a heimign to posterior.

He resempted from one of Virginia's most prominent, column and minimum families. His academic education was acquired a dota schools in his native county, in the beautiful Piedmont setion, and at the University of Virginia. After graduating in mediume at the University of Virginia. After graduating in mediume at the University of Pennsylvama and took his degree there two stars after and was then appointed on the resident staff of the Hockiev Hospital. At the expiration of his service in this far-famet instrument of that day, he went abroad and completed his medical emaxima in Paris.

In 1857 he located in Richmond, Virginia, where he practised his profession with success till the beginning of hostilities between the States.

Entering the provisional army of the Confederate States as a surgeon he began actual service at Manassas, and in 1862 was assumed as Mehcal Inspector of General Longstreet's corps, which position he filled in a satisfactory manner till the surrender at Application.

In 1973 he was appointed Medical Superintendent of the Central State Hispital for the colored insane of Virginia, which postote he held continuously for twenty-three years, save for two years when the public institutions of the State were made political prey under the Mahone regime. In 1896 he resigned on account of ill health, and as a mark of appreciation for his long and efficient service in developing the institution to a high standard, the board of directors conferred upon him the unusual but merited honor of superintendent emeritus. When he retired from active service he carried with him the respect and regard of the public and the gratitude and high esteem of those who had been associated with him in the work of the hospital. I count myself fortunate indeed to have had the advantage of ten years' training under and association with a man of such exalted character, keen sense of justice and tender sympathy, and withal such superior ability.

Though he wrote little for the medical press, and his retiring disposition was a barrier to his prominence on the floor of medical societies, he was justly regarded as one of the ablest alienists and hospital superintendents of his State and of the South. His annual reports, written in his peculiar epigrammatic style, were models of clearness and conciseness—too much so, for the reason that he did not elaborate sufficiently the advanced ideas he had regarding the care and treatment of the insane and the construction and management of hospitals and the splendid work he was doing in his chosen field. He was a member of the Medical Society of Virginia and the American Medico-Psychological Association, and took deep interest in them.

He was twice married. His first wife was Miss Macfarland of Richmond and his second Miss Patteson of Petersburg. She and a son and two daughters by the first marriage live to bless his memory.

Dr. Barksdale's personality was distinctive. He was a typical example of the old school of Southern gentry, whose characteristics we of later generations never tire of extolling. Of lofty ideals and dignified bearing, reserved and retiring, unostentatious and unobtrusive yet firm in conviction, wise in counsel and bold in action, loyal in friendship, kind and considerate, courteous and gentle always, he was respected and beloved by a host of admiring friends.

> "Both sexes' virtues in him combined: He had the fierceness of the manly mind, And all the meekness, too, of womankind, He never knew what envy was, nor hate, His soul was filled with worth and honesty, And with another thing besides, quite out of date, Call'd modesty."

> > WILLIAM F. DREWRY.

Dalf-Pearly Summary.

CALIFORNIA.—Agneum State Hospital, Agneum.—It has been fully decided that this hospital shall be reconstructed on the cottage plan along lines most approved. The material used will be reinforced concrete with Roman tile roofs and the buildings will be earthquake and fire proof.

The general plan of the new hospital and the arrangement in each building has been carefully worked out by the superintendent, Dr. Leonard Stocking, and designed by the State architects, Sellon & Hemmings.

Five buildings are now under construction by the hospital without contract, although soon several additional buildings may be contracted for. In the meantime patients continue to do well in temporary buildings and the health of both patients and employes has been remarkably good.

DELAWARE.—Delaware State Hospital, Farnhurst.—A new cottage recently built at this hospital has been named the John J. Black Cottage, after the president of the board of trustees.

GEORGIA.—Georgis State Sanitarium, Milledgeville.—During the past year a water works plant was constructed at a cost of \$65,000 which affords an abundance of good, wholesome water from the Oconee River.

A new ice-plant costing about \$7000, with a capacity of ten tons was installed.

A new dairy costing about \$2500 was built.

A tiled floor was laid in the kitchen, new cooking utensils purchased, and a new oven put in the bakery.

IowA — The Retreat, Des Moines.— This private hospital has been open nearly three years, during which time over 160 patients have been treated. The capacity is 20, without crowding.

KANSAS.—State Hospital for Epileptics, Parsons.—Work has recently been started on an administration building to include quarters for officers and in one wing a commodious assembly room. The structure is to cost \$65,000, and will be completed in about eight months. It is situated in the front center of the grounds and will add greatly to the appearance and convenience of the hospital.

A deep water well is being drilled at the present time. A depth of 1030 feet has been reached and a flow of sulphur water sufficient for the institution's needs is confidently expected at a depth of 1200 or 1400 feet. At a

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depth of 600 feet a small flow (50,000 cubic feet per day) of natural gas was found. The hospital will probably sink a well for gas during the coming summer.

Considerable grading has been done and outside improvements made during the past half-year.

In the school more time is being devoted to manual training than ever before with gratifying results in the character of the work done by the pupils. Some additions in the way of arts and crafts have been made to the work of last year in this department, and some new equipment acquired.

The population of the hospital continues to increase, being now about 400, and a better class of epileptics are being received than at any previous time. The number of same epileptics is increasing and also the number of acute cases. This very materially adds to the interest in the work and to the results to be obtained.

There have been no changes in the staff during the past half-year.

MAINE.-Maine Insane Hospital, Augusta.-Since the acquisition of the United States arsenal property which is contiguous to the other real estate of the Maine Insane Hospital, one of the large buildings located on this property has been reconstructed of fire-proof material and is now occupied by 120 chronic patients, thereby relieving the congested condition of the main hospital. This building is constructed on the open dormitory plan with a large parlor for the accommodation of the patients during the day. Nearly a year's experience in this colonization has been successful and meets the entire approval of the management of the hospital. It is contemplated to construct a wing on the same plan for the female patients of the same class of disease as the male patients now domiciled there. The last legislature created an act providing for the further care of the criminal insane of the State by placing them under hospital treatment. A legislative appropriation of \$40,000 for the construction of a fire-proof building to be located upon the above property and sufficiently isolated from the other buildings, will become when completed a part of the institution. The criminal insane have been cared for, for many years, in a department connected with the State prison at Thomaston, and under the supervision of the superintendent of the Maine Insane Hospital, the warden and physician of the State prison. Much opposition arose from the friends of the patients and many prominent citizens of the State in relation to caring for this class at the Maine State Prison. For the above reasons, and others we might mention, the legislature determined to place this class under hospital treatment, and such a movement is meeting with the entire approval of the citizens of the State. An appropriation of \$110,000 was made by the last legislature for additional improvements at the hospital, among which one of the old wings of the institution is being renovated, is nearly completed in fire-proof construction, and many changes are being made in increasing light and ventilation. A new carpenter shop has

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and were constructed and a new seconderic affording additional room for new sterring and secondary. An appropriation was also made for the furtion occurs of the water support for the purposes and the manifold of a article on some. Further approximations were made for the changes a fit was, articulates. The institution and the machinetizing of the same.

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heisensettettette volumenten State Haspital, Northampton-One of the next meristing new instances at the Northanspace State Hospital ad me which is regarder as if great value in the work of the institution is the James memorial services, which has recently been opened. The build my was ermitten mittener te the late Lyman D James, of Williamsburg, who was for many years a ferrored and efficient member of the board of masters of the assumil, and is presented by Mrs. James. The building is te antheritte artitionitare and finish, and has an advantageous situation a bee mots norm of the main buildings in the apple orchard, from which man he seen an annannee view of Paradise point and the city. Its play it somewhat the that 5 dowed in the creation of armories, with a head-house. haveri by the long, mercor shed containing the howing alleys. As the visition enters he faces the alleys, which extend back from the lobby, and in enter hand are not commodious recreation rooms. The reading-room, ne me ment, is simility provided with books and magazines, and its equipment. like that of the game room, includes a freplace of good size, which, mouth a s not needed to supply heat, is maintained for its cheering infinence. In the opposite room the minor games, like cards and checkers, my he played and a pool table will soon he established there. Opening from each of these two rooms is a smaller room, one of which is occupied by the man m charge and the other used at present as a store-room. There is also a truet-roces. The interior of the head-house is tastefully finished

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in stained woods, with which the mission furniture harmonizes effectively. A bronze memorial tablet in honor of Mr. James, which has been ordered, will be placed above the fireplace.

The bowling alley has the benefit of the solid concrete foundation which was placed beneath the entire structure and is thoroughly constructed in accord with the demands which the recent popularity and development of an ancient game have produced. It is of regulation length, has two sections, and is equipped with the latest device for the return of the balls and the most convenient arrangement for scoring. The interior of the alley is finished in white to afford the better reflection of light in the evening. The building is heated with steam from the main steam plant, and is lighted by electric lamps, supplied from the electric plant of the institution. Dr. J. A. Houston, the superintendent of the hospital, regards the usefulness of the new establishment in providing recreation for the inmates as very great, and its popularity, as judged by one who recently inspected it, cannot be doubted. In the reading-room patients were reading and engaged in playing checkers, in the game-room a hand at cards was being played, while a bowling match was in progress and was being observed by an interested company of spectators. Suitable recreation is regarded as one of the most valuable forms of treatment, and to provide means for it at the hospital is not only to afford the opportunity for enjoyment to a large number, but to give a valuable extension of the resources of the institution for improvement and cure. In another respect, also, the recreation pavilion will be of important advantage to the hospital. The members of the large corps of attendants and other employes are likely to feel somewhat isolated by distance and lack of acquaintance from the amusement advantages of the town, and improvement of opportunity in this respect at the hospital affords recreation which is pleasing and needful to them, and for the hospital simplifies the problem of securing and retaining employes.

MINNESOTA.—Fergus Falls State Hospital, Fergus Falls.—Two new buildings are shortly to be erected here, a detention hospital to cost \$65,000 and a contagious ward to cost \$10,000.

MISSISSIPPI.—*East Mississippi Insane Hospital, Meridian.*—A new cottage for women and a hospital for the sick have not been completed, owing to the increased cost of building. It will be necessary to ask the legislature for an additional appropriation for heating, plumbing, lighting, and furnishing.

A 75-horsepower Corliss engine, costing \$1500 has been installed to increase the capacity of the electric light plant.

A brick building was constructed for cold storage, and cooling rooms for milk and meat installed.

The line of cast iron water pipe for fire protection has been extended to reach all of the buildings, including the new ones.

Manuscus.-Same Haspital No. 3. Neuralis.-A number of improvements have been made at this hospital, chief of which are the enlargement of the pathelogical laboratory, the installment of electrical apparatus for electrotherapentic and diagnostic purposes, and the installment of steam inticaluments which have been found beneficial. A moving picture machine has been perchased with which weekly entertainments are given, in the desight and henefit of the patients.

A heanery, at which are 1000 heas, furnishes a large quantity of irstciase eggs.

A brack smoke stack has been built and the exhaust steam is being used for heating purposes with the result of considerably saving fuel.

On March 1, 1906, the statistics were as follows:

Males.	Pennsins.	Total.
Under care September 1, 1907 639	4 82	LIII
Received	52	139
Discharged recovered	34	70
stationary	2	8
ärd 18	18	ø
Under care March 1, 1908 636	48 0	1,116

-Coivey for Epiceptic and Feetie-minded, Marshall-On January 19, 1908, two cottages were damaged by fire to the extent of \$35,000. No one was injured.

NEMASKA-H: spital for the Insame, Norfolk-This bospital will shortly begin the erection of a number of buildings, the total cost of which will aggregate \$100,000. A hospital building for women to accommodate 100 patients is among these.

New HAMPSHIRE.-New Hompshire State Hospital, Concord.-In March, 1907, the new hospital building, devoted to the reception of new cases as well as the care of hospital or infirm patients, was opened. The building cost \$130,000, and has a capacity for 156 patients. The new cases are admitted at this building and are afterwards located according to their mental condition, either in the hospital building itself or in some other part of the institution. The building is connected with the main hospital by a subway 300 feet long. The heat is furnished from the central holler station about 1000 feet distant from the building. The general cooking for the hospital building is done in the central kitchen, but there is a diet kichen in the building itself in which is prepared special sick diets, and in which the tea and coffee are prepared and the food from the central kitchen kept warm. The nurses in this building reside in the third story, and two physicians have rooms on the first and second floors, so that one physician may be on duty at all times.

Two buildings are now in process of erection: one for excited and disturbed women patients, and the other for men patients of this class. These

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will not be ready for occupation until about January I, 1909. Both of these buildings have external walls of brick and all floors and inner partitions are of re-enforced concrete. The State is gradually withdrawing its chronic insane from county care and placing them in the State hospital under State support and supervision. It is expected that these transfers will be consummated some time in the year 1909.

Early in the spring and fall of 1907, the trustees, with the consent of the governor and council, purchased nearly 180 acres of land at Lake Penacook, located about four miles from the main buildings, where the hospital already owns over 100 acres. The purchase included a small farm house with barns. It has been arranged to keep 12 patients at this farm the year round. These patients care for the young stock and assist in cutting ice and wood for the main building. It is proposed in the near future to keep a hennery at this farm, and raise small fruits and apples. This farm with its 12 patients is to be the nucleus of a larger farm colony in the future.

New JERSEY.—State Village for Epileptics, Skillman.—The interior of the Fernwood farmhouse was completely torn out, the extension raised to a foundation level with the main building, and the building converted into two houses, one of which is used for the residence of the dairyman and his family, and the other for the farm hands.

The farm buildings on the new farm have been moved into a group and repaired, and a new house for employees erected.

Two large pavilions were put up early in the summer, near the children's building, and have been much enjoyed, as they afford ample space for games, as well as protection from the sun.

A new board walk has been laid from the railway station through the entire grounds.

A water softening plant has been installed which, it is hoped, will prevent deposit forming in the pipes and boilers.

Early in the summer the building formerly used for laundry purposes was fitted up as a recreation room for the employees. Billiard and pool tables, shuffle boards, and other games have been put in, and it has done much to make the attendants and other employees more contented.

-New Jersey State Hospital, Morris Plains.—From the daily press it is learned that on the night of November 26, 1907, the three-story building which is occupied by nurses was destroyed by fire, causing a loss of \$12,000. The blaze began in the cellar and spread to the upper floors through a dust chute. Escape of four nurses on the second floor was made by means of a rope of sheets from the window.

The legislature has been asked for an appropriation of \$150,000 for improvements.

NEW YORK.—Eastern New York State Custodial Asylum.—The Commission appointed by Governor Hughes last year to recommend a site,

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etc., upon which should be established an asylum for the imbecile and epleptic which now are in the insane hospitals, made its report to the legilature February 19, 1908, and from it we abstract the following :

Summary of recommendations:

1. The commission recommends the purchase of the site at Thiells P. 0. Rockland County, comprising in all 1267 acres, and that the sum of \$178,375 be appropriated for this purpose. That a tract of land two miles northwest of said site and one square mile in extent, embracing part of the watershed of the middle branch of Minisceongo Creek, be purchased as a source of gravity water supply, and for the protection of said water supply, and that \$9000 be appropriated for this purpose.

II. That the name be changed to Haverstraw Colony. That the object shall be to provide humane, curative, scientific, and economical care, education and treatment of epileptic and feeble-minded persons, exclusive of insane cases. That the admission of State patients be so apportioned that each county shall be represented in the ratio of its total population to the total population of the State. Appropriations, of \$2000 for the care of the buildings on the site, of \$7500 for a topographical map, of \$10,000 for alterations to make temporary provision for 100 working patients, and of \$100,000 for new buildings, are asked.

The site recommended contains about 750 acres of farm land under cutivation, a large deposit of brick clay, a gravel pit, 2 ponds, 15 orchards, 14 houses, 8 cottages, 22 barns, etc., and 24 wells.

