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JOHN HASLAM, M.D.ABERD., M.R.C.S.ENG.  
(1760-1844).

To illustrate paper by Professor G. M. ROBERTSON on "The Discovery of  
General Paralysis."

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**Part I.—Original Articles.**

*The Discovery of General Paralysis.*<sup>(1)</sup> By GEORGE M. ROBERTSON, M.D., F.R.C.P.Ed., President, Medico-Psychological Association, and Vice-President of the Congress to Commemorate the Centenary of the Thesis of Bayle, Paris.

ON November 21, 1822, a young man named A. L. J. Bayle presented a thesis for the Doctorate of Medicine to the Faculty of Paris. It was entitled "Recherches sur les Maladies Mentales," and it was sustained. In this thesis Bayle recorded the opinion that general and incomplete paralysis and mental disorder, when they developed side by side, were caused by chronic arachnitis. In other words that these two groups of phenomena—a certain form of paralysis and disorder of the mind—were the associated symptoms of a definite disease, having a distinctive pathological anatomy. This was an opinion never expressed before by anyone, and it has since then been proved to be true in its essential features. The disease he referred to is now known as general paralysis of the insane.

Bayle did not discover the symptoms of general paralysis; these had been previously observed and studied in Paris for seventeen years. Yet, the association together of these two orders of symptoms by Bayle, and the view that they indicated the existence of a definite pathological entity, form a landmark in the history of medicine. According to Baillarger, it signalises the greatest advance ever made in the history of mental disease. It is therefore fitting that we should mark the centenary of this event by a brief account of the discovery of general paralysis and of the chief actors by whom this was effected.

Although the honour of the differentiation of general paralysis clearly belongs to French alienists, the first case of undoubted general paralysis recorded in medical literature was described in 1798 by an Englishman named John Haslam. He not only described the associated

<sup>(1)</sup> A paper read at the Quarterly Meeting held at Bethlem Royal Hospital on November 23, 1922.

mental and physical symptoms and the pathological findings in this particular case, but he also made commentaries on these which showed that he had in a measure noted their significance. It is therefore appropriate that we should meet to mark this centenary at Bethlem Royal Hospital of which Haslam was the Apothecary or Resident Medical Officer.

#### THE PRECURSORS OF HASLAM.

It has been suggested that general paralysis had been observed before the publication of Haslam's case. These suppositions are based on accounts of the sequence of mental excitement and fatuity, or of the association of paralysis and enfeeblement of the mind or memory, or of the presence of meningitis and excess of cerebro-spinal fluid. In all of the instances given the account is vague and meagre, or there is some important hiatus. In none is there that certainty of diagnosis which is universally conceded to the case described by Haslam.

The first of the alleged precursors of Haslam was Thomas Willis, M.D., who published a work entitled *De Anima Brutorum* in London in the year 1672. He writes in Latin: "In very many cases in which the brain is already diseased, I have noticed, when the patient is affected with mental dulness, loss of memory, and finally with dementia, that he afterwards develops paralysis—a certainty I have ever been in the habit of forecasting. This occurs because the material which causes the disease gradually runs downwards and is eventually collected in a heaped mass somewhere within the caudate nucleus, where the fibres of the medullary tract are more closely assembled than in the corpus striatum. On this account as these areas are more or less obstructed, there follows either general paralysis (paralysis universalis) or hemiplegia or some particular local paralysis" (Cap. IX, p. 281).

It will be noted that the term "paralysis universalis" is used, and this may possibly refer to general paralysis. On the other hand, it is much more likely that Willis refers to senile or arteriosclerotic dementia followed by apoplexy and softening.

Bayle himself selected twenty-seven cases of possible general paralysis from medical literature in his treatise. One has been taken from Littré and another from Geoffroi, published respectively in 1705 and 1706, but neither of these is a clear case of general paralysis. He also quotes five cases described by Meckel in 1764. Two of these, both soldiers, may possibly have been cases of general paralysis, but one cannot be certain, so severe has been the economy exercised in the account of their symptoms. Of seven cases selected from Chiarugi because of the *post-mortem* findings, most are certainly not cases of

general paralysis. The clinical history of the case, numbered eighth, of a drunken soldier, æt. 40, is without doubt suggestive of general paralysis, even though excess only of cerebro-spinal fluid and an injection of the brain and its membranes was found at the autopsy. Of the thirteen cases selected from Neuman of Berlin, some may have been cases of general paralysis, but here, again, there is not certainty of diagnosis in a single case.

Another author who is sometimes quoted as a precursor of Haslam is William Perfect, M.D., of West Malling Place in Kent. He published in his *Annals of Insanity* an account of sixty-one selected cases in 1787, with the view of describing his successful treatment. A second edition of his book recording 105 cases appeared in 1801. As Perfect selected cases that usually recovered in proof of his vaunted methods of treatment, not one of his patients appears to have suffered from general paralysis.

#### 1798. JOHN HASLAM.

We now come to John Haslam himself, who was Apothecary to Bethlem Royal Hospital from 1795 till 1816. There was some misconception in his day, and there still is at the present time, as to the status of an apothecary, but this was settled in 1701 by a decision of the House of Lords. Ever since that time an "apothecary" has been legally recognised as a medical practitioner. There is, however, no record that Haslam ever belonged to the Society of Apothecaries of London, but since 1785 he had been a Member of the Corporation of Surgeons, afterwards (1801) the Royal College of Surgeons, and he was entitled to practise medicine and surgery. Owing to certain prerogatives of the Royal College of Physicians of London, he was not entitled to call himself a physician or to hold the post of a physician in any of the London hospitals. After he left Bethlem Hospital in 1816 to engage in private practice in London, he received a degree of Doctor of Medicine from Aberdeen University. He studied at Edinburgh University during 1785-86, and was President of the Royal Medical Society, the oldest debating society for medical undergraduates in the world. He then entered Pembroke College, Cambridge. Later he became one of the original members of the Medico-Psychological Association of Great Britain and Ireland.

Haslam's duties at Bethlem Hospital were those of a medical officer or assistant physician. He was required to visit the patients daily, to examine the sick, and prescribe for them, and lastly to write up the records of the cases. The Hospital was also visited once or twice a week by a visiting physician and a surgeon, whose attention was directed by Haslam to important matters in their respective spheres.

