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GENERAL PARESIS.*

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The disease concerning which I am to present to you a few clinical notes, derives special importance from the comparatively recent date at which its identity has been established, and from the remarkable increase within that period of the number of cases of insanity assuming its characteristics. Although, in the light of our present knowledge of its evidences, we can recognize them as existing in individual cases long since described, yet so rare were these cases that they were regarded as simply presenting unusual symptoms added to those of some one or other of the then accepted varieties of mental aberration; and it is within this century that the increasing frequency of occurrence of such cases has led to their closer study, and so to their separation into a distinct type of mental alienation.

For a long time the theory of such separate identity was vigorously combatted, and even yet there are alienists and pathologists, who, differing from the great

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majority of their compeers, hold that the association of the mental with the physical alterations is only fortuitous, and does not constitute a distinct diseased condition. But this view is steadily losing ground, and can scarcely be deemed tenable by any one whose investigations of the morbid manifestations have been practical rather than theoretical.

If general paralysis is simply insanity plus paralysis, the two conditions having no inter-dependence one upon the other, we might expect to find a similar paralysis attacking patients whose minds remain unaffected; but we do not; or to find patients manifesting similar evidences of mental, without motor disturbance; but we do not. And again, where there *is* insanity and where there *is* paralysis of this nature, we should expect to find the association, if it be indeed accidental, at one time with one form of mental alienation, and at another time with another form; but *this* we never find. Other paralyses, indeed, may attack the sane, or, attacking the insane, may be found in different cases associated with mental disturbances of different types; but the paralysis of which we speak is no more plainly distinguished from other paralyses by physical peculiarities, than is the insanity with which it is always conjoined distinguished from sanity, or from other forms of insanity, by certain definite mental peculiarities.

In the few cases wherein the disease attacks those who at the time of its invasion are suffering from insanity of another form, we find further proof of this inter-dependence, for the mental manifestations of that form are replaced by those of paresis as the physical symptoms of the latter disease assert themselves.

Since its recognition, and exaltation to the dignity of a distinct disease, much has been written, much recorded and much conjectured, concerning this affection.

The names applied to it have been various. Among others: "Paralytic Insanity" or "Paralytic Dementia;" "General Incomplete," or "General Progressive, Paralysis;" and finally, "The General Paralysis of the Insane," shortened to the "General Paralysis" of the English, and "General Paresis" of our own, writers.

My own contribution to the study of the disease is intended to be rather in the way of record than conjecture, to present an abstract of the present state of knowledge upon the subject, and to apply the theories advanced, and the observations detailed by others, to the cases which have come under my care in the institution to which I am attached. In reading the descriptions of others, I have been struck by the small number of cases, upon the examination of which important conclusions have been based, and it has seemed to me that by the examination of a larger number of cases we might at once determine more accurately the value of these conclusions, and at the same time clear up some existing differences, which may, very possibly, have arisen from the paucity of material available for analysis. The asylum under my charge, admitting within its walls a number of General Paretics considerably larger than that coming under the care of any other similar institution, at least in this country, has seemed a convenient place for such an experiment, and I have, accordingly, during the past two years and a half, with the assistance of Dr. James G. Kiernan, of the asylum staff, engaged in the collection of material for the notes which I submit this evening.

There have been treated in the asylum during the period named two hundred and five cases of General Paresis, out of a total of one thousand six hundred cases of insanity of all kinds; and for the purpose of

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comparison upon certain points, examination has been made of the tables accompanying all reports received from other asylums in this and foreign countries, so that upon these points the statistics represent the examination of over eighteen thousand cases of insanity.

My excuse for presenting these notes in a manner calculated to reach gentlemen in general practice, rather than one addressed more directly to those connected with asylums, must be found in my belief that anything tending to simplify and render more certain the diagnosis of General Paresis is of special importance to the general practitioner, who must have to do with sufferers from the disease before their admission to an asylum, and at a time when the recognition of the true character of the malady may save the patient and his friends from very serious consequences. To this is added the more practical reason that an examination of the certificates sent to the asylum by gentlemen in private practice shows that they recognized the true character of the disease in but three cases out of thirty-five, in which they made affidavits.

Physicians connected with Public Institutions make a somewhat better showing, detecting the form of insanity in thirteen instances out of eighty-five.

Corroborative evidence of want of familiarity with the indications of the disease, and with its great fatality, is to be found very frequently in the newspapers, which, accompanying the record of the illness of some prominent personage with the detail of such symptoms as show indubitably commencing Paresis, often conclude with the announcement that "in the opinion of the family physician, a few weeks rest, will restore the patient to his usual health."

The diseased condition to which we apply the name "General Paresis" is characterized by an association of

psychic and somatic symptoms, of which progression is the prominent quality. A case fulfilling the requirements of its designation will be marked by progressive incomplete paralysis of the muscles, extending gradually over those of the entire body; and by a mental failure marked by extravagant delusions, progressive also, both in the degree of their grandeur and in the variety of the subjects which they embrace.

A brief description of the course of the disease will best illustrate its characteristics, and lead us to the proposed examination of the various theories which have been advanced regarding it.

A man, then, of middle age and robust frame, of active and vigorous habits, given very probably to high-living, with the various dissipations which the term has come to imply, but preserving among his associates the reputation of a keen and shrewd business man, is observed to undergo a change.