The commission is composed of William R. Stewart, Franklin B. Kirkbride, and Alexander C. Proudfit.

-Binghamton State Hospital, Binghamton.-During the past two years a large new building for the chronic insane, known as Broadmoor, has been erected and equipped for about 500 patients. To fill it 180 men were transferred from the St. Lawrence State Hospital, Ogdensburg, N. Y., December 4, 1907, and 200 men from the Central Islip State Hospital, Central Islip, N. Y., and 50 men from the Kings Park State Hospital, Kings Park, N. Y., were transferred December 18, 1907. This building occupies a commanding position east of the main hospital and faces the Susquehama river which flows past it on the south side. This building was designed for the chronic insane at a cost of about \$500 per bed, and is believed to be well adapted for the purpose it serves.

Another building is now approaching completion. It is designed for the care and treatment of acute recoverable cases. When finished it will have cost approximately \$1000 per bed, exclusive of the furnishings, and will accommodate 100 patients. It will probably be opened and occupied during the coming summer.

Plans are nearly completed for the erection of a nurses' home for the accommodation of 150 persons. The building will be of brick and will be well provided with bath rooms, closets, and sanitary plumbing. Each nurse will have a single room. Plans are also approaching completion for the reconstruction of the entire heating and electric equipment. New

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boilers will be installed and the electric lighting system will be changed from the direct to the alternating system.

March 17 and 18, 1908, a large meeting was held at which were many of the physicians from the State hospitals of New York. Several interesting papers were presented and a number of cases were exhibited. The autopsy work covering a period of two years was also reviewed. The meeting was presided over by Dr. Adolf Meyer, director of the Pathological Institute, Ward's Island, New York City.

-Manhattan State Hospital, Ward's Island.-The following improvements have been made during the past six months:

The re-wiring of Main and East Buildings and Employees' Home is about completed.

The cementing of freight and passenger dock at the west side has been completed.

An electric lighting plant has been installed on the steamer "William L. Parkhurst."

Congregate spray bath for the use of men patients in east wing of Main Building has been installed in basement of Ward 48.

Three pavilions, connected and built as one, have been constructed at south end of the island to be occupied by the tuberculosis patients, capacity 100 patients. Material and labor have been allowed to thoroughly overhaul and repaint inside and outside Wards 11 and 12 and attached solarium formerly occupied by these patients. Work has not been started, as the building has not yet been vacated.

A poultry building accommodating about 450 chickens has been constructed.

Machinery to the amount of \$2000 has been purchased and installed in engineer and carpenter's shop.

Six new large washing machines and one collar dampener, folder, and shaper have been installed in laundry, and a conveyor drying-room has been ordered, and will be installed within 30 days.

Material has been allowed for the cementing of the coal dock, west side. A new 6-inch water line to provide better fire protection for the high buildings on the west side of the island has been installed.

Material and labor have been allowed for the erection of a flour storage building at the bakery and some alterations to the old building.

An appropriation has also been provided for new and modern machinery for the bakery which will be installed in the near future.

A new bath room has been constructed and equipped in the apartments occupied by Dr. Rusk, Main Building.

Material has been allowed for installing tile floors in the toilet and bath sections of Wards 56, 57 and 58, East Building, in place of red patent flooring which had given out.

A transfer of 200 men patients was recently made to the Central Islip State Hospital, L. I., and, although a seemingly small matter, this relieved to an appreciable extent the overcrowded condition of the men's division. The general health of the hospital immates has been up to the usual standard, although there has been an occasional sporadic case of diphthenia during the past few months, but the hospital having a very appropriate isolation pavilion, these cases have been promptly removed to this ward, and measures taken to prevent the spread of the disease. The liberal use of diphtheria anti-toxin was found of great advantage. Immuning doses have been administered to both attendants and patients who came is contact with the cases of diphtheria.

The tubercular patients have received the open air treatment so far as possible, as heretofore. While no new features have been introduced, attempt is constantly made to perfect old methods with the gratifying result that the death rate has declined quite noticeably. During the year 1907, in the men's department, 86 patients were treated in the tubercular camp. Many of these suffered from alcohol or exhaustive psychoses and showed marked mental as well as physical improvement, some being in fit condition to be discharged after a short residence. When the weather permits, the bed patients in this division (about 20 per cent of the total number) are carried out-doors and allowed to lie in their beds under the trees. These patients often fall into a sleep and awaken refreshed and quieted in mind and body.

The new tuberculosis camp referred to previously in this article for the women's division, having a capacity of about 100 patients, has been completed, and will soon be occupied. The patients will be transferred from the building now occupied by them, which building has been rather unsatisfactory in many ways for the accommodation of this class of patients. These wards, 11 and 12, will be thoroughly overhauled and renovated, and will then probably be used for other purposes.

The training school work is progressing very favorably. In the bospital wards, during the past six months, work has been carried on with little, if any, variation from the plan pursued for some time. The number of acute medical cases has been rather below that of former winters in the men's division, particularly pneumonias, but in the women's division there have been an unusual number of cases of pneumonia during the past few weeks. Surgical operations have been performed whenever necessary, and in the men's division have consisted mainly of herniotomies, the results in each case being very favorable. At the women's division the surgical work has been held in abeyance during the fall and winter, cases of urgency receiving surgical treatment as indicated, but during the past few weeks gynecological surgery has been resumed.

Hydrotherapy, as practised at this hospital, finds an ever widening sphere of usefulness. There are but few forms of acute mental disorders which are not at some time benefited by some of the various forms of bydrotherapeutic procedure. The continuous bath has been found of especial benefit in delirious, infective, exhaustive, and toxic cases. It has been found that manic depressive cases respond less promptly, but also show a lessened unrest in the continuous bath, and their convalescence appears to

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be hastened by the treatment. On the acute wards all forms of packs and douches are given daily to properly selected patients. All hydrotherapy is under the immediate supervision of a trained nurse, who has had an additional course of instruction in hydrotherapeutic measures, while such treatment is only given upon a physician's prescription written for each individual case.

Massage has also been found a valuable adjunct in the treatment of acute psychoses and a trained masseur is daily employed. This form of treatment has proven of the greatest benefit in cases with sluggish terminal circulation and with faulty metabolism. Each member of the senior class of the training school is given personal instruction in both hydrotherapy and massage.

The hospital, especially the women's division, is still very much overcrowded, the census at the present time being nearly 4500. Relief in this direction is hoped within the near future by transfer to one or two of the other State hospitals.

-Hudson River State Hospital, Poughkeepsie, N. Y.-During the fiscal year ending September 30, 1907, 577 patients, 317 men and 260 women, were admitted.

There were 486 cases, 273 men and 213 women, discharged as follows:

	Men.	Women.
As recovered 154	83	71
As improved 57	34	23
As unimproved 58	35	23
As not insane 11	6	5
Died 206	115	91

The daily average number of patients under treatment was 2329.

The capacity of the institution, as certified to by the commission in lunacy, is 2235, but this is at least 20 per cent higher than it should be. The present census is 2387.

The rate of recoveries based on the original commitments was 27.45 per cent, while it was over 32 per cent on the number discharged, exclusive of those transferred to other State hospitals. These figures show an increase of more than 7 per cent over those of the previous year. In 445 cases out of the 577 admitted during the year the prognosis was unfavorable from the beginning. With so many unfavorable cases to work upon, the recovery rate is certainly encouraging.

Much attention is given to the medical work and encouraging results are being obtained under the wise direction of Dr. Meyer, director of the New York State Pathological Institute.

The rooms in the administration building, formerly occupied by the official staff of the institution, were opened in September as wards for quiet women patients. Each floor accommodates 50, and the changes which were made converted them into very pleasant and convenient wards.

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The new amusement hall, with a seating capacity of 800, was opened on Hallowe'en evening. The hall is very satisfactory in every way and opens up a wide field of usefulness.

All the toilet rooms, bath rooms, and lavatories in Wards I, 5, and 9 were completely renovated during the year. New tile floors were laid, the old unsanitary piping was replaced and new bath and toilet fixtures were provided. New bath and toilet rooms have also been provided in commetion with the quarters used by the women employed in the laundry, and by the men in the kitchen block at the central group.

Several changes have been made in the laundry and new machinery, including a steam sterilizer, has been purchased and installed.

A much needed improvement has been made in the street lighting around the main building.

Linoleum has been laid in several of the corridors, and some new furniture has been added to provide for deficiencies.

A new carpet was laid on Ward 1, and the ward was painted.

Two new sun rooms have been added to Wards 3 and 7.

At the last legislature \$17,000 was appropriated for increasing the capacity of the nurses' cottage and the building, which is of frame construction, is well under way.

Five new boilers have been placed in the cottage department, and two new boilers have been placed in the boiler house at the main building.

The two new buildings, one for the chronic cases and one for the acute cases, are nearing completion and will in all probability be occupied by June 1. The building for the chronic insane is called "Inwood," and will accommodate about 80, 40 of each sex.

The old amusement hall is being overhauled for the use of patients. There will be placed in the rear end a large dining room with a serving room on one side, and on the other will be bath rooms, toilet rooms, and lavatories. This hall will accommodate about 50 of the quiet, infirm class of patients.

A rearrangement has been made in the heating plant of the north and south wings, main building.

That portion of the old post road in front of the hospital has been greatly improved by widening and macadamizing, and an attractive rustic fence has been built on either side.

-Utica State Hospital, Utica.-The nurses' home, which has been in the course of erection for several months, is nearing completion, and is expected to be ready for occupancy very shortly. The building is three stories in height, and provides accommodation for 150 employees. The married employees will occupy about a third of the space in the structure, a portion of the building having been especially constructed with that end in view. The building will supply a long-felt want and will help rehere the over-crowding of the institution.

The new building for the acute insane, which was commenced has spring, is being pushed rapidly to completion. The four wards into which •

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the building is divided will have a capacity of 100 patients, and will permit of the separation of the acute and chronic classes, a thing hitherto impossible at this institution. The armamentarium of the hospital will be greatly enhanced by the electro and hydrotherapeutic apparatus, rooms for the continuous bath, and an operating room, which are to be installed in this new group. It is designed to have a congregate dining room, and quarters for a physician are provided in the administration building. The need for such a group as this has been felt and urged upon the State authorities for many years, and the hospital officers are greatly pleased at the culmination of the efforts now in view.

-Craig Colony for Epileptics, Sonyea.-Dr. J. F. Munson, pathologist at the Colony, is abroad for six months with the purpose of ascertaining what is being done in the laboratories of Europe relative to researches in epilepsy.

It is hoped that an appropriation for an addition to the pathological laboratory will be allowed this year so that better facilities for carrying on chemical work can be provided.

The present capacity of the colony is 1195, exclusive of the Peterson Hospital, which has 22 beds for male patients and 11 beds for female patients.

The census on March 1, 1908, was 640 males and 510 females; total, 1150. On the completion of the service building there will be accommodations for 30 additional female patients.

During the past winter cellars have been excavated beneath the ten original cottages in the women's group.

A new ice house has been completed. Two small isolation cottages for contagious diseases are to be erected this spring. These are to replace the building burned last summer. One will be located in the men's division and one in the women's division.

Four additional cottages for married employees are also to be built as soon as the weather permits.

A new building to contain a paint shop in the basement, fire apparatus on the first floor, and a tailor shop on the second floor has been completed and is in use.

All of the electric light and telephone wires in the women's group have been placed in subways.

Considerable grading was done in the women's group last summer.

Several rooms for night attendants have been completed in third floor of the administration building.

The public highway which extends through the colony premises is to be macadamized during the coming summer.

During December and January a general quarantine existed at the colony because of several cases of scarlet fever, and in March a similar quarantine existed because of the diphtheria being present at three different places in the institution. -Middletown State Homeopathic Hospital, Middletown.—A building for the accommodation of 535 patients, which has been under construction for the past two years, is now practically completed, and is to be occupied about April 1, 1908. It will relieve to some degree the overcrowding of this hospital, but will be chiefly filled by the transfer of patients from the metropolitan district. The building is designed for the care of the unrecoverable insane, and the plan is that of dormitories for 50 patients each; corresponding to each dormitory there is a capacious and pleasant day room, with a wide veranda. Plans are being prepared for a separate building for 100 acute patients, a nurses' home for 150 nurses, and for a small building for contagious diseases. It is expected that the construction of these buildings will begin during the present summer.

The increased size of the hospital has made necessary the installation of two new boilers and the enlargement of the laundry by the construction of a second story, where ironing is done and where it is planned ultimately to have the clothing mended before it is returned to the ward. Three new washers, three new extractors, and a new drying room have been installed

-Willard State Hospital, Willard.-A notable event occurred at the hospital on February 6, when the institution was presented with a portrait in oil of Dr. John B. Chapin, who may justly be regarded as its founder. The occasion was a sequel of the dinner given in honor of Dr. Chapin at Philadelphia, December 1, 1904. Through the instrumentality of the committee, of which Dr. Edward N. Brush, of the Sheppard and Enoch Pratt Hospital, was chairman, surplus funds subscribed for that function were used to secure for Willard a copy of the portrait presented to Dr. Chapin, made by the artist who painted the original. The proceedings were attended by about 100 invited guests, managers, resident officers, and a few of the older employees who were in the service during Dr. Chapin's tenure of office. Dr. Elliott presided and addresses were made by Dr. Chapin, Dr. Brush, and Mr. A. S. Stothoff, president of the board of managers. Dr. Chapin was building commissioner from 1865 to 1869 and medical superintendent from 1860 to 1884, when he resigned to succeed the late Dr. Kirkbride as superintendent of the Pennsylvania Hospital for the Insane, Philadelphia.

The work of enlarging the dining rooms at the Pines and Edgemere is completed. A contract has been let for the installation of two new engines and generators at the electric light plant. The sum of \$10,000 appropriated by the legislature for the erection of a pavilion for 35 tuberculous women was found to be insufficient, and the plans and specifications prepared have therefore not been acted upon. It is expected that an additional appropriation of \$8000 will be made during the present session of the legislature to permit the construction of the building.

The hospital has been unusually free from contagious or epidemic diseases during the past six months, and there has been less than the usual amount of illness among the 480 employees.

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-Bloomingdale, White Plains.-There were 16 more admissions this year than last.

The average number of patients in the institution was 340, 5 more than the average of the preceding year.

The number of weeks' board and treatment furnished for patients was 17,702. The average expenditure per patient was \$12.72 per week, which includes the total cost of maintaining the property at White Plains, and the patients upon it, and is for all salaries and wages, repairs, supplies, and maintenance of every kind, except that the high-paying patients, which have increased in number, pay for the exclusive services of their attendants, and this sum is deducted from the total expense. In making up the average cost for the patients per week, there was a decrease of .03 per capita from the cost of the preceding year.

Sixty-two women were beneficiaries of the John C. Green Memorial Fund during the year 1907. The amount of income received from that fund and expended for these women in 1907 was \$7,808.21. The total charitable expenditures during the year 1907 in caring for and treating patients (preferably acute and presumably hopeful cases) was \$55,327.84. Two hundred and twenty-nine individuals shared in this charitable assistance, some being entirely and others partially supported. The sum of \$47,519.63 was expended for this purpose from the earnings of Bloomingdale during the year 1907, from which earnings charitable assistance to patients was given to the extent mentioned above. 9.5 per cent of the patients treated contributed nothing whatever to their support; 53.6 per cent of the patients paid sums varying from nothing to the bare cost of their care. Only 46.4 per cent paid a rate which secured a surplus for the institution. The total support and partial assistance rendered to patients unable to pay their entire cost to the hospital was equivalent to maintaining 84 free beds.

The graduates of the training school for attendants, including the two who graduated this year, amount to a total of 88 since the school was first started in 1895, 24 of whom remain in the employ of the institution, namely, 4 men and 20 women.

