"14, Savile-row, July 14, 1849.

MY DEAR SIR,—I have read your paper on obstructions of the Fallopian tubes. I have no doubt of the practicability of the operation which you propose. Probably, in the present state of our knowledge, the principal difficulty will be to *distinguish* the cases to which it is applicable. The operation would be safe enough in gentle and cautious hands. But I suppose that the Fallopian tube would bear no rude treatment, and that the accidental perforation of it would be certainly fatal to the patient. This, however, is no more than may be said of the rectum, bladder, and even of the urethra. A clumsy operator may cause a rupture of the bladder with the lithotripsy forceps, and kill his patient, although this is an accident which never happens to one who has light hands, and who is skilled in the operation.

It would be well to ascertain whether the bougie or probe used is one which *may*, by any accident, be made to perforate the Fallopian tube. A silver sound or catheter *may* be pushed through the urethra, but a plastic bougie or elastic catheter cannot; and therefore I never hesitate to trust the patient himself with using the last-mentioned instruments, though I may hesitate to trust him with the former.

On the whole, I think that the inquiry which you have begun is well worthy of being pursued, and that it is not improbable that good will come out of it.—Always, dear Sir,
yours truly,

B. C. BRODIE.

To Dr. Tyler Smith."

I may mention, that since this date some Fallopian bougies have been made by Weiss, of fine whalebone and catgut, coated with gum, and of such fineness and flexibility as to render any injury to the uterus or tubes well nigh impossible.

My immediate purpose is with the practicability of operating upon the Fallopian tubes; but since I commenced the present investigation, I have been more and more convinced that the mechanical causes of sterility have been much underrated. Without any structural impediment in the generative canal, I believe that in mucous subjects, not only the clogging of the Fallopian tubes, but of the infundibuliform angles, and of the canal of the body and cervix uteri, must frequently exist to such an extent as to prevent impregnation.

NOTE.—In operating, the uterine sound should always be passed to the fundus uteri, in the first instance. I have had a sound made which answers much better, for all purposes for which this instrument is required, than the one in general use. The common sound is rounded and knobbed at the uterine extremity, and it is notched on its posterior surface, to enable the practitioner to measure, with the finger, the distance it has entered into the os uteri. Consequently it is generally used in the dark. I consider that the sound should seldom if ever be used blindly, and without the speculum. The adaptation of the present instrument for use by the unaided touch has led to serious mischief. Two unpublished cases have come to my knowledge, in which it has been thrust into the gravid uterus—the gravid uterus in one case being mistaken for retroversion. The sound, therefore, should be graduated on the anterior surface, so as to be used by sight as well as touch. I have had a further alteration made in the uterine extremity, the end being flattened instead of rounded. The uterine canal is flattened in the natural sound, and there is often a difficulty in passing the knob of the common sound through the os internum. On withdrawing it, a blood-stain is frequently observed upon the metal. This difficulty is lessened by having the sound flattened somewhat like the female catheter, to accommodate it to the flattened entrance and canal of the uterus. This necessity for a flattened instrument for the uterus is recognised in the construction of the intra-uterine pessary. I was led to adopt it in the sound from observing, that in some cases, when the knobbed sound passed only with considerable difficulty, the Fallopian catheter, equal to it in width, but not in depth, passed with greater readiness.

ON THE

ESSENTIAL PATHOLOGICAL CONDITIONS OF THE BRAIN IN INSANITY.

By EDWARD PALMER, M.D., Bow.

THE pathology of insanity, after standing for ages as a veiled image in the temple of science, bids fair to be stripped of its mystic vest by the industry and scientific research of the present day. The old belief in demoniacal agency and mysterious sympathies, which only rendered confusion more confusing, has happily given place to the more rational

method of studying morbid manifestations of mind in connexion with lesions found in the brain after death. Hitherto, the progress in this branch of pathology has been necessarily slow from the want of more accurate knowledge of the minute anatomy of the brain and nervous system, and of their functional relations to the healthy and morbid conditions of the blood. Added to this, the manifestations of mind have not been sufficiently regarded as the simple result of cerebral action, so that a superstitious hesitation and a too abstract philosophy have stayed the hand and perverted the thoughts that would search for purely physical causes of mental aberration. The perplexity of the subject has also been much increased by the published results of post-mortem examinations of the brains of idiots and lunatics, in which no defect or disease has been noticed, and by the record of some remarkable cases of injury and disease of the brain from which no obvious mental derangement resulted. Now, however, that the microscope is unfolding to our view intimate nervous structures which have hitherto laid in obscurity, chemistry showing to us the constituents of our fluids and solids both in health and disease, and comparative anatomy, vivisections and the more carefully observed phenomena of disease, affording us new facts, new views, and new probabilities, with regard to the proper functions of the brain, we may venture to correct many erroneous notions, reconcile many apparently contradictory facts, and reasonably hope to show, ere long, with what physical changes or defects the various forms of insanity are inseparably connected.