Generally there is a period of melancholy and depression, with moroseness and irritability, lasting but a few days, and very possibly passing unnoticed. Then the man is seen to be flighty. In his business he shows a speculative tendency and a recklessness that are new to him; he makes useless purchases, and contracts, and bargains, that must necessarily be disadvantageous to him. In his personal life, if he has been correct before, he now becomes dissipated and fast; if he has been self-indulgent, he seeks new and grosser dissipations.

With it all there is an evident air of self-esteem, of physical and mental well-being, a tendency to loudness of manner and dress, to ostentatious display, coupled with unusual and unnecessary generosity toward others. The prevailing feeling now is one of good-humor, the desire is to have a good time and share it with as many others as possible. A little further progress in this di-

rection and we find open indecencies of conduct, petty thefts very likely, violence towards others who have refused to join in the proposed good time or remonstrated with its proposer; and with them all, a decided failure of memory, covering especially actions and events of very recent occurrence. In the meantime physical symptoms have become apparent, detected at first, if at all, only by those familiar with the disease, but gradually forcing themselves upon the attention of ordinary observers.

The prominent feature of these changes is a loss of co-ordinating power in the voluntary muscles, progressing steadily toward their complete paralysis. This is recognized as first affecting those most delicate in function. Our attention will be called to a slight hesitancy in speech, and looking at the lips and the protruded tongue, we shall find in the former a slight tremor with an inability to keep them firmly closed, and in the latter a convulsive trembling, with an inclination to return by a sudden involuntary jerk into the mouth.

The articulation is manifestly abnormal; there is a thickness of speech like that of a drunken man, a halting at certain words, and a slurring over of others. It is evident the patient feels there is something wrong in this respect, and endeavors to right it, enunciating his words slowly and carefully, and for a time succeeding, but soon lapsing again, and making especially bad work of it where vowel sounds are few and labial sounds frequent. The appearance of the whole face alters too, it has a flabby, greasy look, and the facial folds are relaxed, perhaps unequally, and in time obliterated.

But more distinctive still is the appearance of the eyes, showing changes so constant, and so uniform, that they furnish one of our most reliable aids to diagnosis. At first there may be contraction of the pupils, but

later there is dilatation usually *unequal*, and in this inequality lies the great value of the evidence. Often added to inequality, there is irregularity of pupil; from the edge of the iris being folded in, and there may be ptosis too.

The want of co-ordination is now found also in the muscles of the extremities. If the elbow is bent and the fingers extended, they can not be held steady, but their tips will tremble and jerk convulsively. Hence the handwriting is altered, and becomes scratchy and irregular; some letters are larger than others, and the lines upon the paper are not followed. The mental change makes itself apparent in the composition of the letters, so that their perusal will doubly indicate the condition of the writer. The change will be similar to that noticed in the speech—a tendency to omit words or parts of sentences, to mingle topics together, and especially to repeat phrases, and to reassert some prominent idea or ideas. In the lower extremities the want of co-ordinating power produces changes of gait. There is at first a little difficulty in getting started promptly and easily; a little tendency to make a wider circle round corners, and a decided difficulty in changing direction quickly, and avoiding collisions. As these difficulties progress, the gait becomes more markedly abnormal. There is a tremulous, unsteady step, the patient separates his feet and stretches out his hands, as if afraid of toppling over, and he either drags his feet after him, as in the ordinary forms of paralysis, or brings his heels down with a rap, as in Locomotor Ataxia. As these troubles increase it becomes altogether too much of a tax upon his attention to keep his equilibrium and to make progress, to permit of his turning it at the same time to anything else; and if he be addressed he will stop and steady

himself upon his legs before answering, even if his questioner is walking with him. But, long before this degree of muscular failure is reached, the mental aberration will have progressed until the stage of delusion has been attained. These delusions are themselves distinctive of General Paresis, for, although, in what the lovers of extended classification have called "ambitious mania," somewhat similar ones are found, there is, in fact, a perceptible difference between them. The one characteristic in which these delusions agree is their exaltation; preserving that, they spread themselves over the widest possible field, not only when looked at in different persons, but at different times in the same person. They are, like delusions of all kinds, primarily connected with the patient personally; if extended to include others, it must be secondarily, as for instance, because a patient imagines himself to hold some certain rank, he must extend his imagination to recognize some certain other and inferior rank, in those surrounding him.

Naturally, therefore, these exalted delusions have reference, first, to the patient's person, his health, and his powers of endurance and action; and so he always, to begin with, thinks himself robust and hearty. His answer to your inquiry as to his condition is always a positive assertion of his well being; and this he continues long after his advancing disease has deprived him of the strength to leave his bed, and almost of the power to articulate an answer at all. As a sequel to this belief in his vigorous health, comes an equally decided estimate of his bodily powers and prowess; he is the greatest pugilist, pedestrian, oarsman, ever known; he will spend hours in training himself for a boat race, totter up and down the ward in the firm belief that he is walking a thousand miles in a thousand hours, and give you the politest possible invitation to make personal