There has been the usual medical activity in the hospital during the rear 1907. The care of the patients by means of mental and physical treatnent, by diversions and exercise, has been conducted as before. Much tress is being laid on the accurate observation of the patients, and recordng their cases amply for the purpose of gaining more definite information or treatment, as well as for wider scientific reasons.

On May 25 the annual inspection by the board of governors took place. An inspection was made of the farm and grounds, and the buildings, inluding the wards and domestic department. At 3 p. m. Mr. Theodorus B. Voolsey, the president of the board, presented the certificate and medals to the graduates of the training school for attendants, 2 in number. Preeding these graduation exercises there was a concert by voluntary talent efore an audience from White Plains and New York. A considerable umber of the friends of the institution and the attendants were present

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on the occasion, which passed off in a very satisfactory manner. Many compliments were paid by the visitors, on the cheerful and orderly condtion of the halls through which they passed.

As heretofore, during the summer of 1907 picnic parties went to the cottage rented at Oakland beach for their benefit, whenever the weather was pleasant enough to make such trips agreeable, the parties averaging 8 to 10 people. They left about 9 o'clock in the morning, arriving at the beach at about 10 o'clock, and returning so as to reach the hospital at 5 o'clock in the afternoon. If the day was unpropitious the parties were omitted. The men patients usually went on Tuesdays, Thursdays, and Saturdays, and the women on Mondays, Wednesdays, and Fridays.

The outdoor diversions during the summer, intended to be a part of the moral treatment of the patients, as well as for their enjoyment, have included base ball games with outside teams. A number of patients took part in these games, including scorer and at times umpire. Men patients and women patients were spectators, and looked forward eagerly to the games.

Through the year the customary Sunday services, Tuesday dances, and Friday evening entertainments have been held.

The custom of the patients going out on longer or shorter visits from the hospital, to test their ability to live in the world, has been continued, with success in many instances, and well justified the risk taken that some of them may relapse, and do something distressing; in fact, few of them do so, and many of them again live rational and satisfactory lives.

As originally designed, the administration building at Bloomingdale was to contain everything regarded as essential, but the necessity of reducing the amount of expenditures, lead to the curtailment of this building, rather than those devoted to patients. To supply some deficiency in the original plan, there was finished during the year 1907, a rear extension of the center building, containing post mortem and laying-out rooms of a thoroughly modern and sanitary class, a large, fine therapeutic bathroom, to take the place for the men of the one which has been used for the past 14 years for both men and women. There is also a large gathering room for informal entertainments of patients and officials, and for occasional meetings of official visitors. On the same floor there is a psychological laboratory containing two large rooms, one for examinations and various tests and reactions, and the other for microscopic and such work as is carried on in the most modern of these laboratories. This is in the immediate charge of the first assistant, Dr. Hoch, and Dr. Amsden, who devote themselves more particularly to the work of investigation. On the top floor of this building there are four very good bed rooms, which were needed for some increase in the medical staff.

Dr. Hoch, in charge of the psychopathic laboratory, reports as follows:

The laboratory in its new quarters, is now well equipped, so that, so far as that is concerned, we have adequate facilities for work. The work which has been carried on during the year consists, not only in the study of the tissues from the nervous system and other organs, obtained at autopsy, but also in the study of lesions by means of serial sections through the brain as a whole. This work makes possible a proper co-ordination of clinical symptoms and anatomical changes in the nervous system. The additional facilities offered for the examination of the secretions and excretions of the body, as well as the blood and the cerebro-spinal fluid, are daily in use, and add efficiency to the clinical work.

A considerable amount of research has been devoted to the study of the causation of certain forms of insanity. The beginning of these studies was indicated in the report of last year. In this age of bacteriology the mental causes of insanity have been strikingly neglected, and only recently attention has again been directed towards them. Such studies teach us that what is at the bottom of certain-of course not all-mental disorders, are conflicts in the patient's life, usually of long standing, with which the patient has never been able to get square, and which, owing to the lack of sufficient balancing factors and sound mental habits, give rise to a growing disharmony. That which we then call the mental disorder, is nothing more than the becoming dominant of such conflicts in various forms of peculiar abnormal reactions and faulty attempts at adjustment. These manifest themselves in delusions, hallucinations, peculiar acts, and the like. In such case, therefore, a careful psycho-analysis is necessary, not only for the purpose of research, but for the diagnosis as well. By diagnosis we no longer mean merely that which can be expressed in a single word, but we mean a thorough clearing up of the situation, that is, an understanding of the actual struggles and difficulties which the patient has, and which are hidden under the perplexing array of mental symptoms. It is becoming more and more evident that for a proper management and treatment of those forms of insanity which we have in mind, such a knowledge is indispensable, and that to be satisfied with anything less is a procedure to be put on the same level as a treatment, without any diagnosis at all, i. e., without adequate indications.

The results of these researches which are in line with work done by others in the same field, have been laid down in the following papers:

I. "The Manageable Causes of Insanity." Public lectures given at the New York Academy of Medicine.

2. "Psychogenesis in Paranoiac States." Paper read before the New York Psychiatric Society.

3. "The Psycho-genetic Factors in the Development of Psychoses." Psychological Bulletin, Vol. 4, No. 6.

4. "On Psychotherapy in Psychiatry." Paper read before the New York Neurological Association.

5. "Psychogenesis in Dementia Præcox." Paper read before the New York Psychiatric Society.

NORTH CAROLINA.—The general assembly, at its last session passed an act creating a hospital commission and appropriating \$500,000 for the improvement of the three present insane hospitals and for the purchase of

land and construction of buildings to accommodate epileptics and ether mental defectives.

-State Hospital, Dir Hill, Raleigh.-During the past year an addition was made to this hospital to accommodate 100 female patients, and there is now under construction an addition to the male department to accommodate the same number.

OH10.—Massillow State Hospital, Massillow.—In order to increase the water supply, three wells were drilled, which are directly connected with a new reservoir having a capacity of 840,000 gallons, which is expected to meet the demands of the future.

There have been no new buildings constructed during the past six months. Appropriation has been asked for a new hospital building, which would relieve the present congestion on the men's side.

An appropriation is asked to purchase an adjoining farm, which could be utilized for dairy purposes. In this case the institution would obtain a more wholesome supply of milk.

There has been added a new and complete surgical equipment to the hospital, which will enable it better to meet emergencies.

In the pathological department research in the causation of paresis occupies the most attention. Support is continually being added to the theory that the Bacillus Paralyticans is the etiological factor in the production of this disease.

During the past few months a thorough research has been instituted among the different classes of insane, particularly an examination of the cerebro-spinal fluid for this organism, and it has not been found in any case other than paresis. It is present in the cerebro-spinal fluid of 85 per cent of the cases of paresis examined. Some cases of paresis are being treated with vaccines, and some with an antiserum directed against this organism, and in almost all the cases there has been an apparent improvement. The antiserum has a twofold function, acting as a diagnostic agent as well as therapeutically. A thorough investigation of the cases has been made for tuberculosis, using Calmette's ophthalmo-reaction, an account of which will be published shortly.

More recently a dentist has been engaged to assist in caring for the teeth, and also to aid in an investigation which is being carried on with respect to certain conditions of the teeth as a factor in the production of insanity. X-ray photographs of the teeth are taken, and any abnormal conditions noted are corrected by the dentist. So far there has been a certain improvement in some cases.

There have been no changes in the official staff.

Columbus State Hospital, Columbus.—A new building on the dormitory plan has recently been completed and will shortly be opened for chromic incurable cases. It will be called Harris Cottage in honor of the governor.

A nurses' home for accommodating 50 women nurses is now being furnished. It is a beautiful building of the colonial style of architecture.

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three stories high, and is the first building in Ohio used exclusively as a nurses' home.

A new barn with capacity for 25 horses has been completed and is occupied.

There has been very little sickness, although the hospital has been very crowded, and it has been necessary to transfer over a hundred patients to other institutions.

The outdoor treatment of tuberculosis was continued last year with success, over 150 cases being in the colony. Other cases not tubercular were benefited by this treatment, notably one case of Korsakow's psychosis. During the coming year it is hoped to erect a cottage for the permanent care and treatment of this class of cases. The building to be so constructed that it can be thrown open, and the patients practically be given the same treatment the entire year, segregating them and so preventing the extension of the disease to other patients. It is also hoped to construct a cold storage plant and additional laundry facilities.

-Ohio Hospital for Epileptics, Gallipolis.-The alterations to Wade Cottage have been completed, and it is now occupied by 30 elderly female patients.

The two small tracts of land separating the hospital grounds from the farm have been purchased, cleared of rubbish and underbrush, and direct connection with the farm has been established by means of a well-built road.

A bread mixer and other machinery has been installed in the bakery, additional machinery has been purchased for the main laundry, and a separate laundry has been established for the insane department.

There have been extensive improvements in building roads and pavements, laying brick gutters, tiling the farm lands, and in extensive grading in various parts of the institution. The farm lands which were in a very poor condition at the time of purchase have been brought to a moderate degree of productiveness by much cultivation and fertilizing. A young orchard has been planted, and additional pasture land gained by the clearing of underbrush.

-Longview Hospital, Cincinnati.-A course of lectures upon clinical psychiatry was instituted at this hospital in the spring of 1907 which is open to practitioners of medicine and senior students. These clinics are conducted by Drs. Langdon, Zenner, Hoppe, and Wolfstein, of Cincinnati, and are well attended, much interest being shown by the local practitioners.

This hospital, together with the other State institutions, has adopted a uniform scale of wages (see p. 367).

OKLAHOMA.—Fort Supply Insane Asylum, Fort Supply.—The territorial board of trustees of the asylum let the contract for the remodeling of the old army post that it may be used as a territorial insane hospital. The contract called for the completion of the work by November 15, 1907.

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PENNSYLVANIA.—State Hospital for Criminal Insane, Fairview.—The plans for this hospital were approved by the lunacy commission November 13, 1907. It is expected that the buildings will accommodate 450 patients

-State Hospital for the Insane, Norristown.—An additional tract of ground amounting to 292 acres has been purchased for this hospital at a cost of \$30,000. The institution now treats over 2,200 patients, and the per capita weekly cost during the past year was \$4.10 per week, an increase of 40 cents. On December 23, 1907, L49 patients, 99 of whom were women, were transferred in special cars from the insane department of the Philadelphia Hospital. One hundred of these had been formerly at Norristown, but were transferred to Blockley at the time of the fire.

-State Asylum for Chronic Insane, Wernersville.-Plans have been completed for the erection of an infirmary building in which it is hoped to have a small laboratory, so that the scope of the pathological work may be enlarged.

It is intended to construct an addition to the dining room the second floor of which shall be used as a day room.

Two hundred acres of woodland have been purchased for better protection of the water supply, and this is being improved by construction of drives and planting of trees, the latter work being carried on under the supervision of the State department of forestry.

A frame cottage has been added to and remodeled so that there are now rooms for three small families of the employees.

The coal dump has been reconstructed of concrete and steel beams, and two concrete coal bins have been built, replacing the wooden ones.

A hot house, 100 feet long and 20 feet wide, with concrete foundation and benches and the superstructure of old material, has been built.

-State Hospital, Warren.—During the past few months four new buldings have been occupied. First, an infirmary for 50 tuberculous patients of both sexes, in charge of women nurses both day and night, who are assisted by the stronger male patients in bathing and similar duties. A building for each sex on the dormitory plan, each accommodating 100 patients, designed for able-bodied persons who go out to work in the different departments. Fourth, a large brick addition to the ward for convalescent women. This last-named building is situated about a mile from the main building and can accommodate 35 patients with the necessary nurses. This is of the greatest service in the work. The patients there are allowed the freedom of the grounds and appreciate their privilege very much.

There has also been installed a fine hydriatic department for women where daily instruction is given the nurses in massage and hydrotherapy. From 50 to 55 patients receive treatment here daily with marked beneficial effect.

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RHODE ISLAND.—Butler Hospital, Providence.—Among the most important improvements at this hospital have been the installation of a new receiving tank in the pump room, provided with a thermostatic valve and connected with a new boiler feed pump. All the return water of condensation discharges into the receiving tank except that from the engines which is carried to the drip tank to allow the oil to separate.

The roof of Ray hall has been relaid with asbestos slates, and new gutters, ridge, and two additional conductors, all of copper, have been provided. A lavatory with tile floor and "effectile" walls has been built for general purposes, while the workshop for patients has also been supplied with a new lavatory. The inside woodwork has been refinished and the outside woodwork repainted.

The heating of the south, east, and west wards has been improved by the introduction of a new air supply which is most successful.

The Goddard house hydrotherapy room has been reconstructed. The marble work, like that in the Weld house, has been carried to the ceiling around the entire room.

The superintendent's house, Duncan Lodge, has been improved by building a front staircase from the second to the third floor, and by enlarging with new windows two front rooms, making that part of the house more available for family purposes. A new bath room has also been provided.

An engine lathe has been set up in the carpenter's shop.

The Sanford Conservatory has been strengthened, braced, and put in repair, and new beds constructed.

At the farm the manure pit has been abolished and an overhead track carrying a tilting bucket, into which all refuse is thrown, runs to the end of the barn where the refuse is dumped into a wagon. The floor of the stable has been relaid.

VIRGINIA.—Western State Hospital, Staunton.—Cement steps to Ward 8 have been constructed to replace the old ones made of wood.

A new steam pump has been bought for the spring in the orchard to replace the old compressed air pump located there, 1600 feet from the steam house.

New roofs have been put on the farmer's house and soap house, and a good deal of guttering and downfalls has been renewed.

Four hundred feet of roofing, two feet wide has been put over Wards 8, 9, and 10.

Two hundred feet of 3-inch steam main was put in for Wards C, K, L, X, Y, and Z, to replace a smaller one which did not allow enough steam to pass to keep the wards comfortable.

Two new 120-horsepower boilers were purchased to replace those which had been condemned.

-Eastern State Hospital, Williamsburg.-The plumbing in the infirmary has been thoroughly overhauled, the floors throughout stained and waxed, and those of the bath rooms tiled. The pharmacy has been moved from the basement of the Montague building to the infirmary where a brighter and more convenient room is used. Alterations have been made in the room used as an operating room so that a laboratory has been added. A diet kitchen has been established where all the food for the acute sick a prepared. A graduate nurse has been appointed to have direct charge of the infirmary and also to have supervision of the female wards. Women nurses are in charge of both men and women patients in the infirmary, and this arrangement is found to be satisfactory.

Additional office room has been provided by using two connecting rooms in the superintendent's home, adjoining the administration building as his offices, and using those formerly occupied by him for the assistant physicians.

A new piggery has been built.

The sewer main has been extended an additional 125 feet and now empties into a larger stream, and there is consequently greater dilution.

WISCONSIN.—Milwowkee Hospital for Insane, Warwatosa.—Improvements at this hospital during the past six months consist of the following:

A five-inch pipe has been laid from the bottom of the lake to the power plant to be connected to a fire pump with a capacity of 1100 gallons per minute. This arrangement will prove most valuable in case of fire, providing an enormous reserve in case of failure of the supply from the central pumping station, the lake, by this arrangement, constituting a large reservoir. A 3-inch pipe line has also been laid in the same trench connecting the ice-plant with the lake so that the waste water from the iceplant, amounting to several thousand gallons daily in the summer season, will run into the lake and act as its greatest source of supply, thus avoiding to a great extent the necessity of using the water from the pumping station.

In the laundry an all-brass washer and sterilizer 35×64 inches has been installed. Likewise a 30-inch exhaust fan. The racks in the dry room have all been sheathed in metal and the drying compartment made absolutely fire-proof, automatic sprinklers also being installed overhead.

In the ironing department, four more electrically heated flat-irons have been added, making the total number 20, all operated by patients. A threeroll ribbon feed Hagen mangle 5×10 feet has been installed, facilitating very materially the work of this department.