Haslam was an able man, and an accurate observer, who had the gift of literary expression. Early in 1798, less than three years after entering upon his special duties at Bethlem Hospital, he published the first edition of his *Observations on Insanity*. As a contemporary estimate of the importance of this work, the opinion of Pinel, the greatest alienist of that day, may be accepted. He refers to Haslam in his own great work *Sur L'Alienation Mentale*, published two years later, probably as often as any other single author, in spite of the fact that he thought that Haslam was not a medical man, but filled a post similar to that of Poussin, the head attendant of Bicêtre, to whom Pinel was so greatly indebted for help when introducing his historical reforms (p. xxvii).

Haslam's policy in writing differed from that of Perfect; it was purely scientific. While Perfect selected his cases to advertise his recoveries, Haslam without selection described every case that died in Bethlem between July 10, 1795, and February 17, 1798, in which he had performed a *post-mortem* examination. He was thus much more likely to include descriptions of general paralysis in his 29 cases than Perfect in his 105. Case 16 was probably a case of general paralysis, but Case 15 fortunately presents a clinical and pathological picture so typical that no one has ever doubted this diagnosis. A record of this interesting case is here given in full:

#### FIRST RECORDED CASE.

"J. A—, a man, forty-two years of age, was first admitted into the house on June 27, 1795. His disease came on suddenly whilst he was working in a garden, on a very hot day, without any covering to his head. He had some years before travelled with a gentleman over a great part of Europe; his ideas ran particularly on what he had seen abroad; sometimes he conceived himself the King of Denmark, at other times the King of France. Although naturally dull and wanting common education, he professed himself a master of all the dead and living languages, but his most intimate acquaintance was with the old French, and he was persuaded he had some faint recollection of coming over to this country with William the Conqueror. His temper was very irritable and he was disposed to quarrel with everybody about him. After he had continued ten months in the hospital he became tranquil, relinquished his absurdities, and was discharged well in June, 1796. He went into the country with his wife to settle some domestic affairs, and in about six weeks afterwards relapsed. He was readmitted into the hospital August 13.

"He now evidently had a paralytic affection; his speech was inarticulate, and his mouth drawn aside. He shortly became stupid, his legs swelled, and afterwards ulcerated; at length his appetite failed him, he became emaciated and died.

"December 27 of the same year: The head was opened twenty hours after death. There was a greater quantity of water between the different membranes of the brain than has ever occurred to me. The tunica arachnoidea was generally opaque and very much thickened; the pia mater was loaded with blood, and the veins of that membrane were particularly enlarged. On the fore-part of the right hemisphere of the brain, when stripped of its membranes, there was a blotch, of a brown colour, several shades darker than the rest of the cortical substance; the ventricles were much enlarged, and contained, by estimation, at least six ounces of water. The veins in these cavities were particularly turgid. The consistence of the brain was firmer than usual."

The patient is a male; he is *æt.* 42—still the most common age for the development of general paralysis; he had travelled abroad some years before, when he had probably been infected with syphilis; he had typical delusions of grandeur. After ten months the acute symptoms passed off and he was discharged recovered, as so many other cases of general paralysis have been since then. He was re-admitted, and he now developed signs of paralysis, difficulty of speech, and stupidity. Finally he became emaciated and died. At the *post-mortem* examination the membranes were opaque and very much thickened, and there was great excess of cerebro-spinal fluid.

It is an extraordinary circumstance that Bayle in his search through medical literature for illustrations of the combination of paralysis and insanity, with chronic meningitis, should have overlooked this striking case. As a reader of Pinel's treatise, the existence of Haslam's book must have been well known to him. It must be assumed, then, that in spite of the fact that he quoted on the title-page of his thesis five lines from the poem by Sir John Armstrong, M.D.Edin. (1709–1779), on "The Art of Preserving Health," he was not so familiar with the English language as Pinel, who translated the medical works of Prof. Cullen of Edinburgh University. Further, this failure to quote Haslam even so late as 1826 indicates how completely his observations had been overlooked, and demonstrates conclusively that the discovery of general paralysis by the French alienists was of quite independent origin.

In addition to giving us a description of a typical case, Haslam made certain deductions of an original nature regarding paralysis. Firstly, he observed the frequency of the association of paralysis and insanity, whether as cause or effect (note, p. 208). Secondly, he pointed out, many years before Bayle, the association of extreme feebleness of body with feelings of well-being, of elation and of pride; and thirdly, he recognised the seriousness of the prognosis in such cases.

The passages in which the above opinions are expressed are quoted, and the additions made in the second edition, published in 1809, are enclosed in brackets to show the development of his ideas:

"Paralytic affections are a much more frequent cause of insanity than has been commonly supposed [and they are also a very common effect of madness; more maniacs die of hemiplegia and apoplexy than from any other disease]. In those affected from this cause, we are, on enquiry, enabled to trace a sudden affection, or fit, to have preceded the disease. These patients usually bear marks of such affection, independently of their insanity: the speech is impeded, and the mouth drawn aside; an arm, or leg, is more or less deprived of its capability of being moved by the will, and in most of them the memory is par-

ticularly impaired. [Persons thus disordered are in general not at all sensible of being so affected. When so feeble as scarcely to be able to stand, they commonly say that they feel perfectly strong, and capable of great exertions. However pitiable these objects may be to the feeling spectator, yet it is fortunate for the condition of the sufferer that his pride and pretensions are usually exalted in proportion to the degradation of the calamity which afflicts him.] Very few [none] of these cases [patients] have received any benefit in the hospital; and from the enquiries I have been able to make at the private mad-houses, where they have been afterwards confined, it has appeared that they have either died suddenly, from apoplexy, or have had repeated fits, from the effects of which they have sunk into a stupid state, and gradually dwindled away" (p. 259).

Further, in an age when the pathology of insanity was at a very low ebb, judging by the views of Pinel, Haslam's belief that madness was always connected with disease of the brain and of its membranes is worthy of quotation :

"From the preceding dissections of insane persons, it may be inferred that madness has always been connected with disease of the brain and of its membranes. These cases have not been selected from a variety of others, but comprise the entire number which have fallen under my observation. Having no particular theory to build up, they have been related purely for the advancement of science and of truth."

Lastly, I cannot refrain from adding the following testimony to his personal worth by the great Pinel : "The character of a Superintendent," he writes, "who is in the habit of discharging the important duties of his office with integrity, dignity and humanity, is itself a circumstance of great weight and influence in an establishment for the treatment of mental disease." He cites three instances from England of the truth of this remark : Willis, who treated King George III ; Fowler, whose name is preserved in "Fowler's solution," the first Visiting Physician of the Retreat at York; and finally Haslam, the Apothecary of Bethlem Hospital.