test of his capabilities as a boxer. But his powers and attributes are not confined to mere animal superiority—mentally he is the most brilliant of men. There is no language with which he is unfamiliar, no branch of study in which he is not proficient, no philosophical experiment which he has not successfully undertaken, no discovery which is not his own. And the legitimate rewards of such perfection of body and mind have not failed to follow him—renown, wealth, honors, are his without measure or number; he is not king of a single dominion, but emperor of the whole world; he is not as rich as anybody else, but richer than everybody else put together. Delusions of this extent are not always reached at once. Sometimes they come with the progression which is so distinctive of the disease in all its aspects. I have one patient who illustrates this remarkably. He always addresses me in the same form, saying, “I am the agent of the Empire Line, and they pay me—,” but the end of his sentence has changed from time to time, and it has now gotten up to “two million dollars a day.” They are not generally so definite as this even, and express their wealth or their power by comparisons, oftener than by definite sums or titles. “I am richer than Rothschild,” or “Astor,” are common assertions. I have myself observed more tolerance of the delusions of others, even amounting to belief in them, among paretics, than in the insane of other classes. Ordinarily an insane man will recognize wherein his neighbor is deficient in sense, while strenuously maintaining his own soundness, but a parietic’s delusions are extensive enough to embrace all mankind. When one of them has given a summary of his wealth, the others, if appealed to, will often indorse his statements, but always adding that wealthy as he is, *they* are still more so. One of my patients, indeed, makes this

belief the basis for his own extravagant delusion, for, accepting the claims to wealth made by his companions as true, and having been before his admission a professional gambler, he tells me in confidence that he is about to open a faro bank in the ward, and so possess himself of *their* millions. In another instance a mutual confidence in each other's strict accuracy of statement led two gentlemen to form a co-partnership having for its object the conveyance to certain ports by one of them who owned "all the steamships in the world," or "all the dried apples in the world," in which the other had established a corner. Prominent differences between the delusions of the general paretic, and those of the sufferer from insanity of some other form, are seen in their greater extravagance, their want of permanency, and in the absence of sequence and co-ordination. Most delusions in the maniac and melancholic are as to things which might possibly occur or exist. They are comparatively fixed and persistent, and, starting from false premises, they have thereafter a natural and logical connection. But the delusions of the paretic are absurd and impossible, they vary constantly, and they are utterly contradictory and incompatible. The former, too, will maintain the truth of their delusions with keenness and shrewdness of argument, and will endeavor to explain differences, and reconcile them with facts. But the paretic does not detect incongruities, and will not argue, but simply reassert. One patient called himself the Duke of Buckingham, and claimed to have been elected President of the United States, and when reminded that the latter office was only open to natives of the country it did not embarrass him in the least, or lead him to alter his pretensions.

During all this time the patient is generally possessed of a keen appetite and sleeps soundly, and it

is not uncommon for him to gain considerably in weight. The mental change increases, sometimes bringing the patient into a condition of complete dementia, but oftener preserving the more active character, of which these delusions give evidence, until the end. Physically the changes progress until death is reached by simple exhaustion, due to the increasing muscular paralysis, unless it occur sooner, as it often does from intercurrent diseases, pulmonary especially, or from the convulsive seizures which characterize the disease. These seizures are usually epileptiform in character, but sometimes apoplectic, when they are liable to be followed by paralytic evidences of longer continuation. In their commoner form, however, they are usually but light attacks, leaving little apparent effect, and that of a transitory nature. Such is in brief a summary of the more prominent features observable in the commencement and course of an attack of General Paresis; and this leads us to a review of certain of its characteristics that are of interest.

Much of the controversy regarding the disease has been upon the question whether priority in appearance is to be accorded to the mental or physical symptoms. The general tenor of opinion is now decidedly in favor of giving the first place to the mental, though admitting that in exceptional cases the order of precedence may be reversed. The point is not a very important one at best, and decision upon it is embarrassed by the fact, that the testimony upon which it is based must almost always come from unpractised observers, who naturally overlook the more subtile physical changes and regard the mental aberration as the starting point. In almost all the patients admitted to the asylum, mental irregularity is asserted by the friends to have been the initiatory abnormality. Doubtless it

was the first *observed*; whether it was the first *existent* is another question. If the actual commencement of disease could always be observed, *and appreciated*, it would probably be found that the two classes of symptoms were simultaneous or nearly so, in their invasion.

A curious point in the history of the disease is its gradual extension from one country or locality to another, and its gradual increase in localities where it has once appeared. Of its history in any one locality it may be said that statistics show an uniform order of progression, which may be recognized by certain salient characteristics.

Taken in order they may be stated as—

First. The appearance and recognition of the disease in male patients.

Second. Increased frequency of occurrence in male patients and appearance in female.

Third. Increased frequency of occurrence in both sexes (in greater proportion than the increase of ordinary forms of insanity) and increase in the proportion of females to males attacked.

Fourth. Departures from ordinary rule in various points, such as duration of the disease, age of patients attacked, &c.

In France, where the disease was first recognized and described, I believe its history shows this sequence, though I have been unable to test the truth of the belief by the examination of a sufficient number of statistics. In Great Britain and in our own country, and in different localities of each, it has certainly been, and is still being followed. In the former country the recognition of the disease antedates its recognition in this country, by about thirty-five years; or, in round numbers, it has been known in Great Britain for a

period twice as long as it has been known here. To test then its relative frequency in the two countries, by statistics which are available for examination, during the past three years, we find that in Great Britain the percentage of cases of paresis, relatively to those of insanity of all kinds, is fourteen and three-tenths per cent. among males, and two per cent. among females; while in this country the proportions were four and one-tenth per cent. and four-tenths of one per cent., respectively. Of deaths among the insane, in institutions, during the same period, in Great Britain twenty-five and a half per cent. in males, and twelve and a half per cent. in females, were from General Paresis; while in this country that cause was operative in nineteen and four-tenths per cent. of deaths among males, and five and one-tenth per cent. among females. On this continent, a difference no less striking is found to exist, when the reports of asylums comprised within different areas are examined, and the history of the gradual extension of the disease from the sea-board, and its rapid increase in localities where it has once made its appearance, emphasize the conclusions we have drawn as to its general course.