In the way of concrete work, the sidewalk of the highway has been extended to the east line; a 6-foot walk was laid from the main building to the male grove; another from the rear of the north wing connecting with this walk to the grove and yet another skirting the west side of the baseball grounds, touching the club house and connecting with the main walk in the grove for men patients. A walk of ashes covered with crushed stone was also laid to the grove for women patients. A 4-foot concrete walk was also laid from the rear of the main building to the

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barns. Concrete platforms re-enforced by iron rails were constructed on the east and west sides of the new storage building. This arrangement is of the greatest convenience, permitting the unloading of flour and other merchandise directly from the car into the building.

A sun porch was built connecting with Ward 6 north and south, similar to those on the two lower floors. These porches have proven of immense benefit to the patients during all seasons of the year, especially for that class who are at times disinclined to go for their daily walk, but most particularly, for the crippled and infirm class on the hospital wards.

Much work has been done the past season in adding to the attractiveness of the grounds surrounding the lake, as well as along the highway. The bank skirting the new concrete walk on the highway was graded and sodded along the entire frontage, the highway widened and the land east of the street railway station and extending to the east line, graded and seeded with lawn grass. Two ornamental flower vases were placed on the lawn in front of the administration building.

The new staff house which is located on a high point, just east of the main driveway, upon this new stretch of lawn referred to, is progressing toward completion. This house will be of great service in relieving the congestion in the main building, as well as providing additional space for patients.

The club house on the ball grounds was this fall moved to a point bordering on the men's grove and placed on a concrete foundation, a floor of the same material being laid therein. This house is made use of by the occupants of the violent ward for men; one-half of the ward using it in turn. This plan has been found to conduce materially to the comfort and contentment of the patients of this class and in a decided degree to the quiet and tranquility of this formerly disturbed and noisy ward.

An ambulance, known as the "Bennett Invalid Coach," has been purchased for transporting patients from their home to the hospital in charge of the hospital nurses. It bears no resemblance to the ordinary ambulance, having the appearance of an ordinary landau or rockaway, but still furnishing all the features of an ambulance of the best type. The horses purchased for it will be utilized on the farm as well.

A potato-peeling machine has been installed in the general kitchen.

Ornamental steel ceilings have been provided on Wards 2 and 3, north and south, and in several of the patients' bed rooms. The old ceilings will be replaced with steel ceilings in all the rooms, whenever in need of repair, thus making a permanent improvement.

A new Edison combination kinetoscope and stereopticon has been purchased and is greatly enjoyed by the patients.

-Asylum for Chronic Insane, Milwaukee County.-The chief improvement during the past year has been a tiled floor which was laid in the kitchen and scullery. White enameled sinks and new plumbing have been put in, and with new china closets the kitchen is in a very sanitary condition.

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The completion of the new industrial building has been delayed by more important work.

New electric flatirons have been installed in the laundry, and the store has been taken out, thus eliminating a source of danger.

A wagon shed has been constructed for the storage of wagons and of farm implements, the roof of the barn has been repaired and shingled, and the greenhouse has been repaired.

WYOMING.—Wyoming State Hospital for the Insane, Evanston.—Plans are under consideration and construction will soon begin of a new cortage for women to accommodate 75 patients. It is expected to be modern in every way. An appropriation of \$50,000 is available for this purpose, but the question as to whether it shall be built by contract or under the charge of the superintendent has not yet been decided.

CANADA.—Protestant Hospital for the Insane. Verdun, Quebec.—During the latter part of the past year the hospital acquired the property adjoining the present grounds on the east side. This handsome gift, procured through the kindness of Dr. James Douglas, of New York, who purchased it at a cost of \$42,000, fills a greatly required need. It contains about 60 acres, and will almost double the frontage of the hospital property on the river. Dr. Douglas is a son of Dr. James Douglas who for a long time was identified with the Beauport Asylum.

A new fireproof detached engine-room, in which are installed two dynamos, as well as the pumps for bringing the water from the aqueduct at the rear of the hospital has been completed.

From the hospital to the aqueduct a new line of 14-inch pipe has been laid and connected with pumps, so it is now possible, if needed, to pump the water supply direct from the aqueduct, and in case of fire, are independent of the overhead tank.

-Asylum for the Insane, Toronto, Ontario.—The course in clinical psychiatry recently established at Toronto University has been conducted during the past two months at this institution. The examination at the end of the course was clinical in character and tested the students' ability to deal with actual cases. It is hoped that by next year the arrangements will be such that the work will be even more clinical in character than was possible this year.

The report of the commissioners sent abroad by the provincial secretary to enquire into psychiatric questions abroad, has been issued in pamphlet form. The matter is to be brought up in the legislature at an early date and dealt with. The recommendations briefly were: the establishment of psychiatric clinics at university centers, the enlargement of existing country asylums for chronic cases and provision for the care of insane criminals. The commissioners are to be congratulated on their very readable report, which is full of things of interest.

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-Asylum for the Insane, London.-Changes are under way at this institution whereby the infirmary building will be converted into a hospital for acute cases, a large amount is to be spent installing a complete hydrotherapeutic outfit. A laboratory for the pathological and clinical work is also being established and will be in charge of one of the members of the medical staff.

-Hospital for the Insane, New Westminster.—It is understood that extensive changes are contemplated in connection with this hospital. New buildings are being erected and provision made for separate care and treatment of acute cases.

-Regina.—The recently formed province of Saskatchewan, whose capital is Regina, is contemplating in the near future the establishment of a hospital for the insane. With this in mind Dr. Lowe, of Regina, has appointed a commission to visit various foreign institutions for the purpose of getting ideas to be used in the establishment of the new hospital.

Dr. Lowe has presented a most excellent report containing many suggestions of value, which, if adopted, by the provincial authorities, will insure a most up-to-date institution for the province of Saskatchewan.

Book Reviews.

Fifteenth Annual Report of the State Charities Aid Association to the State Commission in Lunacy. November 1, 1907. (New York City: United Charities Building.)

This report is full of interest. The enlightened views of the Board of Managers as to the care of the insane in New York commend themselves to all interested in the enormous problems which were developed by State care. It is gratifying to perceive a note of warning lest attempted compmies may lower the standard of care so essential to the well-being of insure patients. It seems that during the past year the per capita of the mainte nance of each patient has been \$183.83, and yet the appropriations for 19th with an increase of about 800 patients, allows a per capita expenditure of less than \$170. This reduction came through the failure of the Legislature to take into consideration the amounts which have been turned into the State treasury by the State hospitals as earnings of their farms or money received from patients. These sums have usually been re-appropriated to the use of the hospitals, but as this has been deemed inconsistent with the principle that appropriations should be according to needs rather than according to earnings they were omitted from the appropriations for 1908. In the judgment of the managers, unless a larger appropriation is made, there is grave danger that a reduction will be made in the force of employees with consequent neglect of patients. The plan of making sep arate appropriations to each institution evidently does not meet the approval of the association, and the plan of a lump sum appropriation to the Commissioners in Lunacy to be expended according to their discretion is preferred.

The suggestion as to the therapeutic value of transfers of patients from one hospital to another seems excellent and is worthy of reproduction bere:

" It would seem as if the transfer of patients from one hospital to another offers a very valuable opportunity for interesting experiments as to the effect on a fairly hopeful case of such a change. The monotony of institution life is not sufficiently appreciated. Anything that breaks this monotony is likely to result in the improvement of the patients affected. Superintendents often remark on the improvement in a patient's condition that results from transfer from one building to another in the same institution, and some hospitals have adopted a system of sending patients for short visits to other and different parts of the hospital, especially if they have farm colonies, or recreation cottages. In the same way and to a great extent the transfer of patients from one hospital to another is likely to result in benefit in many cases. Certain hospitals are well equipped to care

for patients who will be benefited by out-door work on a farm, others have their indoor industries well developed, some are situated on or near the sea, others on or near the great or smaller lakes, others on the banks of great rivers, some are in or near large cities, others in the country far from any considerable town. In variety of location, and climate and surroundings, as well as of internal administration, our thirteen State hospitals offer great opportunities for differences in methods of care and treatment adapted to the individual needs of patients suffering from different kinds of mental or physical disease. It would seem as if greater advantage should be taken of this opportunity to transmute the agency of transfers into one of the curative and ameliorative agencies in the care and treatment of the insane."

The suggestion is also made that a scientific agriculturist should be employed to visit the farms connected with hospitals for the insane and report on methods of improving the productivity of these farms. Many hospitals need more land, better equipment, increased herds of milch cows and a greater differentiation of farm products. An expert agriculturist could secure better co-operation between the different institutions, and it may be an exchange of farm products. The suggestion is made that manufactured products of one institution favorably situated for manufactures might be exchanged for the farm products of one favorably situated for agriculture.

The portion of the report which urges the importance of raising the standard of care of patients by raising the standard of the training schools in the State hospitals is worthy of attention.

"Each school should have at its head as principal, some well-qualified person whose chief duty is the conduct of the school. The important part taken by superintendents of training schools in the improvement of general hospitals is well known to all who have studied the progress of such institutions during the past generation. At present the responsibility for the school is shared by the medical superintendents, the physicians, and the matrons who have other more absorbing duties. It is possible that in some hospitals the matron might act as principal of the training school if a competent assistant matron or housekeeper were appointed to relieve her of the less responsible work in the matron's department, but if this arrangement were made, it should be with the understanding that the first and most important part of her work is in connection with the training of those who are entrusted with the immediate care of the patients. With a competent officer devoting most of her time to this work, it should be possible not only to secure a thorough and more varied course of training for those who aim to become trained and registered nurses, but also to devise some more satisfactory method of dealing with attendants who do not enter the regular training school, or who, after entering, fail to meet the required tests and are forced to abandon the course.

"An effort should be made to counteract in some way the disadvantage which at present results from raising the standard of the training given, in

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that it crowds out attendants of inadequate preliminary education, with the result that in most of the State hospitals the great mass of the attendants who have the immediate charge of the patients, are neither pupils in, nor graduates of the schools for nurses. Not only do the majority of the attendants remain outside the training school, and lose the benefit of the valuable course of instruction now offered, but they have no systematic preparation for their work, except what they may gain from reading the rules and regulations, and following the instructions given them by the charge and supervising nurses under whom they serve.

"It would seem as if the importance of special training for the performance of the difficult duties connected with the care of the insane, as to whom the layman has as a rule so many misconceptions, would warrant insistence on a fairly complete course of training for every employee Many attendants who might be unable to pass successfully all the required examinations could still derive much benefit from some systematic instrution. Every person employed to care for insane patients should certainly be helped at the very outset to see the work from the right point of view. should be taught something of the nature of insanity and the proper methods of dealing with the insane in connection with both the physical and the so-called 'moral treatment' of their charges. The instruction might be conveyed in simpler language than that of the regular training school class-room, but it should to some extent cover the same ground In this connection we wish to repeat a recommendation made in our report for 1899: 'For those who do not intend to take the training-school course. we would suggest that a more elementary course be devised, which would be of benefit alike to the employees and to the patients in their charge. Such a course would sustain the same relation to the training school that the "Course for Trained Attendants for the Sick" does to the curriculum of general hospital training schools. This would not and should not take the place of the higher education, for we would deprecate any lowering of the standards of the schools. But there is a need to be met to-day, a temporary need we hope, which might be met by a simple course of instruction for many of the attendants of these large State hospitals.'

"It is perhaps not sufficiently recognized that the ordinary attendant enters the State hospital service with the same prejudices and misconceptions about the insane that are common to the general public. Such persons are seldom of a sufficiently high grade of intelligence to see in the rules and regulations they are directed to read, and the orders issued by their superiors, the underlying principles of a proper system of care and treatment of the insane. Attendants who are incapable of pursuing the training-school course are certainly incapable of working out for themselves the right theory and practice of their profession. Attendants who may not measure up to the requirements of admission to existing schools are still capable of some form of instruction, and a person incapable of benefiting by instruction, is hardly a suitable person to undertake such duties."

The table which follows shows the ratio of trained nurses to the total ward service of the State hospitals and gives a strong argument for the necessity of a more systematic training of nurses. From this table we learn that the Rochester State Hospital stands at the head of the list with 71.9 per cent of the attendants as pupils or graduate nurses, while at the other extreme stands the Hudson River State Hospital with only 26.9 per cent of the attendants thus trained or in process of training. The average of pupil nurses and graduates in all the State hospitals of New York is but 37.4 per cent! Surely something should be done to further the training of nurses for the care of the insane.

A remarkable evidence of the sagacious interest shown by the State Charities Aid Association in every department of its work is given in the section on the care of alleged insane persons, pending their admission to hospitals for the insane. Information has been received that many insane persons who have suddenly developed insanity have been sent temporarily to jails, station-houses and lock-ups. It is the hope of the association that in lieu of this very unfortunate practice arrangements can be made for the care of such insane persons in local general hospitals.

In the appendix interesting details are given as to the new movement for after-care, and in connection with it the important subjects of preventive work and of parole and discharge are fully discussed. The parole for patients, in the judgment of the association, should be longer than 30 days, and the burden of deciding whether the patient is to be left at home or not should rest with the superintendent of the State hospital where he has been under treatment, and final discharge should be deferred until definitely affirmative news of the continued improvement of the patient comes to the hospital.

The reports of visitors to State hospitals constitute very interesting reading, and the recommendations are often suggestive and useful. The suggestion as to substituting at Willard "aero mills for producing through dynamos an electrical current to furnish heat, light, and power" is a novel one. . . . "A windmill large enough to actuate a large dynamo could easily be erected on the summit at Grand View and near it a building for a storage battery; and it is believed that from the storage house a current might be drawn sufficient to provide for at least one of the great essentials of light, heat, or power. Power is all that is required. And upon that breezy hilltop the vanes of a windmill would not often be idle."

The State of New York is most fortunate in its State Charities Aid Association, with its numerous visitors and its able managers and officers. The whole report is full of good meat.

The Morison Lectures. On Insanity with Special Reference to Heredity and Prognosis. By A. R. Urquhart, M. D., F. R. C. P., Ed. Perth. Delivered before the Royal College of Physicians, Edinburgh, January, 1907. Reprinted from the Journal of Mental Science.

These lectures are of special value, by reason of the wealth of statistical information which their accomplished author has gathered with extreme

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industry from the records of James Murray's Royal Asylum at Perth. The statistics are painstaking studies in the field of readmissions, and relapses of patients-that terra incognita of psychiatry-also in heredity. causation, recovery, and mortality. The author points out many difficulties in dealing with asylum statistics, and very properly calls them "untrustworthy and impossible of collection" because there is no possibility of agreement as to the use of the word "recovery" by which he means "to indicate those in whom there is re-establishment of mental soundness, permitting of return to ordinary life without need of the care and the supervision of others." He further says: "Recovery may be used to designate a partial improvement in mental condition, a lucid interval more or less temporary or a discharge from asylum care and control to the custodial care of home life. A final, permanent recovery, we shall see, is a comparatively rare event—just as rare as a true recovery from gout. The recoveries generally claimed in asylum statistics are referable to cases not to persons. Even when referable to persons they are only declared, and that rarely, as recoveries, so far as official statistics can show. No doubt the same remarks may be made regarding the medical results of general hospitals dealing with other constitutional diseases of obscure causation. The persons are received and treated, are discharged cured, and returned relapsed. The vital history can only be completed on death."

The author very forcibly urges that each insane person recorded in the registers of the Commissioners in Lunacy be given one number and no more, and that this number be used in every collective investigation as to the number of insane persons in any country. In this way alone will it be possible to determine whether or not insanity is increasing. In the statistics which he presents he disregards all readmissions and relapses and concentrates his attention mainly upon 809 persons who constitute the 082 cases which have been treated at James Murray's Royal Asylum. It is interesting, however, to note that of these 809 persons 195 had already been treated in some other institution than this asylum.