#### 1804. JOSEPH MASON COX.

There is one other English author to whom I must refer, namely Joseph Mason Cox, M.D., of Fishponds Asylum, near Bristol. Georget, one of the great French pioneers in the discovery of general paralysis, in his article—"Folie"—in the *Dictionary of Medicine*, published in 1824, writing of the seriousness of paralysis in mental disease, quotes as authorities for this statement the names of Esquirol, Cox, and Haslam. If placed in their order of priority these names should be reversed, as Cox wrote regarding paralysis in his *Practical Obser-*

*vations on Insanity* in 1804, and Esquirol not till the following year. The paragraph referred to is as follows :

“ Paralysis, hemiplegia and diseases of this class supervening may be reckoned among the unfavourable occurrences ; in these cases the system is rendered insensible to the action of medicinal agents and the unhappy patient too frequently sinks into fatuity—a state which does not admit of even a ray of hope, and to which death itself is preferable ” (p. 31).

To Cox also belongs the honour of being perhaps the first to observe the Argyll-Robertson phenomenon. He writes : “ In a few instances I have observed the retina almost insensitive when no other symptom of anæsthesia was present ; and on submitting the pupils to a similar degree of light, they have contracted unequally. These are rare but ominous occurrences and always render the prognosis unfavourable ” (p. 28).

#### FRANCE.

We must now transport ourselves to the capital of France, where this medical drama is enacted during the height of the Napoleonic era and the years immediately following it. The clinical symptoms of general paralysis were there again discovered independently by Esquirol, and were studied by him, his pupils and others for nearly twenty years. Anatomical pathology then attracted attention. Finally, in 1826, Bayle and Calmeil gave us a complete account of the symptoms, the course and the naked-eye pathology of general paralysis, to which only details have been added during a hundred years. These researches circling round the discovery of general paralysis reveal a wonderful scene of scientific enthusiasm and perseverance crowned with complete success in which old and young played their respective parts most creditably.

Justice cannot be done to those who helped to discover general paralysis without bringing in the name of the great Pinel, even though his share in this work was mainly indirect. It was Pinel who advocated a study of the symptoms of insanity on strictly scientific lines. He insisted on a daily medical visitation of the patients, on a careful examination of their symptoms and on a record of the course of their illness. He regarded the insane as human beings who were sick, and treated them with the greatest consideration and kindness. Under conditions such as these the discovery of the symptoms of general paralysis was bound to follow, and this was soon effected by his greatest pupil, Esquirol.

In the second place, Paris was fortunately situated for this discovery by the presence there of three large mental hospitals—Bicêtre for men of the poorer classes, La Salpêtrière for women, and the Maison Royale



of Charenton for rich and poor of both sexes, and particularly for men who had been in the army. The symptoms of general paralysis are so striking that a great number of similar cases thus collected together could scarcely be overlooked when Pinel's methods of caring for the insane were adopted.

Lastly the Napoleonic Wars produced so large a harvest of cases of general paralysis, that it was recognised from the beginning that soldiers were prone to suffer from this disease. The soldiers of Napoleon had marched through almost every country in Europe, and many were infected with syphilis. This was, however, so common that neither Bayle nor Calmeil dared to regard it as the cause of general paralysis. They attributed it rather to the excesses, alcoholic and venereal, and to the supreme efforts and anxieties followed by exhaustion that formed the lot of a soldier in the marvellous campaigns of Napoleon.

#### 1805-14. ESQUIROL AND PINEL.

The first person in France to record the existence of paralysis among insane persons was Esquirol in his thesis on "The Emotions, considered as Causes, Symptoms, and Means of Treatment in Insanity," presented in 1805. He did not say, as was alleged by Dr. Burrows, that paralysis was the effect and not the cause of insanity, but simply that paralysis was a common complication of insanity, and that when it was present it added to the seriousness of the prognosis. Esquirol asserts that these two observations attracted the attention of physicians, and of those making a special study of the pathological anatomy of mental disease.

Pinel next referred to this subject in 1812 in an article ("Adynamie") in the *Dictionary of Medical Sciences*, and again in 1813 in the account of mania given in his *Nosographie Philosophique*. These references are almost identical in language, and I quote the former :

"The condition of powerlessness is also seen in a form not less intense, which often ends fatally ; this occurs in certain special cases of low nervous fever, about which little as yet is known, and it is especially noticeable in public lunatic asylums, because of the complication of mania or dementia with the paralysis. A more or less violent maniacal agitation or a protracted silent delirium is succeeded by incipient paralysis. The patient avoids moving, and the lower limbs gradually lose their agility ; finally he is obliged to keep in bed, and also loses the power of his arms ; a continuous febrile condition then ensues marked by paroxysms or attacks twice daily, morning and evening, with flushed face, a viscous sweat, and dreams more or less terrifying.

"The paralysis increases, the muscles involved in chewing can

scarcely be contracted, swallowing and articulation become more and more difficult, patches of gangrene appear in different parts of the body, and these are the heralds of approaching death."

At this date Pinel had been engaged for nearly twenty years in the study of mental disease, and he must have seen many cases of general paralysis. Although the occurrence of paralysis in insanity was noted by him, as well as the unfavourable prognosis produced by this complication, the differentiation of general paralysis from other forms had not been achieved by him.

In the following year, 1814, Esquirol wrote the article on Dementia in the *Dictionary of Medical Sciences*. His references to paralysis are scattered through this article, but it will be found that his ideas were clearer, and his conception was nearer to the actual truth than that of Pinel :

"When paralysis is a complication of dementia, all the paralytic symptoms appear one after the other ; first of all the articulation of sounds is laboured ; soon after locomotion is made with difficulty ; finally there is loss of control of excretions, etc. All these epiphenomena must not be confused with the symptoms that characterise dementia, any more than the signs of scrofula, which often complicate that illness, can be taken for it."

"*Complicated types.*—Dementia with complications ought to conform to the three preceding types. It is complicated with melancholia, mania, epilepsy, convulsions, scrofula, and above all paralysis.

"This type is incurable. Hippocrates has pointed out, as a fatal sign in acute illnesses, the complication of madness with any kind of convulsion. What the Father of Medicine has said with regard to acute illnesses is applicable to dementia, since the complication of dementia with convulsions, epilepsy and paralysis resists all curative means, and excludes hope of a long existence."

However imperfect this account of the symptoms of general paralysis may be, there are good reasons for believing that Esquirol was already, or was soon after, able to diagnose the condition with certainty. In the year 1819, for example, he took for a time the place of Pariset at the Bicêtre, where only male patients were treated, and at once discovered that the number of cases of insanity complicated with paralysis was much greater among males than among females, who alone were treated by him at La Salpêtrière. These, of course, must have been cases of general paralysis.