Its first recognition here dates back to 1843, and was at the hands of Dr. Luther V. Bell of the McLean Asylum, near Boston, who, after seeing the disease abroad, detected it within the three years preceding his report, in fifteen cases, of whom one was a female, and of whom all died of the disease. Four years later Dr. Pliny Earle, then of Bloomingdale Asylum, in this city, reported several cases of the disease, and a similar report came from Dr. Brigham of the State Lunatic Asylum in Utica. Later still, Dr. Ranney, of the Asylum on Blackwell's Island, described several cases among its inmates. Thence the disease has gradually

come to occupy a place in the statistical tables of all asylums in the neighborhoods named, and to appear from time to time in a greater number of the reports coming from a steadily increasing distance. In 1866, in a paper read before the State Medical Society, Prof. John P. Gray, Superintendent of the State Asylum at Utica, illustrated a very complete resumé of the then existing views upon the subject, by the citation of a number of cases selected from a total of one hundred and nineteen admitted to the Utica Asylum during the sixteen years immediately preceding. At the present date General Paresis is the form of disease in a large number of the insane, in institutions in the eastern and middle States, while in those of the southern and western, it is comparatively rare. During the recent meeting of Superintendents of Insane Asylums, conversation turning upon the subject, Dr. Kempster (who from former service in the Utica Asylum is necessarily familiar with the disease,) stated that he had seen but one or two cases since his removal to Wisconsin; and several Superintendents from the west and south, remarked that the disease was unknown in their neighborhoods, and that they had never seen a case.

Examination of the reports of asylums in those portions of the country, confirm these statements. In very few of them is Paresis admitted to a place in the classification of insanity. One gentleman uses the term, but places no cases beneath it, and adds that he uses it only to make his tables conform to those of other institutions, and that he has not seen the disease in that under his own charge. Others mention the disease only to bear similar testimony as to their want of familiarity with it, and concerning its non-existence in the localities in which they severally reside. The sub-

joined table, being a condensation of statistics of American Asylums for the past three years, (covering a total of nearly sixteen thousand patients,) will illustrate the comparative immunity from General Paresis enjoyed by certain territories.

		STATES.			
		Eastern.	Middle.	Western.	Southern.
Percentage of Paretics to whole number of admissions.	Males	4	8 $\frac{6}{10}$	1 $\frac{7}{10}$	1 $\frac{1}{10}$
	Females	0 $\frac{9}{10}$	0 $\frac{4}{10}$	0 $\frac{2}{10}$	0 $\frac{1}{10}$
Percentage of deaths from Paresis to those from all causes.	Males	21 $\frac{2}{10}$	23 $\frac{4}{10}$	9 $\frac{3}{10}$	7 $\frac{3}{10}$
	Females	4 $\frac{8}{10}$	2 $\frac{9}{10}$	1 $\frac{1}{10}$	2 $\frac{6}{10}$

The increase in frequency of occurrence of Paresis, in a given locality, is illustrated by the fact, that the number of cases of the disease admitted to my own Institution, in each of the past three years, has been respectively thirty-four, fifty-five, and seventy-two; the number of deaths of paretics, fourteen, forty-one and forty-four. This special increase, and indeed all statistics which tend to show such increase, may be explained to a certain extent by the fact that greater familiarity with the manifestations of the disease has conduced to greater facility and certainty in its diagnosis. Thus, since my connection with the Asylum, fifteen patients with Paresis have returned to it, who had, prior thereto, been discharged as cases of insanity of other forms. But with all due allowance made on this account, there is still abundant evidence that the disease is steadily and rapidly extending.

The causation of the disease is a subject upon which different opinions are held, and no one opinion is sus-

tained by convincing arguments. At one time, one cause has been thought to be the potent one; at another time, another. Only one thing can be assumed as settled, and that is that heredity must be looked upon as the great predisposing cause in this, as in the other varieties of insanity. Of one hundred and nine patients regarding whose ancestry fairly complete particulars could be obtained, thirty-nine revealed a history of insanity in one or other of the branches, thirty of other nervous diseases, twenty-two of intemperance in parents, and in fifteen cases the record was unfavorable regarding both branches. In turn prolonged intellectual effort, intemperance, venereal excesses have been cited as the distinct determining agent in the production of the disease. But the fact that it attacks men of all grades of mind, and chiefly indeed those of a low order of intelligence and education, negatives the first proposition; and the occasional occurrence of the disease in persons of perfectly correct habits, and addicted to no vicious indulgences, shows that such indulgences, though actual can not be the essential causes. It is true that a great majority of the victims of the disease have been noted for their addiction to dissipation of some kind, and where this has been long continued, and existent at a time sufficiently long prior to the recognition of the disease, it is impossible to deny its claim to influence in its production. But this is not always the history; often it is of loose habits, suddenly assumed, shortly before the supposed inception of the disease, and contrasting with a former life of steadiness and propriety of conduct. Then the question arises (as it has arisen regarding most of the assigned causes of insanity, and to the ultimate exclusion of many of them and especially of the so-called "moral causes," once so generally deemed effective,) whether the alleged cause is really a cause at

all, or not rather an effect; whether, in other words, the insanity did not precede the drunkenness (if the excess takes that form,) and lead to it, and not the reverse order of procedure. Change of character is the prominent symptom of commencing insanity of other forms, and there is scarcely sufficient ground for assigning it another function or significance in this. By the facts ascertained regarding patients in the asylum, the belief as to the influence of alcoholic intemperance is strongly sustained. One hundred and sixteen of one hundred and fifty-five patients give a history of habitual intemperance, while all but ten of the remainder claim (or their friends for them) the designation of "moderate drinkers," the word "moderate," if the truth were known, being probably a very mild and insufficient indicator of the real amount of customary indulgence.