The point of view of the author is often quite optimistic. Witness his confession in regard to heredity: "The point for me is that heredity works out in two directions—for better or worse.".... Glib talk about the extinction of families and the eradication of undesirables must be balanced by the reasoned knowledge of natural processes. On the one hand, we can discern the ruin and decay of families in spite of the constant effort of nature at reconstruction and rehabilitation; on the other hand, by the prepotency of new blood and a more favorable environment there is a reversal of the process, a rehabilitation just as important and just as certain." This he illustrates by Chart 4. Here 38 neuropathic fathers had 240 children; 47 per cent were sane, 29 per cent were insane. Forty-five neuropathic mothers had 239 children; 42 per cent were sane and 39 per cent were insane.

A grim humor lurks in many passages. In speaking of cases he says: "No doubt the physician may take credit for cure, the return of his patient

to the ordinary activities of life but if we are to see life sanely and see it whole, we can call no man happy until he is dead. *Even in this last event suspicion may lurk.*" Later he says: "Prognosis can never be an affair of aphorisms; these *obiter dicta* require to be fitted into the general scheme of things; they are altogether too facile and too partial for our purposes."

These and similar shrewd and kindly words go directly to the heart of things and indicate how patiently the author has studied his data and how skilfully he has constructed his superstructure of facts from them. The lectures are plainly the results of experience, and are far more practical than any theories of insanity drawn from working hypotheses. They deserve to be read by all careful students of psychiatry and by physicians and students of medicine.

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Second Series, Vol. XII. O-Periodicals. (Washington: Government Printing Office, 1907.)

The value of this work has been the subject of previous comment and it seems hardly worth while to reiterate what has been said on this point. The present volume contains a great deal of interest, for example, a list of the collected reprints of William Osler, which occupies nearly six octavo pages. Surely this is a monument of achievement to leave behind one. Of especial value to us as alienists, perhaps, is the bibliography of general paralysis which occupies about 25 pages. It is so subdivided that reference to it is easy. W. R. D.

Transactions of the College of Physicians of Philadelphia. Third Series, Vol. XXIX. (Philadelphia: Printed for the College, 1907.)

This volume contains the papers which were read before the college from January, 1907, to December, 1907, inclusive. There are 12 in all, including the president's address by Dr. Arthur V. Meigs, and are chiefly of purely medical interest, but one paper by Dr. William G. Spiller and Dr. Edward Martin, entitled "The Occasional Long Duration of Brain Tumor," with the report of a case of Jacksonian epilepsy of eight years' duration as the only sign of a small cerebral glioma is naturally of interest to the neurologist and surgeon. Though an operation was made, the condition of the patient did not justify any prolonged exploration and on this account was unsuccessful. A paper by Prof. Morris Jastrow, Jr., on the "Liver in Antiquity and the Beginnings of Anatomy" is of considerable historical interest.

Mechanically the book is fully up to the standard of this series.

W. R. D.

Outlines of Psychiatry. By Wm. A. White, M. D., Superintendent of the Government Hospital for the Insane. (New York: The Journal of Nervous and Mental Disease Publishing Co., 1907.)

Doctor White's work constitutes the first of a series of monographs on diseases of the nervous system and allied topics, which the Journal of Nervous and Mental Disease proposes for occasional publication.

In a well-made brochure of 232 pages the author sets forth in condensed and convenient form the subject matter of his lectures on psychiatry before the medical schools of Washington. In the introductory chapters on the general characters of mind and the nature of insanity, the newer views of the continuity of mental processes receive emphasis. Strictly speaking, there is no such thing as a pure affect-psychosis or an isolated circumscribed lesion of the will. "Paranoia was long thought to show only intellectual and perhaps volitional disturbance. We now know, however, that disturbances of feeling are among the most prominent of its early symptoms."

Many text-books avoid the difficult and dangerous task of giving a specific definition of insanity. The chief demand for such a definition is a medico-legal one, and Dr. White suggests the following: "Insanity is a disorder of the mind due to disease of the brain manifesting itself by a more or less prolonged departure from the individual's usual manner of thinking, feeling, and acting, and resulting in a lessened capacity for adaptation to the environment."

This is surely as comprehensive and at the same time as concise and adequate a statement as could be offered, and will cover the opinion of all those who limit the application of the word to those mental abnormalities which may be spoken of as acquired. Although this is a common acceptance of the term, it is a dangerous one. "Insanity" means unsoundness, a state of abnormality, a condition not measuring up to an assumed standard of health. But there are numerous such standards. There is what may be spoken of as the absolute standard which would result from taking the average of mental soundness of men of all historic times, past and present. There are also epochal, racial, and age standards, and finally, of most limited scope of all and applying indeed to no two individuals, is the personal standard. It is of the utmost importance, as the author points out, that each case should be studied from this personal point of view, judging mental states by the standard of the individual norm; but does it logically follow that we may determine the presence or absence of insanity by this standard alone? In social and forensic relations the abnormality of an act or belief is judged, not by what the given individual is in the habit of thinking or doing, but by what is assumed to be the average of conduct of an entire people under certain very general conditions of environment. Strictly, there is just as much reason for asserting that a personality which departs widely from this given social norm is unsound, and therefore insane, as in a case which suddenly develops a psychosis, and is therefore abnormal, as measured by its own personal standard. Why

should we say that the idiot is not insane, i. e., not unsound, simply because his condition is congenital, while we freely apply the term to patients who are reduced to practically an identical state, provided their disease is acquired? Insanity in this sense excludes all cases of congenital or constitutional abnormality and becomes synonymous with acquired psychosis. A frank attack of depression or of maniac excitement avowedly constitutes insanity, but the cases of so-called constitutional excitement or depression would be excluded; and yet the two groups of cases may be symptomatologically identical, and we know that all possible intermediate conditions exist between constitutional and episodic cases. Moreover, all the instances of degeneracy, unstable and ill-balanced personality, congenital ethical defect, so-called psychopathic inferiority-all these, because habitual to the individual, are not to be classed as insane, although from the viewpoint of the social body and average mental health they are undoubtedly abnormal, unsound, and therefore, etymologically speaking, insane.

All this is, however, merely a question of usage, in which the author adheres to a common custom. In his definition, as well as in his classification, he is entirely undogmatic, and in every chapter he reflects the open spirit which takes account of what is known and does not postulate beyond.

The first half of the book is occupied by chapters on general etiology, symptomatology, and treatment. In this section, Doctor Franz has contributed an elaborate and instructive chapter on the psychologic examination of patients.

The chapters on the various psychoses, which make up the second half of the book, are clear and concise, and by their internal arrangement well adapted to serve their purpose; namely, to supply in as accessible form as possible to the student, the main facts of psychiatry.

It is understood that the "Outlines" represent an epitome of a more detailed work which the author has in prospect. FARRAR.

Psychologie d'une Religion. By G. Revault D'Allonnes. (Paris: Félix Alcan, 1908.)

In all ages it has been the life-object of certain devoted Teresians to discover the philosopher's stone which should transmute into their opposites the inevitable incompleteness, disappointment, and sorrow of human existence. These spiritual alchemists have been the founders of cults and religions which have moved the world. Their seed is not dead; prophets and messiahs continue to appear.

Whatever may be the attitude of humanity toward the *fruits* of their labors, it is practically agreed that in their *life* and *personality* these divine messengers, inspired mystics, incarnations, and reincarnations of deity are best understood from the viewpoint of aberrant psychology.

Religious leaders have ever so encased their wares with mystery and awe that for their followers close or impartial scrutiny was well-nigh impossible. However, with the ascendency of the scientific spirit of the nine-

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teenth century, reverence for the simple *ipse distit* has declined, and the standpoint of religionists exemplified in such dicta as *Roma* locute est, rest finite est, has for the critical observer only the value of an historical curiosity. Men have at last dared to subject the questions of religious manifestation to precisely the same methods of analysis by which other natural phenomena are examined.

The work of D'Allonnes is a welcome contribution to the psycholog of religion, the more so in that it deals with a messiah only recently deal and brings documentary evidence of a fresh young religion before it has had time to sink into oblivion, or to be encrusted with the extraneous deposits of succeeding centuries, or obscured by myth and tradition, as has been the case with the original Christian religion.

Guillaume Monod, the founder of Monodism, was born in 1800, and ded in 1896. He was the son of a clergyman, and theology was his life such One of his brothers, also a priest, passed through an attack of neurasthese depression. As a youth Guillaume suffered from timidity amounting # times to a phobia, and with this was associated a remarkably exaggerated self-feel. At about the age of 30, a psychosis developed which necessitand his internment for nearly five years. He exhibited " crises of excitement, with delirious acts, refusal of food, auto-mutilation, hallucinations, ecstasy, mystic ideas, persecutory delusions, ideas of grandeur, and heard a voice proclaiming him the Christ." It appears that Monod never completely recovered from his illness. All the acute symptoms subsided and he was able to resume pastoral work; but a permanent change had been wrought in his personality, he never gave up the belief in his messiahship, but was able to moderate the expression of his ideas, and gradually the original fancies of delirium became transformed and crystallized into a systematic doctrine. It was not until he had reached the age of 72, following the war of 1870, which his brother, a physician, regarded as the exciting cause of the fresh outbreak of his madness, that Guillaume again openly declared himself to be the Christ. From this time on there was no further attempt to contain his grandiose ideas, he had become an influential leader, had inoculated his disciples with his own beliefs, and died when almost a contenarian, and the acknowledged head of a considerable church.

Clinically, the author considers the case of Monod as one of severe acute maniac excitement occurring in his early thirties and followed by a permanent hypomaniac state, characterized by ambitious, mystic, grandiose, religiose ideas—a true theomania. Following the psychologic analysis of the case, the author supplies an interesting and valuable chapter on certain analogous inspired and messianic characters of history, including John the Baptist, Jesus, Paul, Mahomet, the Bab, and others less well known. There are added also analytic biographic documents concerning several Monodist prophets who are living in Paris to-day and carrying on the work of the church.

The work of D'Allonnes is important in presenting from the scientific standpoint a religion in process of making. In America a similar and hardly less valuable service from a lay point of view has been rendered by Miss Milmine, in her authoritative dissection of Mrs. Eddy and Christian Science. It is perhaps not complimentary to human intelligence to show what is the real character of the agencies by which religious movements, great and small, are set in motion, and after which hundreds, or thousands, or millions of mankind in their generation are led to mold their lives,—a statement of the facts we must nevertheless welcome.

FARRAR.

Morris' Human Anatomy. Part III. Nervous System and Organs of Special Sense. Fourth edition. (Philadelphia: P. Blakiston's Son & Co., 1907.)

The value of this standard work has been notably enhanced in the present enlarged edition by the fact that it has been submitted to an international board of editors who have entirely revised and in large part rewritten the book. The section on the nervous system is under the able editorship of Irving Hardesty, A. B., Ph. D., assistant professor of anatomy in the University of California. R. Marcus Gunn, M. A., F. R. C. S., has written the section on the eye, while that on the ear, tongue, and nose has been recast by Abram T. Kerr, B. S., M. D. The work contains many new illustrations, all of a high order; the BNA nomenclature has been introduced, confusion being avoided by retaining also the older terms where they are strikingly different; and a successful effort has been put forth to make the book compact, complete, authoritative, and illuminating. FAREAR.

The Animal Mind. A Text-book of Comparative Psychology. By Margaret Floy Washburn, Associate Professor of Philosophy in Vassar College. 8vo. cloth. pp. 333. (New York: MacMillan & Co., 1908.) This work performs the service of bringing together in compact form a considerable mass of recent work by numerous observers in a comparatively new field of investigation. Human psychology from the standpoint of the laboratory experiment may be said to be hardly a generation old; experimental comparative psychology is inevitably younger, and yet within the past two decades a phenomenal activity has been manifest in investigating the psychic aspect of lower animal life.

The author takes account of the constant difficulties attending such investigation, chiefly from neglecting the Law of Parsimony, or Lloyd Morgan's canon, and on the other hand from the anthropomorphic tendency in interpreting animal behavior, the psychologist's fallacy. She deals with the subject purely from the laboratory point of view, and legitimately discounts the "anecdotal method," which often stands dangerously near to nature-fakery.

In seeking to make her work as objective as possible, the author, in considering the lower animal forms, seems perhaps at times almost to waste space in defining what the possible consciousness of the creature patently is *not*, when obviously the real qualities must be expressed in very brief terms.

The matter is attractively and systematically presented, beginning with the psychic qualities of Amœba and following them through to the higher vertebrates, several illustrations elucidate the text, and the book is a welcome contribution in a very important field of enquiry.

FARRAR

L'Amnésie. Au point de vue séméiologique et médico-légal. Par les Drs. G. Dromard et J. Levassort. Ouvrage couronné par l'Académie de Médecine. (Paris: Félix Alcan, 1907.)

The present work is one of the monograph series constituting the convenient and valuable *collection médicale*, now embracing 38 subjects. The authors were pupils of Paul Garnier, whose untimely death left a mass of projected work unaccomplished, of which a study of amnesia was planned for the immediate future. This work the authors have, since his death, satisfactorily carried out. They were able to avail themselves of his experience and his material, and their work therefore has the added value of his authority.

Memory has been the subject of numerous studies, but hitherto an exhaustive treatise on the *amnesias* had been lacking. In turn the work deals with the amnesia of trauma, toxic amnesia, amnesia in the psychoneuroses, epilepsy, and hysteria, in the various psychoses, and finally the amnesias associated with various organic lesions.

A chapter is devoted to memory falsifications, including the phenomenon of the "dejà éprouvé," and pseudo-reminiscence.

The book closes with the medico-legal consideration of the so-called paroxysmal amnesias, occurring in epilepsy, hysteria, alcoholism, and trauma; and finally with a lucid discussion of the question of simulation.

The work is quite up to the standard of this excellent series of monographs. FARRAR

Abstracts and Extracts.

Il potere riduttore delle urine nei dementi precoci. Ricerche del ANTONIO D'ORMEA. Rivista Sperimentale di Freniatria, Vol. XXXII, p. 79.

Former researches of the author with Maggioto have shown that the metabolism of the organism is profoundly changed in dementia præcox. There is marked retardation of the organic processes of oxidation and of elimination, and a diminution of the total acidity of the urine. The present research is upon the power of the urine to reduce a decinormal solution of potassium permanganate as indicating the measure of the oxidation in the organism. In normal individuals the urine of 24 hours will reduce on an average 9820 cc. of a decinormal solution of potassium permanganate; in pneumonia, on an average 6533 cc.; in diabetes, 113,912 cc., etc.

The method used was that of Helier as modified by Lucatello. The diet was carefully noted, and controls were made on four normal individuals.

The results were carefully tabulated, and it was found that in dementia præcox there is a noteworthy lowering of the reducing power of the urine in comparison with normal individuals, and this diminution is apparent not only in considering the total amount which is observed during the time of observation, but also in the ratio between the reducing power and the quantity of urine passed in 24 hours, and between the food taken daily and the weight of the body. W. R. D.

Ricerche sulla isolisi nei malati di frenosi maniaco-depressiva. Del A. ALBERTI. Giornale di psichiatria clinica e tecnica manicomiale, Anno XXXIII, p. 407.

This research followed a previous one of which an abstract was published in the JOURNAL for April, 1906, p. 665. In the present study Alberti first makes a number of references to the literature and quotes the following from Micheli: "On the whole the study of isohæmolysis of blood serum has undoubtedly great biologic interest, but it has not at present realized the hope of pathologic application which it excited." It is the purpose of this study to show this.

After detailing the technique the author tabulates his results together with brief abstracts of the cases, and formulates the following conclusions:

I. In states of excitement of maniacal-depressive insanity the normal serum had lytic power in five of the six cases examined; in varying degrees, but always appreciably.