Esquirol was appointed a full physician of the Salpêtrière in 1812. He was a man of extraordinary energy and great force of character. He was a facile speaker and attracted crowds of students. In 1817 he commenced the first course of lectures on mental diseases given in any medical school, and in the following year he founded an annual

prize for an essay on a subject connected with insanity, which is still competed for. More than all this, there have been few teachers who have inspired their pupils with a greater enthusiasm for their work.

## 1820. GEORGET.

Among his *internes* at the Salpêtrière was a young man named Georget, afterwards an intimate friend of his, who in 1820, when twenty-five years old, published a book entitled *De la Folie*, which contains the most complete clinical picture of general paralysis given by any of the precursors of Bayle. It is as follows :

## CHRONIC MUSCULAR PARALYSIS.

“Chronic muscular paralysis is much more common and also more lingering than acute paralysis. It sometimes coincides with the development of insanity in people between 45 and 55 or 60 years of age, and shows that such insanity is incurable ; more often it does not appear till the second or third year or later. At its onset it is usually gradual and partial ; later on it becomes general and absolute. Its progress is marked by continual degeneration and finally by complete loss of the mental powers.

“Its course from the beginning of the disease to the patient’s death may be divided into three stages.

“*First stage.*—The paralysis nearly always begins by affecting the muscles of the tongue ; very often it is confined to that area before spreading elsewhere. The patient experiences difficulty in speaking, articulation is imperfect or slow, stammering is frequent ; if the tongue be put out it cannot be moved more to one side than another and seems generally affected. Other phenomena soon appear.

“If the patient can give an account of his sensations, he complains of feeling, either on one side or on both, numbness of the limbs, tingling in the hands and feet and all along the nervous tracts ; pains in the head, mainly general, sometimes very circumscribed, and commonly on the opposite side of the paralysed one, but occasionally on the same side. Movements become slower and more difficult until the patient entirely loses the power of his limbs on one side. All the other functions are unimpaired, the digestion is particularly good, the patient loses no weight. This first stage may last a very long time, indeed for several years, without any apparent change in the general health of the patient.

“*Second stage.*—The patient is completely paralysed on one side of the body or on both ; he can no longer walk or stand, he must always be kept lying down. He can barely articulate, and what he can say is of no account as his intelligence is gone.

“He still gains in weight and digests his food well.

"The symptoms I have mentioned in chronic irritation are now usually manifested; the pulse is quick and wiry, in the afternoon the cheeks are flushed, there is considerable thirst. This stage usually lasts from a few months to a year or more.

"*Third degree.*—This stage includes the last month of existence. It is marked by the increase of the paralysis so that the patient becomes a mere inert mass. He loses colour and grows pale and thin. The appetite fails, looseness or stubborn constipation sets in, and at last death quickly terminates the painful scene.

"The intelligence is *nil*; paralytics sometimes remain for a year or two without uttering a single word, even to ask for what is necessary. Chronic paralysis, beginning with the symptoms I have mentioned in the first stage, especially if it is first developed on one side only, is almost always the result of softening of the brain. When it is general from the beginning the origin is more particularly in the spinal column.

"Paralysis of the insane is incurable. In the last stage of the malady it is necessary to keep the patient in a bed shaped like a trough, so that he may be prevented from falling out."

There are many points to be noted in this account. In the first place the disease is now for the first time given a definite name, and is called "chronic muscular paralysis." Secondly, the amount of detail has increased, and it may be surmised that the observations of Esquirol, who was now giving lectures, are incorporated in this description. Thirdly, the course of the disease is divided for the first time into three degrees or stages, beginning with difficulty of articulation, and not ending till the patient becomes a "mere inert mass." The limits of the disease are, however, still vague and inaccurate, and some of the symptoms described are those which follow apoplexy.

#### PATHOLOGICAL ANATOMY.

The next phase in the discovery of general paralysis deals largely with its pathological anatomy. Although no two men had done more in the preliminary stages than Pinel and Esquirol to uncover the mystery that hid general paralysis, neither of them was specially disposed to encourage research into its pathological anatomy. Pinel in 1800, in the first edition of his book on insanity, scarcely touches on pathology. When the second edition was published in 1809 the subject again received little notice, but a significant observation now appeared. He re-inserted the introduction to the first edition, after it had been severely re-edited, and he started off with the following remarks, which did not appear in the first edition—a feature which adds to their importance:

"When making mental disease a special object of research, it

would be following a bad course to commit one's self to vague discussions on the seat of the mind and the nature of its various lesions. Nothing is more obscure and impenetrable " (p. ix).

Further on he writes : " It seems that the primitive seat of insanity is generally in the region of the stomach and intestines, and it is from that centre that the disorder of the intelligence propagates itself, as by a species of irradiation " (p. 142).

This quotation will please those who believe in intestinal intoxication, but it did not encourage a study of the pathological anatomy of the brain in the year 1809. The doctrine it was founded on was that known as " sympathy," in which Esquirol was also a believer. It must, however, be placed to Esquirol's credit in any account of the pathology of general paralysis, that if he professed to know little or nothing of the pathology of mental symptoms and diseases such as delirium or dementia, he thought as early as 1814 that the pathological changes of the brain and its membranes occasionally found after death in the insane were due to the complications of insanity, such as convulsions and paralysis. The following passages are from his article on dementia :

" The dura mater is often adherent, either to the vertex or to the base of the cranium ; it is sometimes thick, and frequently its distended vessels injected. The inner side of the dura mater is covered with a membranous layer as if the fibrine of the extravasated blood has there spread itself out in the form of a membrane ; there are almost always present between the arachnoid and the pia mater serous or albuminous effusions, which cover and almost conceal the convolutions. Serous effusions at the base of the cranium are usual, and they are almost always present in the ventricles of the brain. Are these not the effects of the illness or death ?"

" If I were asked what is the seat of dementia, I would answer that it is as unknown to me as that of mental derangement (*délire*) in general."

" The opening of the body teaches us nothing with regard to this, and all the organic alterations of the brain belong less to insanity than to its complications. I possess many observations on anatomical pathology, which, compared with the history of the illness, prove that madness existed before any organic lesion of the brain, and that when the organic lesion took place, it showed itself by convulsions or paralysis, which are present as complications."