Of excess in the direction of sexual indulgence the influences are scarcely less perceptible; where reliable particulars can be gained, they almost uniformly show such indulgence. Wives or mistresses of paretics, when they are not reticent upon the subject, tell stories of extreme sexual ardor, and of acts of coition repeated with astonishing frequency; and in these wives and mistresses there is a certain appearance of animal vigor and sensuality which I have come to look upon as a diagnostic sign almost as valuable as is the appearance of the paretic himself.

At one time syphilis was asserted to be the cause of the brain changes finding expression through the symptoms of paresis, but though probably an occasional cause, it is certainly not the only one, and the attempt to assign to it a sole, or even a special importance has been virtually abandoned. Syphilis has been recognized in forty-five cases of General Paresis out of one hundred and fifty-five admitted to the asylum. Examination of

the assigned causes of Paresis in the cases admitted leads the attention to two other influences—sunstroke and injuries to the head. Of eighty-three cases the former was alleged as the cause in twelve, and the latter in twelve. But sexual indulgence was the assigned cause in the largest number of cases, forty-five in all, while the remaining fourteen were attributed to various causes, opium-eating, lead-poisoning and otorrhoea among the number.

All that it is safe to assume then regarding the causes of General Paresis, in the present state of our knowledge, and pending the progress of pathological study, is, that, in common with the other forms of insanity, it finds its subjects mainly among those in whom there is an hereditary tendency toward nervous disease; and that so far as immediate causes are concerned, while the disease undoubtedly attacks a few who have no such vices, and many in whom the relation of such vices to the disease—whether that of cause or effect—is not determined, yet the fact that in a conspicuous proportion of cases attacked there is a history of profligate and vicious indulgences justifies the belief that such indulgences are operative as the most frequent, if not the sole determining influence.

A characteristic of General Paresis which has been observed from its earliest recognition is its selection of the male sex as its subjects, in the very large majority of cases. Indeed, early in its history, writers upon the subject were inclined to regard the disease as appertaining only to men, but in course of time indubitable cases occurring in females came to be recognized and recorded, and now we know that it is a disease to which females, in common with males, are liable, although in very much inferior degree. There is a very appreciable difference in the matter of localities in this regard also,

in some the number of women attacked bearing a much larger proportion to the whole number than in others. Thus, in English asylums twenty-five per cent. of the deaths from General Paresis were of women. In this country, on the other hand, the proportion of women to the entire number of both sexes was, of the admissions eight and three-tenths per cent. and of the deaths twelve per cent. Taking this particular locality, the city of New York, we find that the statistics of the two public asylums for the past three years compare as follows: my colleague, Dr. Parsons, Superintendent of the Asylum for Females reports seven admissions of paretics in a total of one thousand three hundred and thirty-five, and fourteen deaths in a total of two hundred and eighty-eight. In the Asylum under my own care, and receiving only male patients, one hundred and sixty-six of the one thousand two hundred and thirty-eight cases admitted during the same period have been classified as general paretics; while of four hundred and two deaths, ninety-nine were of patients suffering from that disease. In other words, insanity has taken the form of General Paresis in twelve and six-tenths per cent. of the male and five-tenths of one per cent. of the female patients entering the Asylums, and in twenty-two and one-tenth per cent. of the males and four and nine tenths per cent. of the females dying therein.

These facts have a bearing upon the question of causation also. That the disease is relatively rare in the sex which is less given to alcoholic intemperance, and upon whose economy excessive sexual indulgence has less effect, is a point in favor of the potency of these irregularities in its determination. Further weight is given to the theory by the greater prevalence of the disease in countries and districts, and among classes, where the use of spirituous liquors among women is

commoner; and still further from the fact that the investigation of the former condition of the females attacked reveals commonly the history of dissolute practices, and frequently of professional prostitution.

In the matter of age, paretics follow the general rule which makes insanity a disease especially of middle life, affecting but rarely either the very young or the very old; and they follow it somewhat more closely than sufferers from other forms of the disease. Of one hundred and fifty-five cases admitted to the asylum sixty-six were between the ages of thirty-five and forty-five, while thirty were between twenty-five and thirty-five, and forty between forty-five and fifty-five. Only four patients were under the age of twenty-five, and of them the youngest was twenty-three. Thus far former statements as to the age of paretics are confirmed; but another generally accepted belief that the disease was never seen in patients over sixty, is not substantiated by our observations. Ten of our patients who died were between their sixtieth and sixty-fifth year, and two had passed the latter age, one being sixty-six and the other sixty-seven.

In two respects which are curious enough to deserve mention at least, examination of the asylum statistics reveals a departure in the case of the paretics from the general rules relating to other patients. In the first place, as regards their civil condition, only a minority of the other patients were married men—thirty-three and a half per cent. in all—while of paretics over eighty-one per cent. were married. In regard to nationality, natives of this country form but twenty per cent. of patients suffering from insanity of other forms; and thirty-six per cent. of those having General Paresis.