2. This may be due not so much to the disease as to difference between individuals.

3. In depressed states of maniacal-depressive insanity the lyic power of normal serum upon the blood of patients is not constant, and even in some of the positive cases is barely perceptible.

4. There is no lytic power between patients in the depressive stage.

5. In recovered patients four of those who were used in the experiment did not show any phenomena of lysis in comparison with the normal nor between themselves.

6. From the viewpoint of resistance of the corpuscles to serum, the states of maniacal-depressive insanity show, then, these differences:

In the state of excitement the corpuscles show least resistance to but In the state of excitement, a greater resistance.

In the state of recovery the resistance is greatest.

As a further conclusion to the above Alberti formulates the following: The power of resistance of the red corpuscles is proportioned to the isolytic power of the serum, from which it may be said that as much is the resistance of the cell to the serum of animals of the same species, so much more is the strength of the isolytic power that the serum has more the blood of animals of the same species with which they may be compared.

W. R. D.

The Attitude of the Medical Profession toward the Psychotherateuric Movement. By E. W. TAYLOR, M. D. Boston Medical and Surgical Journal, Vol. CLVII, p. 843, December 26, 1907.

The author first alludes to the change which has taken place in therapeutics in the last few years, methods of treatment being regarded as of more importance than drugs, and then proceeds to discuss the following questions: First, the past and present attitude of the medical profession toward mental therapeutics; second, the present state of therapeutics in relation to the psychotherapeutic movement; third, the general attitude of special students of the subject; and finally, the means by which a knowledge of the movement may best be disseminated.

I. Until a recent period the attitude of the medical profession towards any method of treatment which appealed primarily to the mind was antagonistic. The material aspect of nature has always appealed to the great mass of thinking men. This is shown in the address of President Elice upon "The Future of Medicine," in which no mention whatever was made of the possibility of future development in other than purely material directions. This feeling is changing, however, and the present danger is of over-enthusiasm in the present state of the public mind.

II. The psychotherapeutic movement cannot be understood without some reference to therapeutics in general. The recognition of natural agencies in combating disease—fresh air, food, water—has marked a change, and drug treatment no longer occupies the place it formerly did. The physician also looks beyond the patient as such to the social welfare of which he forms a part, and must necessarily become more and more concerned with that attitude of mind which we call religion.

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III. The general attitude of students of the subject is optimistic, but we must be careful lest too much be expected of this method. We have now established certain laws of mental action which are bearing the rigid tests of experience, and this fact must be regarded as the entering wedge toward the general recognition of the psychotherapeutic movement as a scientific endeavor. It must be subjected to the same rigid logic as would be demanded of any problem of physical science.

IV. Dr. Taylor believes that public lectures as a means of disseminating knowledge of the psychotherapeutic movement are not advisable, but believes that the popular article may be a good method, as it is apt to be better prepared. He speaks rather negatively in regard to the alliance of the medical profession with the psychologists and with the clergy, feeling that it is doubtful in these cases whether the good overbalances the evil results. He believes that papers upon the subject should be read by competent men before medical societies, and that the medical student should also be instructed. He does not believe that the medical schools are doing their duty in this respect. The article is well worth a careful perusal as it is difficult to do it full justice in an abstract. W. R. D.

La formula emo-leucocitaria nelle psicosi acute confusionali. Del DR. ORESTE SANDRI. Rivista di Patologia nervosa e mentale, Vol. XII, p. 73, Febbraio, 1907.

The author has made differential blood counts in 30 cases of acute confusion, eight of which died. In a number of cases more than one count was made at varying intervals.

His conclusions are as follows:

I. The acute confusional psychoses represent a syndrome that is found originating in one of the many and various states of intoxication that may attack the organism and in a special nervous sensibility of the individual.

II. The gravity of the morbid form seems to depend not so much upon the primary intoxication as upon the secondary derived from toxins elaborated in the pyogenic hosts found usually in the intestine.

III. In the beginning of all the agitated or stuporous acute confusional psychoses there are severe blood changes; that is, more or less noteworthy increase in the total number of blood cells and of the hæmoglobin, a conspicuous leucocytosis with polynucleosis, diminution or complete disappearance of eosinophiles, and diminution of the mononuclears.

IV. The disturbance of the hæmic formula and increase of leucocytes are most marked in the most severe cases.

V. The decline of the toxic infection is shown by the mononucleosis that replaces the initial polynucleosis and by the reappearance of the eosinophiles.

VI. There is a constant parallelism between the evolution of the toxic infection and change in the hæmoleucocytic formula.

W. **R**. **D**.

The Reform of Medical Expert Testimony. By HON. L. C. SOUTHAM. Boston Medical and Surgical Journal, Vol. CLVIII, p. 151, January 30, 1908.

Beginning with the statement that the best of the medical profession has always had to stand between the quack and his victim and drawing attention to the frequent importance of medical opinion, reference is then made to the essentially judicial position held by the expert witness. This position should tend to elevate the character of the expert, but unfortunately frequently does not. The medical witness "would be less than human if he did not have a trifling bias towards the side that employed and paid him. It would certainly appear ungracious if he did not try to do something to earn his money, and herein lies the difficulty of the situation."

The plan proposed to obviate this difficulty is to have the judge appoint one or more competent medical men to make the necessary examination and give their unbiased opinion. The opposing counsel might agree on the individual to be selected, and, if, in the opinion of the court, he was qualfied, the appointment would be made. Or, if counsel were unable to agree, the appointment would be made by the court without selection by the counsel. The fees should be reasonable and paid by the State. It is believed that by this method the position of medical expert would assume a position of dignity and importance which is now sometimes lacking.

W. R. D.

Des résultats tardifs et prolongés de l'ophthalmo-réaction, de l'intensité et des complications de cette dernière. Par G. RAVIART, médicin en chei, et LORTHIOIS, GAYET et CANNAC. L'Echo Médical du Nord, An. XII. p. 38, 26 Janvier, 1908.

Reference is made to a previous paper (see abstract in this JOURNAL, Vol. LXIV, p. 600), in which the subjects of the present report were mentioned.

Referring to the delayed reaction, it is stated that of 260 insane patients examined 66 did not react during 72 hours' observation; 149 reacted at the end of 24 hours; 38 showed no reaction at the end of 48 hours, and 7 reacted at the end of 72 hours. One of those who did not react is obviously affected with tuberculosis, and has recently had two hæmorrhages. Three hundred and thirty-five other patients have been observed for 48 hours, and of these 183 did not react, 117 reacted at the end of 24 hours, and 35 after 48 hours.

Of 689 patients observed, a number showed a prolonged reaction. Of 33 patients on the tuberculous ward who had reacted at the end of 24 hours, 29 showed a marked reaction after 96 hours, 16 after 148 hours, and 8 after 186 hours. Of 36 patients in different wards who had reacted after 24 hours, 32 showed the reaction after 72 hours, 23 after 120 hours, and 12 at the end of 172 hours. One of the above in whom the reactor persisted for 48 hours showed cavities at autopsy. Two others, in whom 1908]

the reaction persisted for 72 hours, were shown by autopsy to have small cavities in their lungs.

The intensity of the reaction may be very marked, and on a scale of weak, moderate, strong, and intense, the last was noted in 18 cases.

As to complications, a small epidemic, 16 cases, of purulent ophthalmia, due to the gonoccoccus, occurred in the ward for untidy patients. Other complications which occurred were less serious.

W. R. D.

Sull' influenza dell' ereditarieta morbosa nella paralisi progressiva. Del GIACINTO FORNACA. Rivista Sperimentale di Freniatria, Vol. XXXIII, p. 631.

In this study besides thoroughly abstracting the literature of the subject the author has carefully investigated 24 cases personally. Among these he has found in the family:

I. Mental changes (paresis, insanity, moral insanity, epilepsy, neurasthenia) in 70 per cent.

2. Syphilis, congenital or acquired, observed or suspected, in 60 per cent.

3. Circulatory changes of various kinds in 30 per cent.

4. Alcoholism in 25 per cent.

5. Delinquency [criminality] in 25 per cent.

6. Tuberculosis in 20 per cent.

7. Suicide in 15 per cent.

8. Other forms of sickness in 10 per cent.

Extended comment is made and the following conclusions are drawn: I. Whenever an heredity of disease assumes so severe a form as to weaken the central nervous system of a family, then when other unfavorable factors are encountered, they have an exceptional effect upon the organism and especially upon the mind. Such are emotional strain, overwork, abuse of alcohol and venery, the intoxications, the acute and chronic fevers.

2. Among the etiological factors of paresis heredity has great importance.

3. In the great majority of cases of paresis the earlier it shows itself the more numerous are the antenatal neuropathies and psychopathies, and the more severe are the pathological changes found.

4. Paresis is a disease that is frequently observed in members of the same family.

5. The male line is more affected than the female. In the first, the direct heredity (father to son) is more frequent (48.8 per cent); in the indirect that of uncle to nephew (12.8 per cent) and grandfather to child (7.6 per cent) are most important. In the female line the direct heredity is also most frequent (mother to child, 25.6 per cent); the indirect not averaging more than 2.5 per cent. The brothers and sisters are affected in 20.5 per cent. W. R. D.

Sul significato delle variazioni nella eliminazione del bleu di metilene pr via renale. Del E. DUSE. Giornale di Psichiatria Clinica e Temica Manicomiale, Anno XXXIV, p. 501.

This is an elaborate and painstaking study which has been recorded principally in the form of tables. First, a series of experiments were made upon cats in which methylene blue was injected, a centigram being used for each 200 grams weight of the animal. Later observations were made upon five hebephrenics and four catatonics with the object of determining whether an alimentary glycosuria was present as well as the study of the elimination of methylene blue. These cases were also subjected to a course of Carlsbad salts. The following are the results noted:

I. There is positive proof of an alimentary glycosuria; with Fehling and with Nylander, an intense reaction suddenly occurs after the first box following the administration of 200 cc. of simple syrup in the morning and when fasting. After from 6 to 20 hours there is a complete disappearance of the glycosuria.

2. In these patients the renal elimination of methylene blue may be prolonged longer than in the normal individual, and shows a noteworthy slowing and intermittency.

3. After the administration of Carlsbad salts this elimination keeps the same irregularity, but is shorter.

To the above it may be added:

I. That the coloring of the urine and the reaction to chromogen in precocious dements disappears several hours before the reaction to chloroform.

a. That it is often found that after the reaction to chromogen the urine becomes yellow, owing to a separation of a thin layer of blue liquid on the surface of the liquid column. W. R. D.

Ricerche sul ricambio materiale nei vecchi alienati e nei vecchi normali La eliminasione del bleu di metilene per via renale nella demensi senile. Per ALEARDO SALERNI. Giornale di Psichiatria Clinica e Tecnica Manicomiale, Anno XXXIV, p. 221.

This research was carried on in the same manner as was that of D'Ormea and Maggiotto (see abstract in this Journal, Vol. LXI, p. 555), the subjects being five normal women whose ages ranged from 60 to 77 years, and cases of senile dementia who were quiet, depressed, and excited. It was found that as compared with the results obtained in normal young women by D'Ormea and Maggiotto, that in the normal old women the elimination showed a discontinuous polycyle, lasted a shorter time, and was about 24 hours longer in attaining its maximum reaction with chloroform. In the young women the elimination was a continuous polycyle.

In the senile dements the type of elimination and the manner of attaining the maximum is similar to that of the normal old women. The stars of quiet, of depression, and of excitement seemed to make no especial difference in the manner of elimination. W. R. D. Ricerche sulla funsione gastrica nei dementi precoci. Del I. BERGAMASCO e V. FAVINI. Giornale di Psichiatria Clinica e Tecnica Manicomiale, Anno XXXIV, p. 598.

Eighteen cases of the various forms of dementia præcox have been the subjects of an inquiry of their gastric functions. Five normal persons were used as controls. The results of this inquiry show that:

I. In dementia præcox the gastric motility is not changed.

2. The gastric juice appears normal in reference to the quality of its components.

3. The total acidity may be normal in hebephrenics; in catatonics may be frequently lower than normal; from the number of observations it was not possible to draw any conclusions in reference to the paranoid form.

W. R. D.

Il ricambio organico nella demensa precoce: Nuove ricerche (N, NaCl, Cl, Ca, P, K, S) del Giacomo Pighini. Rivista Sperimentale di Freniatria, Vol. XXXIII, p. 566 and 762.

This research has been conducted in the careful manner which has characterized the author's previous research (Ibid., Vol. XXXII), and is reported as fully. The subjects were two patients in the acute phase, and four in the chronic, of dementia præcox. From the results of his studies the author formulates the following conclusions:

I. In Kraepelin's dementia præcox we are able to delimit two clinical syndromes, each of which presents special changes in elimination.

2. In the acute phase which is shown in the beginning of the disease characterized by severe psychosensory excitement, motor agitation, violent impulsivity, refusal of food, and slight elevation of temperature, there is a negative balance of azotes (urea, uric acid, xanthin bases), of phosphorus and sulphur, indicating a marked destruction of the phosphates and sulphates of the organism.

3. In the chronic phase of the disease—characterized by dementia, negativism, tics, grimacing, stereotypies, and catatonic attacks, there is a proportional retention of azotes and phosphorus, a loss of sulphur proportional to these two elements, and a loss of calcium independent of the others.

4. In the two phases there is shown a changed ratio of water and a slowing in elimination of chlorine. W. R. D.

Acute Pulmonary Ædema as a complication of Epileptic Seizures. By WM. T. SHANAHAN. New York Medical Journal, Vol. LXXXVII, p. 54, January 11, 1908.

Shanahan here discusses the condition of pulmonary œdema which frequently complicates a grand mal seizure and renders the outlook exceedingly grave.

The writer notes that in every grand mal seizure and in many of the petit mal type that there is an increased secretion of mucus from the

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respiratory tract. In many instances this is evidenced by the patient froming at the mouth. It should be kept in mind, however, that this frommay only be due to the normal amount of fluid in the mouth being forced between the teeth by the extraordinary respiratory efforts.

The increased flow of mucus is very great in some cases, and is sufcient, according to Shanahan, to almost drown the patient.

The onset of the orderna is sudden and acute and must not be confounded with the terminal orderna seen in many epileptics. It comes on as a rale during the stertorous period of the seizure, and there is frequently a concomitant cyanosis and dyspncea.

As to the causation, the author quotes Welch's theory which is that there is "A disproportion between the working power of the left ventrice and of the right ventricle, of such character that the resistance remaining the same, the left heart is not able to expel in a unit of time the same quantity of blood as the right heart "—it is further believed that the case of the disproportion is a continued, enfeebled action of the left ventrice rather than a spasmodic action. There is probably brought about an is creased intra-capillary pressure in the lungs or a decreased extra-capillary pressure, or both.

The treatment suggested is that which has been found beneficial in the author's cases; namely, changes of posture, turning the patient over the edge of the bed and allowing the respiratory passages to drain out through the mouth and nose. The mouth may be held open with a gag. Dry cupping is also recommended and the use of hypodermics of atropine and strychnine. Adrenalin was used, but no beneficial results were observed.

The II cases comprising the series are then discussed in detail, and of these there were seven recoveries with four deaths. The condition recurred in three cases and in one of these death ensued in the second attack.

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General Paralysis in the Senile Period with a Report of Two Cases. Including Post-Mortem Examination. By MORRIS J. KARPAS. New York Medical Journal, Vol. LXXXVII, p. 157, January 25, 1908.