#### 1820. FOVILLE AND DELAYE.

About this time two young men named Achille Foville and J. B. Delaye were working under Pariset, who had charge of insane male patients at the Bicêtre. They also came under the influence of Rostan, who was an enthusiastic pathologist of the nervous system. They

interested themselves in the pathological anatomy of insanity, and worked to such good purpose that in 1820 they won Esquirol's prize for an essay "On the Causes and the Seat of Mental Diseases."

It is unfortunate that this memoir was never printed, but we have some knowledge of its contents, as Rostan quoted the work of his two former pupils in the second edition of his book, *Researches on Softening of the Brain*, published in 1823.

At that time the functions of the brain were little known, but the views of Gall and Spurzheim had directed the attention of some medical men to the problem of the localisation of function in that organ. Foville and Delaye came to the conclusion that the grey matter of the convolutions was the organ of intelligence, and that the white matter and the basal ganglia presided over locomotion. They compared these two regions of the brain in many different affections in order to see if it was possible to correlate any alterations found in them with the symptoms exhibited during life.

"This comparison brought to their notice that in all cases where there had been intellectual disorder up to the time of death, the cortical substance of the brain was the seat of obvious change. Thus in the greater number of the insane they found sometimes more or less bright red mottling in the superficial grey matter; sometimes definite hardening or a remarkable softening of the same part, often partial adherences of the arachnoid to the surface of the brain, particularly in front; at other times similar adherences to the whole of the cortical substance so dense that in raising the arachnoid (membrane) a remarkable amount of the grey matter was brought away."

"In examining other simple cases of cerebral maladies, with phenomena exclusively related to movement, which show themselves in many extravasations of blood, softening, scirrhus degenerations or others, they saw that the seat of these maladies was always in the white matter or in the masses of deeply situated grey matter; and at all times when the intelligence has been preserved, the superficial grey matter does not participate in the disease. Finally in quite a number of diseases affecting at the same time the intelligence and the organs of locomotion, they notice concomitant alterations in both the grey and white matters" (Rostan, *Du Cerveau*, second edition, p. 251).

Among the diseases studied there must have been many cases of insanity complicated with paralysis, but in the quotations from the memoir made by Rostan, as well as by Georget and Scipio Pinel, there is no reference to any lesions believed to be distinctive of, and peculiar to, general paralysis. The changes in colour and consistence of the grey matter and the white, which they described minutely, were apparently common to all forms of insanity and of paralysis.

Too much has been made by some of the importance of the work of Foville and Delaye in 1820 in relation to general paralysis, but they were, with Bayle, among the first to contemplate the problem of insanity, including general paralysis, from the anatomical and pathological side, which finally played a most important part in the differentiation of the disease. Pinel and Esquirol, as already stated, believed in the "sympathetic" origin of mental disorders. Georget, almost with apologies to his two teachers, suggested that insanity was an "idiopathic" affection. Foville and Delaye, however, boldly asserted that mental disorders were due to an inflammatory affection of the grey matter and were "symptomatic," and that the disorders were not of the mind but of the brain, the organ of the mind. Scipio Pinel carried their views in 1833 to their logical conclusion, for he divided insanity into four forms of cerebritis, namely, acute, chronic, partial, and sympathetic, instead of into mania, melancholia, etc.

## 1823. GEORGET.

It is convenient at this stage to depart from the strict chronological order hitherto followed by omitting meantime Bayle's thesis, which appeared in 1822. In its place we will first refer to two later accounts of general paralysis written by Georget and Delaye in 1823 and 1824 respectively. The quotation from Georget is from the article "Folie" in the *Dictionary of Medicine* :

"The weakening of the mental faculties terminates by being accompanied, in the majority of the insane, by a state of muscular paralysis more or less general in extent. The first muscles which show this symptom are those of the tongue; the patients have embarrassment of speech at first, so slight that one must be very expert to notice it. Even at the stage when the speech impairment is very marked they are still able to employ all their other muscles with sufficient freedom. However, all their other movements are becoming weaker. They walk unsteadily and with difficulty. They hold themselves bending forward. Finally, in course of time, their legs cannot carry them any longer, their arms move with difficulty, and the tongue is no longer capable of articulating words, and the patients remain continually seated or lying down. But on the whole the movements of the eyes, of the eyelids, of the muscles of mastication, deglutition and respiration preserve their actions. Finally, the sphincters of the bladder and the rectum do not retain the urine in the bladder nor the faecal matter in the rectum. Often one side of the body is more paralysed and enfeebled than the other, but one hardly ever comes across a definite hemiplegia. One sees these paralytics drink, eat, sleep, acquire an appearance of well-being and of (apparent) health, keeping in touch with their surroundings by

means of a few isolated sensations. Sooner or later, however, the morbid work of the brain progresses; the patient develops some congestive attacks of an apoplectiform nature with recurrences at varying intervals, under which he may finally succumb; or it may happen that chronic affection of the brain leads on slowly and progressively to marasmus and death" (p. 255).

This description by Georget, published three years after his first account, and after Bayle's thesis had appeared, while still very incomplete so far as the mental symptoms and the pathological changes are concerned, is well constructed, and supplies us with a perfectly accurate clinical picture of the motor signs of the disease. The advance made in the three years, 1820 to 1823, is the most striking feature of this account.

#### 1824. DELAYE.

Delaye's thesis, entitled, "Considerations on a Species of Paralysis which affects the Insane particularly," was published in 1824, and gives us, according to Baillarger, the final views of Esquirol and his school on its clinical aspects, together with Delaye's personal views of its pathology, concerning which the following passages deal:

"In the fairly large number of cases that I have observed, I have most frequently found the white substance obviously hardened, or the meninges infiltrated and adherent to the surface of the brain, which had then little firmness, or finally the cerebral substance compressed and diminished in volume and a large quantity of serous fluid filling the ventricles and the interstices of the convolutions. A notable diminution in the firmness of the brain produces thus incomplete paralysis. This diminution of firmness must not be confused with the disease known under the name of 'softening' (*ramollissement*). It is not rare to come across a mixture of the hardening and this general softening. . . . In this case the brain appears soft to the touch, while it offers a great resistance to the bistoury . . . the softening or this hardening is often accompanied with adhesion of the meninges to the brain; but I am far from saying that this complication is constant.

"One therefore would be wrong to regard the state of the arachnoid as the cause of the alterations of the movements. I am, however, far from maintaining that the diseases of the arachnoid have no influence on the functions of the brain . . . but it would be going too far, when one came across a diseased brain, to attribute the disorder of its functions to a disease of the arachnoid."