As to prognosis, there seems to be no fair ground as yet for anticipating any ending but death, where the evi-

dences of the disease are unmistakable. The few cures that have been from time to time reported are at best doubtful, either their history admitting the suspicion that their subjects were not really paretics, or the short period during which they have been kept under observation after discharge, rendering it likely that the apparent restoration to health constituted simply a remission of the disease, and not a recovery from it. I have not seen a case in which recovery has taken place, and *have* seen, returned to the asylum, several cases in which recovery had been claimed by others. The remissions which are frequently seen in the course of the disease, are very apt to give rise to false hopes of, and false belief in, recovery. To an unpractised eye every trace of the disease seems to have disappeared, and although, in most cases, one accustomed to their observation will find some slight trace remaining—a little difference in the pupils, or a little tremor of the lips, or difficulty of articulation—there are a few cases where even these evidences are wanting. But relaxation of the regularity and discipline of asylum life, and especially the endeavor to resume former pursuits will inevitably rekindle the disease, and the patient's relapse will speedily follow. So that, if the diagnosis be positive, there is no good reason that the prognosis should be less positive; and though the prophecy of death may appear for a time to have been an erroneous one, the patient who has so markedly improved will soon again retrograde, and confirm the verdict.

As regards the duration of the disease, either the opinions of observers have been modified of late, or else it is not so rapidly fatal as it once was. Formerly, it was commonly spoken of as terminating usually in a very few months, and three years was assigned as its utmost limit in rare cases. *Now*, three years is named

as the *average* duration, and many cases are recognized as having endured more than twice that length of time. Of eighty cases terminating in death in the asylum, and regarding the date of invasion of which reliable information was obtained, one died in the first year, seventeen in the second, fifteen in the third, twenty-four in the fourth, thirteen in the fifth, and ten not until the sixth year. Of those remaining in the asylum, two have entered the sixth year. I have not known a case in which death was postponed beyond the sixth year following recognition of the symptoms of the disease.

Death occurring from Paresis uncomplicated, comes in one of two ways—either gradually through the extension of the paralysis to the respiratory muscles, and the exhaustion attending the disease, or suddenly by one of the epileptiform convulsions. The former is much the more common mode of death. Pulmonary complications, too, are not infrequently the cause of death in paretics. Of eighty-five deaths of paretics in the asylum, fifty were from the gradual exhaustion attending the disease, seven from convulsive attacks, and twelve from pulmonary diseases, the remaining sixteen being due to various other complicating affections.

The influence of phthisis in coloring the symptoms of the disease has been observed by Dr. Clouston and succeeding writers. It has been well marked in cases presenting that complication admitted to the asylum, in the appearance of a more decided melancholic element, tempering the general hilarity and the extravagant delusions; and amounting at times to positive depression, coupled with suspicion of others and ideas of persecution. But through it all the characteristics of paresis run, plainly distinguishing it from melancholia proper. The paretic with phthisical and melan-

cholic elements affecting his disease, will accuse others of poisoning him or stealing his money, but he will go on to tell how he is going to sue for damages and recover millions of dollars.

The changes in the temperature of the body observable in General Paresis, have formed the subject of some interesting experiments instituted by Dr. MacLeod, and quoted frequently by subsequent writers. Although detailing the results found in but a single case, the gentleman named mentions that other cases coming under his care have presented similar results, and from these results forms a series of deductions the most important of which are—

“That among the symptoms of General Paresis, there is always a higher temperature in the evening than in the morning.”

“That the thermometer shows the progress of the disease when it can not be satisfactorily discovered by any other means.”

“That in many sleepless and destructive patients, the temperature is higher than it is in those who are quiet and easily managed.”

“That the higher the temperature, and the greater the difference between the morning and evening—the increase being in the evening—the greater the mortality.”

Our own observations, taking account of sixty patients with General Paresis, and excluding those having complicating diseases capable in themselves of producing such variations, do not bear out the claim of these rules to be regarded as absolute. They revealed considerable contradiction between different cases, and the average of differences between the morning and evening temperatures amounted to but half a degree in cases assuming the sthenic form, while in those assum-

ing the asthenic form the average of the evening was actually half a degree *lower* than the morning. The only decisive results regarding differences of temperature, which we have been able to obtain, have relation to the occurrence of periods of maniacal excitement and of convulsive seizures. In each instance the temperature has been observed to rise before the attack, and to fall markedly immediately after it. Fifty cases give an average difference of one degree between the temperature before and after a maniacal exacerbation, and of a degree and a half between that before and after a convulsion.

The abnormalities affecting the appearance of the eye are among the most distinctive of the evidences of General Paresis. The changes usually observed, as has been mentioned in describing the symptoms of the disease, are, first, an uniform contraction of the pupils, followed by their unequal dilation, with which inequality is often associated irregularity. Of the one hundred and fifty-five cases examined in the asylum, contraction was ascertained to have been observed in the beginning in one hundred and twenty-two, the others being doubtful. Of these one hundred and twenty-two, eighty had become subsequently dilated. In forty-one cases the right pupil was most largely dilated; in thirty-nine the left. An attempt was made some years since, by Austin, to establish a connection between the relations of the pupils and the preponderance of maniacal or melancholic symptoms, he asserting that where the left pupil was the larger, depression would be the predominant characteristic, and where the right, elation. No plausible reason for such a difference could well be assigned, and subsequent writers have generally ignored or disputed the claim, or even ridiculed it. From an examination of eighty cases in the asylum, in which