The writer first makes reference to the literature on the subject, a notes that all authorities who recognize senile paresis are agreed on a rarity of its occurrence. Christian and Dupré reject the idea of the pasible appearance of the disease at this time. Magnan and Serieux made statistical study of the admissions at Sainte Anne for six years. In the time 2058 general paralytics were admitted and of these, three cases we over 70 years of age and 22 others were over 60 years of age. Picks found three paretics over 60 years of age out of 149. Two per cent Kraepelin's cases were 60 or over. In Mickel's 2546 male and 668 fem paretics there were 126 over 60 years of age and 27 over 70 years of age

The analysis made by Alzheimer of 173 cases of dementia paralysis showed eight cases between 60 and 65 years old, one at 60, one at 70. If author then gives the details of his own cases. The first was a jear

aged 65. The mental symptoms at first were not characteristic, later she became grandiose. She died in the hospital and a partial autopsy was made. The cortex showed typical paretic changes.

The second case was that of a woman aged 70. The early symptoms, as in the other case, were not typical, but later she deteriorated greatly, and was markedly grandiose. A lumbar puncture was done and marked spinal leucocytosis with increased proteid content was found to be present. At autopsy the microscopic examination revealed the presence of a perivascular infiltration with lymphocytes, plasma cells, and an occasional mast-cell. Rod cells were present, there was some glia proliferation and some pigmentation of the ganglion cells. The differential diagnosis of late cases of dementia paralytica and senile dementia are often impossible without the aid of a cytological examination and necropsy.

FITZGERALD.

Post-delirious Alcoholic Stupor (Alcoholic Cerebral Œdema, "Wet Brain"). By CHARLES K. STILLMAN, New York Medical Journal, Vol. LXXXVII, p. 154, January 25, 1908.

The author, after noting that the clinical symptoms which are usually associated with this pathological condition of the brain, may occasionally be seen in certain other non-alcoholic conditions, goes on to state that the presence of a marked œdema in the meninges in advanced alcoholics has been recognized for a long time, but the factors that produce the condition are believed by the writer to be toxæmia and exhaustion.

In alcoholic wet-brain the condition is simply a transudate, the transudation taking place from the pia-arachnoid and from the small cortical vessels. Post-mortem ædema is to be differentiated from ædema occurring before death by the general distribution of the effusion and its not being limited to the dependent parts.

In discussing the etiology the fact that the stupor is almost invariably preceded by alcoholic delirium is first noted. In 2133 admissions to the female alcoholic wards at Bellevue Hospital from September 12, 1905, to September 12, 1906, there were only 22 cases of alcoholic wet-brain. In the further analysis of these cases the youngest patient was 23 years of age, the oldest 60, the majority being between 30 and 40. The mortality was 81 per cent. Among the fatal cases the duration was from I to 45 days. Some of the cases which lasted over three weeks died of exhaustion. Others who died as a result of complications suffered from lobar pneumonia, broncho-pneumonia, or tuberculosis. Of the non-fatal cases one completely recovered after 94 days. The others were not followed, so the outcome was problematical.

In a similar analysis of male admissions the percentage of wet brains was approximately 1.5, slightly higher than in the female admissions. The mortality rate here was 79 per cent, and the greatest number of cases died in less than five days after admission. The complications were similar to those of the female admissions with the addition of decubital gangrene and fractures. The recoveries took place in from 2 to 45 days. In his summary the author inclines to the opinion that a mortality of 80 per cent is too high and that on further study it will be found to be considerably lower. Females, as a rule, are attacked at an earlier age than males.

The author believes that men survive the shorter attacks more frequently than women because the element of exhaustion is often not presen, whereas in women the delirium is very frequently associated with exhaustion, and not with an attack of delirium, the result of an unusually severe debauch, as is frequently the case with men.

Occasional cases of transitory wet brain where the symptoms are present for only a very short time are apt to be overlooked. Such cases may occur in delirium during pneumonia.

Two distinct types of the disease are seen: the short and the protracted the former being of more frequent occurrence than the latter.

The symptoms usually appear about the third or fourth day of the dearium. One of the earliest symptoms is a change in the facial expression, a gray pallor and immobility of the countenance is observed, the pupils become contracted, and the muscles of the neck may show hypertonus. The patient lies flat on his back with eyes turned constantly toward the celling. the hands are moved about and show a marked tremor. The lusterless appearance of the eyes is also mentioned, and a mumbling articulation which is said to be distinguishable from the muttering of other delina. When the patients speak the labials are absent. The patients show considerable central dulling of the pain and tactile senses, although hyperasthesia is an early symptom as is also muscular hypertonus. The pulse is rapid, feeble, small, low tensioned, intermittent, and of variable quality from hour to hour. Respirations show very little disturbance. The stopor is usually a quiet one, and coma is variable, sometimes being absent. As to the symptoms which are likely to lead one to believe the case will terminate fatally, not one can be relied on constantly. Exhaustion, pneumona. and bedsores determine the end of many, while those who do survive may develop a psychosis or show permanent mental enfeeblement. The diagnosis is not always easy, and the author states that it should always be kept in mind that "any condition where there is cortical cedema or any condition in which cortical irritability is the same in degree as in wet brain may produce a picture that will puzzle the expert."

Tuberculous meningitis is the most fruitful source of error in differential diagnosis, and atypical cases of this disease can only be differentiated by the presence of tubercle bacilli in the cerebro-spinal fluid, or the fact of the patient having at an earlier date, passed through a delirium. Convulsions as seen in the terminal stage of paretics are never seen. As to treatment, forced feeding and judicious stimulation give the best results. Eggs, egg-nogs, liquid peptonoids, and broths are mentioned, and large doses of whiskey, camphor, strychnine, and caffeine in the form of the citrate; sitting patients up in bed is said to be of value in some cases. FITZGERALL

Arteriosclerosis. A contribution to its clinical study. By GEORGE LINCOLN WALTON and WALTER EVERARD PAUL. Journal of the American Medical Association, Vol. L, p. 169, January 18, 1908.

In this article the authors have endeavored to show the exact relationship between definite arteriosclerotic changes and certain clinical manifestations of nervous and mental disease.

That there has been a tendency on the part of many writers to assume that certain symptoms were the result of arteriosclerosis when the presence of such sclerotic changes were more or less conjectural is commented on, and in this series of 100 cases only those cases are included where there was definite thickening of vessels that could be palpated. Blood pressure, cardiac and renal conditions were also noted.

The first symptom, headache, appeared in only 22 per cent of cases. This is a strikingly small percentage, and it leads the authors to believe that while the attacks of cerebral claudication may be the cause of considerable cerebral discomfort, arteriosclerosis *per se* is not a common cause of headache, and further study is necessary in order to reveal the actual cause where this symptom is present. It is stated that in a sufficiently large number of cases the sclerosis was not limited to the peripheral vessels, but had included also the cerebral arteries.

Vertigo was found in 65 per cent of cases, and it is believed to be an important symptom. Apoplectiform attacks were noted in 34 per cent of cases, and this is a very much higher per cent than is found in non-sclerotic persons. Renal complications have to be kept in mind. Leri's explanation of the attacks that they are due to either a spasm or dilatation of the cerebral vessels is accepted as a possible one, but the writers believe that in some cases "cerebral fatigue with temporary suspension of function, with a return after a period of rest, may explain the attacks," or a nutritional disturbance without even temporary changes in the arteries. A case is then given to exemplify this, where the focal attacks were extremely transitory. Loss of memory as a symptom was complained of by 48 of these cases. Insomnia was present in only 30. Various emotional disturbances, such as transient irritability, anxiety, morbid fears, etc., were present in 40 cases, but in one-half, these features entered into the anlage of the individuals. Often the constitutional tendencies of the individual are overlooked and various manifestations are looked upon as evidence of disease when closer inquiry elicits the fact that inability to adjust had been characteristic of the individual when in supposedly good health. Therefore the authors say: "These are facts to be borne in mind before accepting without further analysis arteriosclerosis as the basis for the varied symptoms which have been included under the diagnosis neurasthenia."

The relationship between arteriosclerosis and senile dementia is briefly touched upon, and it is believed that only the vertigo and apoplectiform attacks are directly caused by the sclerotic changes; at the same time it is probably an important factor in the loss of memory, and certain other

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mental and physical signs of the devolutional period. Other mental symptoms may be due, according to these authors, to either toxic influences or to morbid constitutional tendencies, and the proposition of Leri: "that certain senile changes represent a summation of gradually accumulating toxic influences," is quoted in support of this idea.

Signs of kidney disease, especially of the chronic interstitial variety, were present in 36 cases. In these the heart was found to be enlarged in 86 per cent. In the other cases (those not showing renal change) the heart was enlarged in only 36 per cent.

The average blood pressure with the Riva Rocci instrument, 12 cm. band, was 147 in those cases in which heart and kidneys were not diseased. Where the heart was enlarged the average pressure was 168; where the kidneys were involved, 173; where both heart and kidneys showed scale of disease the average blood pressure was 195. Showing that renal disease is the prominent factor in the production of cardiac enlargement and secondly that renal disease when combined with cardiac disease is productive of unusually high blood pressure. The author's conclusions are 15 follows:

"This study would indicate that while arteriosclerosis is directly productive of apoplectiform attacks and of vertigo, and that it plays a part in the loss of memory as well as of other failing powers of involution, it does not produce headache except as the immediate result of apoplectiform attacks.

"Arteriosclerosis naturally appears in a certain proportion of elderly neurasthenics as in any group of elderly persons, but our observations fail to establish its causative influence, and we feel that further study of this branch of the question is desirable.

"Renal degeneration is a prominent factor in the cardiac enlargement often present in cases of arteriosclerosis.

"Arteriosclerosis without cardiac enlargement or renal degeneration is only exceptionally accompanied by a very high blood pressure.

"If either cardiac enlargement or renal degeneration is present, moderately high blood pressure; if both are present, very high blood pressure, is the rule." FITZGERAUM

Appointments, Resignations, Etc.

ASSEV, DR. ANNA M., appointed Woman Physician at Long Island State Hospital at Brokhyn, N. Y.
Interson, Dr. Cyrus H., appointed Superintendent of Illinois Hospital for Insane
Criminals at Chester.
JEERSON, DE. PAUL V., Third Assistant Physician at State Hospital for the Insane
at Morganton, N. C., promoted to be Second Assistant Physician.
TEREWS, DR. BARTON F., Medical Interne at Craig Colony for Epileptics at Sonyea,
N. Y., promoted to be Junior Assistant Physician, January 1, 1908.
DERY, DR. HARRY B., Medical Interne at Manhattan State Hospital at Ward's Island,
N. Y., resigned October 31, 1907.
MCH, DR. H. ELIZABETH, Woman Physician at Long Island State Hospital at
Brooklyn, N. Y., resigned.
MIOT, DE. HARRY B., Medical Interne at Middletown State Homeopathic Hospital
Middletown, N. Y., promoted to be Junior Physician, January 1, 1908.
ASCEPT, DR. CHARLES P., Superintendent of New Hampshire State Hospital at
Concord, was tendered a banquet at the University Club in Boston by a number
of his former assistants, October 16, 1907.
Junn, Dr. Sportswood H., Junior Assistant Physician at Craig Colony for Epileptics
al Sonyea, N. Y., promoted to be Third Assistant Physician.
Petersburg, Va., died November 18, 1907, after an invalidism of 10 years,
aret an invalidism of 10 years,
MUREWS, DR. HARRIS C., appointed Interne at Maine Insane Asylum at Augusta.
INTER, Dr. INEZ A., appointed Executive Woman Physician at Kings Park State
Respital at Long Island, N. Y., December 16, 1907.
DE BERTHA D., appointed Assistant Physician at Western State Hospital at
Staunton, Va.
DE GEORGE, Assistant Physician at Asylum for the Insane at London, Ontario,
transferred to Asylum for the Insane at Hamilton, Ontario,
Lissell, Dz. Russell, Medical Interne at Hudson River State Hospital at Pough-
seepsie, N. Y., resigned August 7, 1907, to become Resident Physician at Women's
seller Corps Home at Oxford, N. Y., and was appointed Assistant Physician at
singhamton State Hospital at Binghamton, N. Y., February I. 1908.
BELIN, DR. MICAJAH, Junior Assistant Physician at Hudson River State Hospital
Poughkeepsie, N. Y., resigned July 15, 1907, to enter Marine Hospital Service.
Banas Da PAUL B., Junior Assistant Physician at Buffalo State Hospital at
Bafalo, N. Y., resigned December 15, 1907, to enter private practice at his
former home, Norwich, Chenango Co., N. Y.
PROFE, Dr. SANGER, appointed Assistant Physician at Western Pennsylvania Hospital,
Department for the Insane at Dixmont, July 1, 1907. Bona, Dr. SAMUEL, Interne at Harper Hospital at Detroit, Mich., appointed
Assurant Physician at Oak Grove Hospital at Flint, Mich.
Cur, Dr. FREDERIC B. M., appointed Junior Assistant Physician at McLean Hos-
THE G WEVERLOW MORE ADDED TOOP
DE JOHN F., resign perintendent of Oregon State Insane Asylum
- SUPE
Calment Dr. S. W., appo ant Superintendent of Illinois Asylum for
"Me Minded Children
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- CARPENTER, DE. HOWARD, appointed Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., August 7, 1907.
- CASAMAJOR, DR. LOUIS, appointed Medical Interne at Manhattan State Hospital at Ward's Island, N. Y., January 1, 1908.
- CATTERNOLE, DR. J. F., appointed Assistant Superintendent of Penetanguishene Asylun. February 15, 1908.
- CHAPMAN, DR. ROSS MCCLURE, Medical Interne at Utica State Hospital at Utica, N. Y., appointed Junior Physician at Binghamton State Hospital at Binghamton, N. Y., December 20, 1907.
- CLARE, DE. HARVEY, Assistant Physician at Asylum for the Insane at Hamilton, Ontario, transferred to Asylum for the Insane at London, Ontario, January 15, 1948.
- CLARKE, DR. CHARLES K., Superintendent of Asylum for the Insane at Toronto. Ontario, appointed Professor of Psychiatry at University of Toronto.
- CLOUTING, DR. E. SHERMAN, appointed Examiner of the Insane at Philadelphia Hospital.
- COMN, Da. EUGAN, Assistant Physician at Illinois Eastern Hospital for the Inner at Hospital, appointed Assistant Superintendent at Illinois Southern Hospital for the Insane at Anna.
- CONDON, DR. E. H., Assistant Physician at Colorado State Insane Asylum at Pain. appointed Assistant Physician at State Hospital for the Insane at Howard, R.L.
- COLE, DR. CHARLES H., appointed Special Medical Attendant at Manhattan State Empital at Ward's Island, N. Y., January 18, 1908.
- CONRAD, DR. CHARLES E., appointed First Assistant Physician at Eastern Sum Hoppital of Virginia at Williamsburg, May 1, 1907.
- COTTON, DR. HARRY A., Assistant Physician at Danvers State Hospital at Hathere. Mass., appointed Medical Director at New Jersey State Hospital at Trems. October 15, 1907.
- DAVIES, DR. C. H., appointed Fourth Assistant Physician at Nebraska State Housin! at Ingleside.
- DISHONG, DR. G. W., appointed First Assistant Physician at Hospital for the lassor at Norfolk, Neb.
- DOWLING, DR. JOHN W., Clinical Assistant at Middletown State Homeopathic Boppital at Middletown, N. Y., resigned June 1, 1907.
- EAGER, DR. BENJAMIN F., formerly Assistant Superintendent of Western Kentucky State Asylum for the Insane at Hopkinsville, died at his home in Louisville, December 28, 1907, aged 39.
- EARL, DR. HARRY B., appointed Assistant Physician at Iowa State Hospital for the Insane at Cherokee.
- ERDMANN, MR. CHARLES C., appointed Assistant in the Chemical Laboratory of McLes Hospital at Waverley, Mass.
- FERGUSON, DR. RAY, Superintendent of Territorial Insane Asylum at Phoenix, Arzona, was assaulted with an ax by a patient and seriously injured, October 31, 1907.
- FITE, DR. CAMPBELL CALDWELL, formerly Assistant Superintendent of East Texesses Hospital for the Insane at Knoxville, died at his home in New York City after a prolonged illness, November 9, 1907, aged 52.
- FITZGERALD, Da. T. G., Clinical Director at Asylum for the Insane at Toronio, Ontario, appointed Demonstrator of Psychiatry at University of Toronto.
- FLETCHER, DR. CHRISTOFHER, appointed Medical Interne at St. Lawrence State Horpital at Ogdensburg, N. Y., October 30, 1906.
- FOLEY, DR. EDWARD A., Assistant Physician at Illinois Northern Hospital for the Insane at Elgin, appointed Assistant Physician at Illinois Eastern Hospital for the Insane at Kankakee.
- FORSTER, DR. J. M., Assistant Physician at Asylum for the Insane at Miconica. Ontario, transferred to Asylum for the Insane at London, Ontario, January 15 1908.
- FOSTER, DE. E. C., Medical Interne at St. Lawrence State Hospital at Ogdensher N. Y., appointed Junior Assistant Physician at Central Ialip State Hospital ^z Long Ialand, N. Y., October 3, 1906.