It is said that Delaye commenced to write this thesis on general paralysis in 1820, but for one reason or another it was not presented till 1824. In the meantime, in 1822, Bayle's thesis had appeared,



and Delaye certainly made a very careful study of this publication. It is therefore impossible to say now to what extent he was or was not indebted to Bayle for developing his ideas, for confirming his observations, and for suggesting the outlines of the clinical picture which he presents.

There are two important differences in their views. Delaye believed that a particular modification of the white matter of the brain was the organic alteration that produced paralysis, whereas Bayle thought that the primary change was in the meninges. Secondly, as pointed out by Baillarger, while Delaye followed Bayle's description of the progress of the symptoms of the disease, and accurately quoted the motor signs, he has carefully eliminated any reference to the mental symptoms, as if such did not form part of the symptoms of the disease. In this respect he followed the teaching of Esquirol.

Finally Delaye was the first to employ the term "general paralysis" as a name for the disease, which has since come to be universally adopted. Delaye does not use this name as if its application by him was something new, but on the contrary implies by his language that it was employed before him. Baillarger, who pointed this out, asks the question who was it that created the term? It is possible the name first crept into colloquial use in the wards, for it was not unfamiliar in those days. In the *Dictionary of Medical Sciences* paralysis is divided into the following varieties—"general or universal paralysis, hemiplegia, paraplegia, and partial or local paralysis." It is also distinguished as "complete or incomplete."

The terms "paralysie générale et incomplete" were thus already in common use at the time, for even Bayle, two years earlier than Delaye, had employed these identical words when describing the symptoms in his thesis.

#### 1822. A. L. J. BAYLE.

We now come to Bayle, by whom the edifice, thus steadily if slowly being built up, was completed. He came to Paris to study medicine in the fateful year 1815, when only sixteen years of age. His uncle, G. L. Bayle, was then one of the most distinguished and cultured medical men in Paris. Through his influence, after being assistant in the first place to his friend Laennec, he was appointed an *interne* under Royer-Collard at the Maison Royale of Charenton, an appointment which suited his purse as well as his inclination for hard work. In facing the problem of mental diseases, Bayle came at once to the conclusion that their solution depended upon anatomical and pathological researches, and he performed as many *post-mortem* examinations on the insane as he possibly could—as a matter of fact over 400. It is not difficult to trace the origin of this conviction and this enthusiasm

for pathology in so young a man. His uncle, G. L. Bayle, perhaps more than any other physician of his time, recognised the importance of anatomical pathology. He was an accepted authority and was selected on that account to write the article on this subject in the great Dictionary. He and Laennec between them had laid the foundations of the pathology of the lungs. Although he died in 1816 very much affected by the political events of the previous year, he had already influenced the mind of his nephew, who, in recognition of this, six years later dedicated his thesis to the memory of his uncle, as well as to his chief, Royer-Collard.

I now quote the following passages from the *résumé* of his observations on general paralysis as given in his thesis :

“ My aim in publishing the above observations has been to throw some light on the nature of mental disorders, by demonstrating that chronic arachnitis is the cause of a symptomatic type of insanity, confused up till now with idiopathic insanity.

“ The anatomical characters of that chronic inflammation are—opacity of the arachnoid ; its thickness, which may be slight enough or may equal or even exceed the thickness of a sheet of parchment ; an increase of adhesiveness and strength, which may be of very varying degrees, and which is sometimes so considerable that the membrane resists efforts to tear it and bears the weight of the whole brain without rupture ; the extravasation of a large quantity of serous fluid which collects at the base of the cranium, infiltrates the tissue of the pia mater and accumulates in the lateral ventricles, which it may distend beyond its natural boundaries, thus causing a symptomatic hydrocephalus ; fairly often the adherence of the arachnoid to itself and to the outer surface of the cerebral cortex to a more or less considerable extent ; pretty frequently injection of the pia mater and thickening of the ventricular arachnoid, upon which one sees very fine granulations, perceptible to the eye and sensible to the touch in a very small number of cases ; sometimes false membranes and rarely blood-clots between the two layers of the arachnoid.

“ The symptoms of chronic arachnitis may all be reduced to paralysis, general and incomplete, and to derangement of the intellectual faculties. These two orders of phenomena go hand in hand, and may make the illness divisible into three periods : (1) First of all pronunciation is sensibly embarrassed, gait shaky, disorder of judgment manifests itself by an enfeeblement of the intelligence, a monomania which more or less dominates the patient, and often by a more or less considerable state of exaltation. In the second period the movements of the tongue and limbs retain often the same embarrassment as in the first, or they become more difficult ; the insanity is maniacal and general, frequently accompanied by imperative ideas, there is

agitation, which varies in loquacity and restlessness, which causes patients continually to move about, and which may reach the stage of the most violent and uncontrollable fury. Finally the third period is characterised by a state of dementia, and by an increase of the general and incomplete paralysis; speech is stammering, trembling, very laboured, and sometimes unintelligible; gait is unsteady, very tottery or even impossible; excretions are passed involuntarily; the intelligence extremely enfeebled, only a small number of incoherent ideas being retained, which are sometimes vague and sometimes more or less fixed; most often the patient is calm, and from time to time there are periods of agitation more or less great. This period terminates sometimes by an almost complete paralysis of all voluntary movements and by a complete state of idiocy."

"I shall have attained the object, which I set before me, if this part of my work proves that chronic arachnitis exists and that it is the cause of a symptomatic mental disorder."

Bayle has given us here a description and a conception of general paralysis which approximates in its essential features to our present-day views of that disease. The account is richer in detail than any which had preceded it; the symptoms, even those that were known before, are described with greater exactness; there is a masterly analysis of the course of the disease; finally the naked-eye pathological anatomy is so accurate that it would enable us to diagnose the disease on the *post-mortem* table. He further introduced congestive and convulsive seizures into the clinical picture, which, although observed before by others, were not regarded before as a symptom of the disease.

#### THREE ORIGINAL FEATURES.

There were three original features in Bayle's account of general paralysis. In the first place he has given us an entirely new conception of the disease by co-relating the mental derangement and the paralysis. These two orders of phenomena, he said, were the associated symptoms of one disease, and what is more, they progress on parallel lines through all its stages. According to Esquirol, on the other hand, they were separate and indicated two quite distinct diseases. Paralysis, said he, was a complication of insanity, and the symptoms of paralysis ought no more to be confounded with those of dementia than the signs of scurvy. The pupils of Esquirol naturally held the same views on this point as their great master. According to Georget, paralysis was only a complication of insanity in the same sense as phthisis was, though he had noted that when established it had an effect on the course of the mental symptoms. "Its progress," said

he, " was accompanied by a gradual diminution and finally by a total loss of the intellectual functions " (p. 470).