there was a perceptible tendency in one or the other direction, it would appear as if there was something in the theory, for of the melancholic cases the left pupil was the more dilated in thirty, and the less in only eight; while of the maniacal the right was the larger in thirty-three, and the left in but nine. It was observed also that the dilation in both pupils was greater in cases having a tendency toward depression than in those with an opposite tendency. But while unequally dilated pupils form strong corroborative evidence of the existence of General Paresis, they are not necessarily conclusive, for they are found in a few instances in patients suffering from other forms of insanity, and even in the sane. Out of curiosity, in the same period in which the figures just given were obtained, observations were made of the pupils of other inmates of the asylum, and also of a number of sane persons, and unequal pupils were found in eighteen of the former, and fourteen of the latter. But in almost all of them, unlike the cases of paresis, some other means of satisfactorily accounting for the peculiarity existed. Thus, among the sane, the difference was congenital in one case, attributable to mechanical injury in eight, and the result of overwork of one eye (with the microscope or the engraver's glass) in five. Of the eighteen insane, ten were cases of acute mania and eight of melancholia; and in four of the former and three of the latter there were other indications that rendered their ultimately developing into cases of General Paresis extremely probable. Others were traceable to injury or strain, and but four were unaccounted for, the failure being due, probably, to lack of information as to antecedents. The irregularity of pupil so often added to inequality, is due to the folding in of the edge of the iris. Such irregularity was

found in forty-five cases in the asylum, affecting both eyes in twenty-five, the right alone in fifteen, and the left alone in five.

A peculiar affection first described by Professor Hammond under the name "athetosis," and defined by him as "mainly characterized by an inability to retain the fingers and toes in any position in which they may be placed, and by their continued motion," has not, as far as I am aware, been before spoken of as a frequent concomitant of General Paresis. We have observed it in quite a number of cases, the toes being affected more generally than the fingers. Rigid flexions of the wrist and fingers have been spoken of by former writers as common in cases of General Paresis, but these we have not found. Where there has been flexion in our cases it has been associated with convulsive movements. Rythmic contractions of the smaller muscles of the face have been observed in twenty-five cases, and in twelve they have been apparent also in the masseter and sterno-cleido-mastoid. The cases described by Professor Hammond and other writers upon the subject of athetosis have so much in them suggestive of the existence or approach of paresis—epileptiform seizures, difficulty in articulation of certain words, impairment of memory, for instance—that, in view of its appearance in so many cases of recognized paresis, I am inclined to the belief that it may possibly be but one of other changes due to the lesions of the latter disease.

A curious little point in the diagnosis of the disease, mentioned first, I think, by Sankey, is the fact that the answer "first-rate," is that ordinarily returned by patients, when the question how they are, is asked them. I have tested it frequently in going through the wards, and have often received that answer from as many as eight or nine out of every ten paretics spoken to.

The subjects of General Paresis are very likely to come before the courts; and, as might be expected from the nature of their delusions, the act of which they are accused is generally some form of theft. Deeds of violence are more rarely committed by them; they are ordinarily good-humored, and indisposed to quarrel; and if they *do* attack others, it is from the delusion that their power is not deferred to, or their rights of property not respected. Thus, in the case of one patient under my care, his arrest upon a charge of assault, first led to the recognition of his insanity and his transfer to the asylum. But the assault was upon the cashier of a bank, and inquiry revealed the fact that the patient had, under the influence of parietic delusion, entered the bank and drawn and presented a check for \$500,000, and that the assault upon the cashier had followed his refusal to honor the check.

Petty thefts are the most common offences calling for the determination of the medico-legal relations of general paretics, and they are committed by the patient under the delusion that what is taken is his own property, that his exalted position gives him the right to help himself to the property of others; or else that he has ample wealth, and will pay at any time for the article appropriated. In the other instances coming under my own observation, where the transgression of the law was of a different nature, the offence was arson or attempted arson; but here equally the overt act was the product of delusion of the parietic type, for the patients, imagining their former residences and appointments to be out of keeping with their acquired dignities, proceeded to burn them up as a convenient preliminary to the provision of more suitable and imposing quarters. I speak here only of those cases where the question of responsibility for the graver

criminal acts is involved. In many other cases arrests for intoxication, disorderly conduct, or indecent exposure of person, first bring the paretic under suspicion of insanity, and lead to the recognition of its existence and to his sequestration. The boisterous behavior and the indecencies are frequent and direct outcomings of the mental disturbance; and the intoxication may be actual or merely the interpretation given to the symptoms of insanity, by the policeman who happens to make the arrest. Indeed, most of our paretics come to us after arrest, and perhaps sentence, for intoxication.

A brief allusion to the pathological anatomy of the disease, with which I now conclude, I condense from a carefully prepared summary of existing knowledge and belief upon the subject kindly furnished to me by Mr. Theodore Deecke, the Special Pathologist of the State Asylum, at Utica.