- FOSTER, DR. R. H., Third Assistant Physician at Nebraska State Hospital at Ingleside, promoted to be Second Assistant Physician.
- GERALDSON, DR. LENA, appointed Assistant Physician at Napa State Hospital at Napa, Cal.
- GIDDINGS, DR. WILLIAM H., for several years Superintendent of Vermont State Hospital for the Insane at Waterbury, died at his home in Bakersfield, January 2, 1908, of heart disease, aged 67.
- GILLETTE, DR. PHILIP F., Assistant Physician at Illinois Asylum for the Insane at Bartonville, resigned January 16, 1908, to enter private practice.
- GINGEL, DR. CHARLES E., formerly Assistant Physician at St. Louis Insane Asylum at St. Louis, Mo., died at Fayetteville, Ark., February 6, 1908, aged 31.
- GORDON, DR. ALFRED, resigned as Examiner of the Insane at Philadelphia Hospital.
- GAMEAM, DR. SAMUEL A., Chief of Staff of Illinois Eastern Hospital for the Insane at Hospital, resigned.
- HALL, DR. JAMES K., Second Assistant Physician at State Hospital for the Insane at Morganton, N. C., promoted to be First Assistant Physician.
- HAMILTON, DR. JOHN C., Medical Interne at Manhattan State Hospital at Ward's Island, N. Y., resigned February 1, 1908.
- HAMILTON, DR. GILBERT V., Junior Assistant Physician at McLean Hospital at Waverley, Mass., resigned October 5, 1907, to enter private practice.
- HARPER, DR. PAUL T., Medical Interne at Manhattan State Hospital at Ward's Island, N. Y., resigned January 13, 1908.
- HULEY, DR. H. P., Medical Interne at St. Lawrence State Hospital at Ogdensburg, N. Y., resigned August 28, 1906, to enter private practice.
- HEDIN, DR. CARL J., appointed Second Assistant Physician at Maine Insane Asylum at Augusta.
- HERRIMAN, DR. W. C., of Rockwood Hospital for the Insane at Kingston, Ontario, appointed Assistant Superintendent at Asylum for the Insane at Micomico, Ontario, January 15, 1908.
- HILL, Da. H. B., Assistant Superintendent of Maine Insane Asylum at Augusta, resigned April 1, 1908.
- HINTON, DR. RALPH, appointed Assistant Physician at Illinois Central Hospital for the Insane at Jacksonville, April 30, 1907.
- HORSMAN, DR. H. L., Second Assistant Physician at Maine Insane Asylum at Augusta, promoted to be First Assistant Physician.
- HOVEY, DR. WALTON, appointed Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., January 22, 1908.
- LEVINE, DE. WILLIAM L., appointed Assistant Physician at Butler Hospital at Providence, R. I.
- JOHNSON, DR. E. F., appointed Third Assistant Physician at North Texas Hospital for the Insane at Terrell.
- JUDERINS, DR. DORA M., appointed Third Assistant Physician at Nebraska State Hospital at Ingleside.
- KILI, DR. OMAR A., appointed Chief of Staff of Illinois Eastern Hospital for the Insane at Hospital.
- KILLER, DR. CORLISS R., appointed Assistant Physician at Longview Hospital at Cincinnati, O., February 15, 1908.
- KHLEY, DR. ERNEST, appointed Assistant Physician and Pathologist at Hospital for the Insane at Norfolk, Nebraska.
- KING, DR. ROBERT, appointed Assistant Physician at Protestant Hospital for the Insane at Verdun, Quebec, January 17, 1908.
- KUEGLE, DR. F. H., Fourth Assistant Physician at Nebraska State Hospital at Ingleside, promoted to be First Assistant Physician.
- LAKE, DR. LAFAYETTE, reappointed Medical Interne at Manhattan State Hospital at Ward's Island, N. Y., February 11, 1908.
- LAMAR, DR. R. N., Pathologist at Georgia State Sanitarium at Milledgeville, resigned November 1, 1907.

- LIGHT, DR. RUDOLPH, Assistant Physician at Michigan Asylum for the Issue & Kalamazoo, resigned.
- LONGINO, DR. L. P., appointed Assistant Physician at Georgia State Sanitarian at Milledgeville, October 20, 1907.
- MACDONALD, DR. J. A., Assistant Physician at Central Indiana Hospital for the lance at Indianapolia, resigned July 31, 1907, to enter private practice.
- MACDONALD, DR. JOHN B., Assistant Physician at Maine Insane Hospital at Augusta. appointed First Assistant Physician at New Hampshire State Hospital at Control. September, 1907, and placed in charge of the new hospital building.
- McCALLUM, DR. GROBGE A., Superintendent of Asylum for the Insuse at Londor, Ontario, transferred to Penetanguishene Asylum, February 1, 1968.
- MCCAMPBELL, DR. JOHN, First Assistant Physician at State Hospital for the Insure at Morganton, N. C., promoted to be Superintendent.
- MCDONALD, DR. CHARLES A., appointed Interne at Butler Hospital at Providence & L. March, 1907, and resigned March, 1908.
- MCGLOTHLAN, DR. ARTHUR B., appointed Pathologist at State Hospital 5:12 & Joseph, Mo.
- MCKAY, DR. J. G., appointed Assistant Superintendent at New Westminner Expinfor the Insane, B. C.
- MCPEER, DE. CHARLES E., Medical Interne at Hudson River State Hospital E. Poughkeepsie, N. Y., resigned November 30, 1907, to take up general hospital work.
- MANGER, DR. CHARLES C., appointed Pathologist at Central Indiana Hospital in the Insane at Indianapolis, July 13, 1907.
- MEAD, DR. SAMUEL T., appointed Assistant Physician in charge of the Pathological Laboratory at State Hospital No. 3 at Nevada, Mo., October, 1907.
- MILTIMERE, DR. EDWARD G., Junior Physician at Central Islip State Hospital at Long Island, N. Y., transferred to Manhattan State Hospital at Ward's Island, N. Y., November 22, 1907.
- MINER, DE. HERBERT S., appointed Superintendent of State Hospital for Inchrises at Knoxville, Iowa.
- NAIRW, DR. B. Ross, Assistant Physician at Buffalo State Hospital at Buffalo, N. Y., resigned February 1, 1908, to enter private practice in Buffalo.
- NEFF, Da. Iawin H., for 13 years First Assistant Physician at Eastern Michigan Asylum at Pontiac, appointed Superintendent of Foxboro State Hospital at Foxboro, Masa.
- NICHOLS, DR. JAMES R., Fourth Assistant Physician at North Texas Hospital for the Insane at Terrell, resigned.
- OESTERGREN, Ma. CHRISTIAN, Assistant in the Chemical Laboratory at McLean Hospital at Waverley, Mass., resigned October 21, 1907.
- ORTON, DR. SAMUEL, Pathologist at Columbus State Hospital at Columbus, Okio. resigned to take a position with Anaconda Copper Mine Co., Montana.
- OSBORN, DR. W. S., Superintendent of State Hospital for Inebriates at Knoxville, Iowa, resigned.
- OWENSBY, DR. N. MORELAND, Chief Resident Physician at Insane Department of Bay View Asylum at Baltimore, Md., resigned February 1, 1908.
- PALMER, DR. CHARLES B., Medical Interne at Manhattan State Hospital at Ward's Island, N. Y., resigned January 1, 1908.
- PALMER, DR. WILLIAM H., Assistant Physician at Butler Hospital at Providence, R. I., resigned December, 1907, to enter private practice.
- PATTERSON, DR. WILLIAM H., appointed Assistant Physician at Western State Hospital at Staunton, Va.
- PITMAN, DR. MASON, Clinical Assistant at St. Lawrence State Hospital at Ogdensber N. Y., appointed Medical Interne at Worcester Insane Hospital at Worcester, Mass., October 4, 1906.

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- wrz, Dz. ERNEST M., appointed Medical Interne at Craig Colony for Epileptics at Sonyea, N. Y., January 27, 1908.
- 197, Dz. CLAUDE M., appointed Second Assistant Physician at North Texas Hospital for the Insane at Terrell.
- NTTS, DR. HERBERT A., Assistant Physician at Illinois Central Hospital for the Insane at Jacksonville, resigned April 30, 1907, to study abroad.
- WELL, DR. GEORGE M., appointed First Assistant Physician at North Texas Hospital for the Insane at Terrell.
- **JTHAM, DR. EMMA, returned to Hudson River State Hospital at Poughkeepsie, N. Y.,** April 1, 1907.
- UINBY, DR. HOSEA M., who has been Superintendent of Worcester Insane Hospital for 18 years, has been granted a long leave of absence and has been visiting Southern California.
- USSON, DE. FREDERICK P., Assistant Physician at Western Pennsylvania Hospital, Department for the Insane at Dixmont, resigned May 1, 1907, to enter practice in Pittsburg.
- ED, DE. STEPHEN J. H., appointed Medical Interne at Manhattan State Hospital at Ward's Island, N. Y., February 4, 1908.
- **EHJERGER**, DR. GEORGE E., Medical Interne at Craig Colony for Epileptics at Sonyea, N. Y., promoted to be Junior Assistant Physician, January 1, 1908.
- ZULING, DR. ROBERT C., died suddenly, December 28, 1907, a few days after his appointment as Assistant Physician at Springfield State Hospital at Sykesville, Md.
- ULLA, DR. GEORGE A., appointed Clinical Assistant at Bloomingdale at White Plains, N. Y., and resigned August 15, 1907.
- ROBINSON, DR. WILLIAM J., appointed Medical Superintendent of Asylum for the Insane at London, Ontario, February 1, 1908.
- loss, Da. W. K., Assistant Physician at Asylum for the Insane at Toronto, Ontario, appointed Demonstrator of Psychiatry at University of Toronto.
- lowz, Dr. J. T., appointed Fourth Assistant Physician at North Texas Hospital for the Insane at Terrell.
- RowLAND, DR. LEVY L., from 1891 to 1895 Superintendent of Oregon State Insane Asylum at Salem, died at his home in Salem, aged 77, January 19, 1908.
- Royce, Dr. HAROLD T., appointed Clinical Assistant at Bloomingdale at White Plains, N. Y.
- RUCKS, DR. WILLIAM W., appointed Assistant Superintendent of Oklahoma State Hospital for the Insane.
- RUGGLES, DR. ARTHUR, Interne at Butler Hospital at Providence, R. I., resigned March, 1907.
- SAUGENT, DR. GEO. F., appointed Clinical Assistant at Sheppard and Enoch Pratt Hospital at Towson, Md., November 6, 1907.
- SEMPLE, DR. JOHN M., appointed Superintendent of Eastern Washington Hospital for the Insane at Medical Lake.
- SHUMARD, DR. H. R., appointed Assistant Physician at Longview Hospital at Cincinnati, O., March, 1907, and resigned February 15, 1908.
- STRCOR, DR. CHARLES B., appointed Superintendent of State Colony for Feeble-Minded and Epileptic at Marshall, Mo.
- SINMS, DR. F. P., First Assistant Physician at Nebraska State Hospital at Ingleside, resigned.
- SIMON, DR. THEODORE W., Assistant Physician at Kings Park State Hospital at Long Island, N. Y., transferred to Central Islip State Hospital at Long Island, N. Y., October 1, 1907.
- SINGER, DE. H. D., First Assistant Physician at Hospital for the Insane at Norfolk, Nebraska, appointed Director of the Psychopathic Institute at Kankakee, III.
- SONGER, DR. WALTER E., Superintendent of Illinois Hospital for Insane Criminals at Chester, died September 18, 1907.
- STEINER, DR. ROBERT E. LEE, appointed Superintendent of Oregon State Insane Asylum at Salem.

SUMMERS, DE. ARTHUE P., Second Assistant Physician at Binghamton State Hospiti s Binghamton, N. Y., died December 10, 1907, of meningitis, aged 39. "He had been a member of the staff for fourteen years and had rendered excellent service"

- SWIFT, Da. HEWEY M., formerly Assistant Physician at Danvers State Hospital at Hathorne, Mass., and recently in private practice, reappointed Assistant Physician at Danvers State Hospital.
- TERMAN, DR. GROBER E., Medical Interne at Kings Park State Hospital # Lang Ialand, N. Y., resigned December 25, 1907, to engage in general hospital work
- THOMPSON, DR. NELSON W., Medical Interne at Middletown State Homeopathic Hoppital at Middletown, N. Y., promoted to be Junior Physician, January 1, 1908.
- TINDOLPH, Da. L. W., appointed Medical Interne at Central Indiana Hospital for the Insane at Indianapolia, August 26, 1907.
- TURWBULL, DR. ERWERT G., Assistant Physician at Protestant Hospital for the Innue at Verdun, Quebec, resigned January 17, 1908, to enter private practice.
- ULLMAN, DR. ALBERT E., Junior Physician at Kings Park State Hospital at Long Island, N. Y., transferred to Central Islip State Hospital at Long Island, X F. December 1, 1907.
- WEERS, DB. HENRY F., appointed Superintendent of New Jersey State VEIng in Epileptics at Skillman, December 1, 1907.
- WEERS, DR. HENRY M., Superintendent of New Jersey State Village for Epileptis 5 Skillman, appointed Superintendent of Eastern Pennsylvania Institution for Feeble-Minded and Epileptics at Spring City, November 8, 1907.
- WELLS, DR. FREDERIC LYMAN, appointed Assistant in Pathological Psychology # McLean Hospital at Waverley, Mass., July 1, 1907.
- WEN GLESKY, DR. J. F., appointed Assistant Superintendent of Illinois Eastern Hoppital for the Insane at Hospital.
- WRITTINGTON, DR. WILLIAM L., Superintendent of State Colony for Feeble-Minded and Epileptic at Marshall, Mo., term expired.
- WILLETTS, DR. DAVID G., of Government Hospital for the Insane at Washington, D. C., appointed Pathologist at Georgia State Sanitarium at Milledgeville.
- WILLIAMS, DR. PORTER F., Superintendent of State Hospital for the Insane at Fulton. Mo., shot himself in the leg while hunting, December, 1907.
- WILSON, DR. MCLEOD C., Clinical Assistant at Bloomingdale at White Plains. N. Y. resigned.
- WOODBURY, DR. CHARLES E., Superintendent of Foxboro State Hospital at Foxbore. Mass., resigned.
- WRIGHT, DR. WILLIAM W., Junior Assistant Physician at Buffalo State Hospital & Buffalo, N. Y., promoted to be Assistant Physician.
- YOUNG, Da. E. H., Clinical Assistant at Asylum for the Insane at Toronto, Ontario, transferred to Rockwood Hospital for the Insane at Kingston, Ontario, February 15, 1908.



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