Delaye also regarded general paralysis as a purely motor disorder, a special form of paralysis which affected the insane particularly. It occurred among them, he believed, more often than in any other class, and more frequently in certain forms of insanity than in others. He, however, excluded all mental phenomena from his account of the symptoms of general paralysis.

Three years after the publication of his thesis Bayle again emphasised the existence of the mental symptoms as a component part of general paralysis by describing the exact forms of mental disorder which usually occurred. These were a state of exaltation, a monomania of grandeur with delusions of wealth, and an enfeeblement of the mind. " The patient believes all of a sudden," he said, " that he is rich, is an important personage, is covered with decorations and possesses titles."

In the second place Bayle gave us an accurate and almost complete description of the pathological anatomy of general paralysis. He states that in 1818, soon after going to Charenton, he was struck by the frequency with which he found the meninges affected in insanity, and he further believed that these changes were frequently related to a particular variety of mental disorder. In his thesis he called this inflammation of the meninges chronic arachnitis. He did not then regard it as an affection of the pia mater, because the adhesions to the cortex were restricted to the convexities of the convolutions where the pia mater was little in evidence, and they did not occur at all in the sulci, where it was present in its largest amount. Afterwards he concluded that inflammation might also exist in the pia mater, and so to include both conditions he changed the name in 1825 to " chronic meningitis." At a later stage of the disease he believed that the inflammation spread from the pia arachnoid to the grey matter of the brain, and produced some softening of its outer layer. Finally, he thought that a great effusion of cerebro-spinal fluid took place, which caused symptoms of pressure. This was an idea still held by some so late as twenty-five years ago, and it then led to the operation of trephining in the treatment of general paralysis.

However wrong he may have been in his pathological theories, to Bayle belongs the credit of having given us the first accurate and detailed account of the naked-eye anatomical changes found in general paralysis. Atrophy of the convolutions, suggested by Delaye in his thesis, and described by Foville in his article on " Alienation " in 1829 in the *Dictionary of Medicine and Surgery*, seems to have been the only important sign that escaped his attention.

In the third place Bayle was the first to suggest that these associated

mental and motor symptoms and these pathological changes of the meninges and the brain were proofs of the presence of a definite disease—of a distinct pathological entity. Here again, whether his theories as to the nature of this disease were correct or not, his conclusion as to the existence of a special disease has been found to be true. He further gave this disease a definite name, selecting not a prominent symptom such as “muscular paralysis,” as Georget had done, or “general paralysis,” as Delaye did later, but what he believed to be its pathological foundation, “chronic arachnitis or meningitis.”

For these three reasons the credit belongs to Bayle of having brought to a successful conclusion the pioneer work of all his predecessors, and the French are justified in calling the disease—*La Maladie de Bayle*.

#### 1826. CALMEIL AND BAYLE.

The history of the discovery of general paralysis is not complete without reference to the year 1826. Bayle for particular reasons had felt himself compelled to publish in 1825 a brochure embodying his views, entitled *Nouvelle Doctrine des Maladies Mentales*. What the reasons were we may guess fairly correctly, for there appeared in 1826 a substantial book devoted entirely to general paralysis, and giving a most admirable account of the disease by a new author, a young physician named Calmeil, who had succeeded Bayle at Charenton.

Calmeil came to Paris in the year 1820, aged 22, and first studied under Rostan, the pathologist of the nervous system. He then worked for a time under Esquirol at the Salpêtrière, and finally became an *interne* at Charenton under Royer-Collard in 1823, the year in which Bayle left the service of that mental hospital. Calmeil, as became a pupil of Rostan, was a keen pathologist, and appears at once to have taken a great interest in general paralysis. He was encouraged in this by Royer-Collard, and but for the death of the latter at the end of 1825 the two might have collaborated in the production of this great work, *De la Paralytie considérée chez les Aliénés*.

In December, 1825, Royer-Collard was succeeded at Charenton by Esquirol, so Calmeil came again under the spell of this great master. He, however, possessed views of his own, or, on the other hand, these may have been the views of the school of Charenton, regarding the association of mental and physical symptoms in general paralysis. He gave an excellent analysis of the mental disorders associated with general paralysis, and even professed in some cases with grandiose delusions to have been able to diagnose the disease from mental symptoms alone before paralysis had set in. These were views which

had not been previously held by Esquirol or any of his pupils. The book deserves the highest praise and remains a classic. Although Calmeil was an *interne* in the same hospital as Bayle, under the same physician, and almost certainly studied many of the same cases, he never once refers to Bayle's thesis in his pages. To the brochure of 1825 he devotes three unfavourable references.

Bayle, however, was neither outdone nor forestalled by Calmeil. He also published in the same year, in spite of illness, his treatise on *Maladies of the Brain and its Membranes*. It also is a great classic, to which the Academy of Sciences awarded a special prize. The appearance in the same year of two such books as those of Bayle and Calmeil, both dealing with a newly discovered disease in so masterly a fashion, is unique in the history of medicine. And, although much has been written about general paralysis during a century, the disease is described in these two books so fully, so faithfully, and so convincingly, that future additions to our knowledge seem little more than details. No other book devoted to this subject alone was written for two generations afterwards, nor was any needed.

#### ROYER-COLLARD.

In this history of the discovery of general paralysis there was one man who played an important part, yet what it was remains mysterious and uncertain. This was Royer-Collard, Professor of Mental Diseases in Paris and Chief Physician at Charenton. Bayle and Calmeil both worked immediately under his eye. The former dedicates his thesis to him, and his treatise to his memory, and the latter states that he and Royer-Collard would have collaborated but for his untimely death. He had observed general paralysis carefully for many years, and we are told he had formed views about it. He confessed to Bayle, after Bayle's memoir of 1825 had appeared, that he himself for many years had also thought that general paralysis was due to an affection of the arachnoid. And just as Esquirol inspired his pupils and added to the public stock of knowledge by his courses of lectures, so Royer-Collard personally influenced the views of his two assistants, but to what extent and in what direction is unknown. The problem might conceivably have been solved had Calmeil not come under the influence of Esquirol when writing his book. Was the association together of the mental symptoms and the signs of paralysis Royer-Collard's contribution? This much, however, is certain, that it was from observations made at Charenton by two of Royer-Collard's assistants that the first complete accounts of general paralysis were given to the world. This great man, whose ability, energy and character were fully recognised during his lifetime,

would to-day be almost forgotten but for the grateful acknowledgments by these two assistants of his kindness and help to them in their work.