There is no pathological condition hitherto observed in the nervous centers which has not been occasionally found in paretics. The changes, as death may occur at any of the progressive stages of the disease, are simple or complex, limited to certain parts, or involving more or less the whole organ. In the annals of the disease, it is true, cases have been reported by authorities, in which no lesions of the central organs at all have been noticed. The remarkable decrease, however, in the number of such cases during the past six or eight years, has greatly diminished their significance. From an anatomical point of view the following names given to the disease, indicate the most prominent features of the lesions observed by different authors: arachnitis chronica, (Bayle;) meningitis chronica, (E. Meyer;) Periencephalitis diffusa, (Calmeil;) cerebritis corticalis generalis, (Calmeil;) encephalitis universalis chronica, meningo-cerebritis, (Belhomme;) and atrophia cerebri,

(Erlenmeyer.) Abnormalities of the bony teguments of the central organs are not unfrequently found. The dura-mater is in one-third to one-half of the cases seriously affected; the pia-mater and the vascular system more or less in all cases, and the neuroglia and the nervous elements in proportion to the progressive stages of the disease.

The most characteristic anatomical feature of the disease, in its last stages, is an extensive atrophied condition of the nervous elements of the central organs which closely resembles that observed in higher grades of senile dementia, and we may regard these alterations as the result of premature senescence.

If we look more closely into the nature of the lesions observed, and their origin and import, the condition of the dura-mater will first attract our attention.

In one-third to one-half of all cases, the inner, and more rarely the outer surface of this membrane is the seat of an inflammatory, organized, exudation, formerly known as "*hæmatoma duræ matris*," and described by Virchow under the name of "*pachymeningitis interna hæmorrhagica chronica*." The exudation forms a very vascular pseudo-membrane, sometimes of considerable thickness, (up to half an inch,) which consists of from two to twenty membranous layers of different colors, red, green, yellow, reddish brown, from numerous extravasations of blood elements in all stages of decomposition and transformation. Sometimes, after extensive hæmorrhages, regular blood-cysts are formed; or the coloring matter of the blood is absorbed, and the cysts contain a serous fluid. The most common seat of these exudations is the convex surface of the brain, over the frontal lobes; and occasionally they extend downward to the base of the brain. The new formation, consisting of a very delicate, loose, fibrous connective tissue,

(of a gelatinous consistence in the more recent layers,) is extremely vascular. The vessels themselves are large with numerous anastomoses, their walls are thin, and they are the sources of frequently repeated hæmorrhages, especially between the suppurating layers of the pseudo-membrane. Of the causes of these inflammatory exudations, little is known. The majority of cases will be found in connection with chronic alcoholismus while some specific forms are of syphilitic origin.

The effect on the brain is undoubtedly by a gradually increasing, and when hæmorrhages occur, by sudden pressure. The convolutions beneath the exudation present all the evidences of interrupted circulation and atrophy.

The pia-mater in nearly all cases shows some abnormal conditions; either it is opaque and milky, especially along the course of the veins, from fatty and pigmentary deposits in the lymphatic spaces, or from cell formations (round cells) in its meshes, or it is studded with small tumor-like eruptions consisting of epithelium cells (Bayle, L. Meyer,) or it is raised, especially between the convolutions, by purulent exudations. In the majority of cases, the pia-mater adheres to the cortex cerebri, and the adherent parts of the cortex contain nuclei and round cells which extend downward into the perivascular spaces.

The most extensive and constant lesions in the earlier stages of the disease are presented by the vascular system of the brain. In the beginning an abnormal dilatation of the vessels is a constant occurrence. This is followed by an atonic condition, obliteration of the capillaries and distention of the lymphatic sheaths surrounding the veins, by the extravasation of blood corpuscles, the remains of which may give rise to various new formations and degenerations. In some cases the

adventitia is filled by cell formations of irregular and spongy texture; in other cases cyst-like dilatations are found of considerable size, visible to the naked eye and presenting the so-called *Etat criblée* of French authors. Proliferation of nuclei and granule cells along the course of the vessels is also of frequent occurrence. The vessels themselves show a fibrillous or glassy degeneration of their walls. The capillaries in extensive areas are found calcified and disintegrated.

In connection with these alterations of the vascular arrangements and in proportion to their extent the neuroglia and the nervous elements are invariably involved.

The proliferation of the nuclei of the neuroglia, and the transformation into a very delicate fibrillous connective tissue and final induration, with a secondary degeneration of the ganglion cells, have been described by Rokitansky as constant phenomena in the spinal marrow and in the brain of paretics.

Other authors have observed "an increase in the amount of the inter-fibrillar connective substance of the medullary columns;" "a fibroid metamorphosis of the nerve-cement;" an "inflammatory induration" or sclerosis" of the white substance.

Besides these, colloid, amyloid and calcareous degenerations of the neuroglia are described, and fatty, colloid, pigmentary and calcareous degenerations of the ganglion cells. Of these the fatty and pigmentary infiltrations are more frequently confined to the ganglionic centers of the spinal marrow, to the cells of the large nuclei of the medulla and to those of the pons Varolii, optic thalami and corpora striata.

The ganglia of the convolutions, especially those of the convexity of the brain, are the seat of calcifications and of fatty involution.

The increase in the amount of the inter-fibrillar substance, or the so-called "simple grey degeneration," most common in cases of paresis, with tabetic symptoms, is frequently confined to the white columns of the cord, while the inflammatory induration or sclerosis extends over the whole substance of the nerve centers.

In the expositions of different authors some one or other of the alterations enumerated plays the most important role.

No one of them, however, has proved to be a primary morbid affection, or to be peculiar to, or invariably connected with paresis. In fact, we may say that they all represent only different stages of atrophy and necrosis of the tissues, or in other words, that they are the result of a *diffuse but slowly progressing atrophy and necrosis*. By their *diffuse* character the lesions observed in paretics are distinguishable from those of other chronic forms of insanity. From all acute cases they differ anatomically in their products.