#### ANTAGONISM TO BAYLE.

That the appearance of the thesis of Bayle marked the critical and the culminating point in the history of the discovery of general paralysis is confirmed by the commotion it produced among his contemporaries. Pinel and Esquirol were the great leaders of psychiatry in those days. Originally teacher and pupil, they had become colleagues at the Salpêtrière, and the closest of friends. Alone each would have stood out as a giant in any medical school, but together they dominated the situation in mental medicine as no two men have ever done.

In the first place this young man of 23 had isolated a form of mental disorder which combined in its course, stages of monomania, mania and dementia, mental states which were regarded by Pinel and Esquirol as separate disorders. This proposal was a most disconcerting addition to their system of classification, and loosened the construction of the whole fabric they had designed.

Secondly, Bayle had boldly declared that this form of insanity was symptomatic, the result of inflammation of the meninges. Pinel and Esquirol, on the other hand, believed in the doctrine of sympathy, and did not admit that any visible change in the brain or its membranes was the cause of mental disorder, as this occurred without such changes.

Lastly, Bayle asserted that paralysis was one only of the two orders of symptoms of a definite disease, whereas Esquirol had taught for seventeen years that it was a thing apart and a mere complication of insanity. Esquirol was so determined upon this last point that he maintained an immovable attitude until his death in 1840. His pupils naturally supported their great teacher, and there is a suspicion that an antagonism to Bayle existed because he did not belong to the school of Esquirol. Georget wrote of his classic work when it appeared, which was honoured by the "Prix Montyon," that "This work is badly done; it is six times too long; the reading of it is as fatiguing as it can possibly be; some statements do not appear to us to be accurate; the greater part of the new ideas expressed by the author appear hypothetical and very improbable and his commentaries strike us as being feeble in the extreme" (*Archives de Médecine*, 1826).

Scipio Pinel in 1833 (*L'Homme Aliéné*) ostentatiously in an appendix attributed to J. P. Falret certain observations on meningitis, regardless of the fact that Bayle (p. xxiii) had preceded Falret, and that Falret had actually adopted Bayle's views. Jules Falret in 1855 (*Folie Paralytique*) writes that general paralysis was "first described

with great care in 1822 by M. Delaye, and in 1826 by M. Bayle." In a foot-note he again antedates Delaye's thesis two years, and ignores all Bayle's work previous to 1826. Trelat, in 1855 (*Annales Medico-Psychologiques*), again gave Delaye all the credit because he believed the idea of the symptomatic nature of mental and paralytic symptoms had entered Delaye's mind first, and because his thesis was wholly devoted to general paralysis, whereas only the first part of Bayle's thesis dealt with it. It is sad to think that Bayle died on March 27, 1858, thirty-six years after his thesis had been presented, without receiving full credit for his original observations. Not till 1860, when Baillarger carefully analysed in the *Annales Medico-Psychologiques* the nature of the work done by Bayle, was the exact part he played in the discovery of general paralysis clearly understood. Since then, however, he has come gloriously into his own. The disease has been called "La maladie de Bayle," and the centenary of the presentation of his thesis has been honoured by a large international conference held in Paris.

The amount of work done by Bayle between the ages of twenty-one and twenty-six was simply phenomenal. In addition to writing his thesis in 1822, and his brochure on *A New Doctrine of Mental Diseases* in 1825, he published three substantial works. These were *A Treatise on Diseases of the Brain and its Membranes*, *A Manual of Descriptive Anatomy*, and *A Manual of General Anatomy*. Besides these he issued five memoirs on "Hallucinations," on "Gout," on "The Nervous System," on "Paralysis," and on "Putrid Fever." After Royer-Collard's death Bayle drifted away from the study of mental diseases to general medicine, anatomy, the history of medicine, and to bibliography.

#### HASLAM, ESQUIROL, BAYLE.

Among many who contributed to the discovery of general paralysis, there are three figures which stand out prominently—Haslam, Esquirol and Bayle.

Haslam, who first described an actual case of the disease, who noted the association of the symptoms, but whose observations were completely overlooked for more than a generation.

Esquirol, who was the first in France to notice the symptom of paralysis, who early recognised its seriousness, and who year after year added to the knowledge about it. He was able to diagnose general paralysis with accuracy, for it is recorded that only three of his patients so diagnosed recovered.

The third is Bayle, who, as a result of his anatomical observations, was the first to form a conception of the pathological nature of the disease. By this additional and accurate means of confirming his



diagnosis he was able to define the exact limits of the disease, to add the mental symptoms and to complete the clinical picture with a sure hand. Let these three be thus honoured together : Haslam, Esquirol, Bayle !

Looking back a hundred years we see in the Paris School of Medicine a wonderful spectacle of great teachers and earnest students. Among the former there stand out Pinel, Esquirol, and Royer-Collard, and among the latter Georget, Foville, Delaye, Calmeil, and Bayle. They all worked hard, and they did not work in vain, for they assisted in drawing aside the veil that concealed the most terrible disease that afflicts humanity. Their successors, after a century, have discovered its cause. It remains for us living at the present day, inspired by their zeal, either to discover a remedy for it, or to prevent it altogether.

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*Infection in Mental Hospitals, with Special Reference to Floor Treatment.*<sup>(1)</sup> By B. H. SHAW, M.D., Medical Superintendent, County Mental Hospital, Stafford.

THE average mortality from tubercular disease in mental hospitals is over nine times that of the outside population, and as regards dysentery, which is rarely met with among the sane community in this country, the Board of Control state that "during the second half of 1921 some 728 persons were attacked by the disease in mental hospitals and of these 126 died." It is a most serious reflection that consequent on admission to a mental hospital a valuable life may be lost, such as, for instance, that of a young mother suffering from nervous shock after confinement, as a result of infection with one of these pathogenic organisms. It is therefore a matter of most urgent necessity that everything possible shall be done in order to eliminate dysentery from our mental hospitals and to reduce the mortality from tuberculosis; and now that the voluntary boarder principle is likely to be adopted for public mental hospitals it becomes more than ever necessary.

Dealing first with the vitality of the organisms in question, there is considerable variance in the statements of authorities as regards the vitality of the dysentery bacillus. Thus Ledingham and Arkwright (1) say—"the *B. dysenteriae* does not live well outside the body, being readily overpowered by other bacteria. Most experimenters (Lentz, 1909) have only noted survival for a few days on unsterilised

<sup>(1)</sup> A paper read at the Autumn Meeting of the Northern and Midland Division held at the County Mental Hospital, Stafford, October 26, 1922.