No evidence is wanting to prove that the vesicular neurine of the convolutions is the centre of the intellectual operations, and that, if it is not also the emotional centre, it is at least most intimately connected with it. Here, by means of some molecular changes, our sensations first become perceptions, impressions are fixed, and trains of thought are worked out in the various operations of imagination, abstraction, comparison, &c. This view of the seat of the intellect is held by nearly all great anatomists and physiologists, and may be regarded as a settled point. We have thus a strong light to guide us in the investigation of the pathology of mental diseases, and are led unhesitatingly and necessarily to refer all intellectual unsoundness, of whatever form or grade, to some deficiency of, or morbid molecular change in, the vesicular neurine of the convolutions. The remote causes of insanity may be either physical or moral, eccentric or centric, originating in other organs of the body, or operating immediately on the intellectual centre; but to whatever sources they may be traced, some disturbance of the healthy molecular changes on which the nutrition and functions of the cortical grey matter depend must be presupposed before insanity can be admitted.

The appearances which have come under my observation, in the post-mortem examinations of the brains of eighty-two lunatics are quite in harmony with these views, not one case having been met with in which there was not distinct lesion of this portion of the grey matter. Cases of insanity may, and no doubt do occur, in which no traces of cerebral disease are discoverable after death, but this cannot be received as evidence that such disease did not exist during life, and was operating as the immediate cause of the mental aberration. What post-mortem traces of the hectic flush, or of some of the exanthematous diseases, are perceptible even to the acutest ken? On the other hand, how much self-examination and study are required to know, even roughly, the absolute and relative powers of one's own faculties and feelings! How many of the intellectual and moral powers lie, as it were, dormant, and unknown to the individual himself, until some accidental train of thought, or some new emotion, rouses them into activity. And how many, again, are in daily operation, without having received special attention. If, then, so much difficulty besets the acquirement of self knowledge, who can possibly become so intimately acquainted with every phase of the mental powers of another, as to be enabled to assert that no alteration has taken place in them after the intellectual centre has been injured by accident or disease? Man must be compared with himself as well as with his fellows, and all that can be conceded as true in such assertions is, that the mental powers are not impaired to a degree appreciable to the observer's knowledge of their previous manifestation.

Out of the whole number of post-mortem examinations of the insane, which I have made during the last five years, not a single instance has occurred in which most indubitable evidence of structural lesion of the cortical grey matter has not been found; associated in most cases with other morbid conditions of the brain or other viscera which had their corresponding symptoms during life, but always bearing a direct ratio to the extent of mental aberration. Various degrees

of defective development, anæmia, atrophy, &c., of the cortical matter are commonly met with, but the most striking and apparently specific lesion in insanity is asthenic inflammatory degeneration of this substance, to which may probably be referred all the alterations in its colour and consistence noticed from time to time by various writers. It proceeds from without in an inward direction, commencing immediately beneath the pia mater, and advancing until the entire thickness of the cortical matter is involved. On different parts of the hemispheres it may be observed in different stages of its progress, but is always more definitely marked about the apex of the posterior lobes, in the posterior part of the convolution, described by Solly (from Foville) as the great convolution of the second order. It is also often observed in the middle lobes, and occasionally, but less distinctly, in the frontal lobes. On minute examination, a well-defined line is perceived to intervene between the outer degenerated portion, which has already succumbed to the inflammatory action, and is of a pale, ash-grey colour, without any appearance of vascularity; and the inner, which is of a full, brownish, pink hue, highly injected, and distinctly undergoing the inflammatory process. Opportunity of satisfactorily bringing these structures under the microscope has not yet occurred to me, but I have no doubt that complete disorganization of the vesicular neurine would be found in the ash-grey layer. The accompanying drawing was made from a preparation which had been a day or two in spirit, and although defective in colour, sufficiently indicates the general character of the disease in a progressive

state. It is from a slice of one of the posterior lobes of a case of chronic mania, in which the disease was progressing at the time of death, the cause of death being chronic muco-enteritis. *A*, shows the already disorganized portion; *B*, the portion undergoing inflammation. Here it may be remarked that insanity—i.e., disease of the convolutional grey matter, has not of itself a fatal tendency, but that death usually results from some previously existing, associated, or induced disease of other portions of the cerebral mass, or of other organs. The nutrition of the cortical matter is often primarily disturbed by the influence of morbid blood circulating through it, and as often by the influence of distant visceral disease, conveyed to it through the medium of the sympathetic, grey matter of the cord, olivary columns, sensory tract, and radiating fibres of the hemispheres. We have also frequently just the reverse taking place—viz., the cause of the intellectual disturbance being purely moral, the quantity and quality of the secretions, and the process of nutrition generally, may be morbidly altered, so that the blood becomes changed in its properties, and vital organs impaired in their power of resisting morbid impressions. Both of these conditions are of common occurrence, and constitute distinct varieties of insanity in regard to symptoms, prognosis, and treatment, although the cortical matter probably undergoes the same change in each of them.

From the known effects of continued stimulus applied to organized animal tissues generally, it is to be inferred that this disorganization of the cortical matter must be preceded by stages of increased irritability and erethism. These are,

indeed, clearly marked in the mental symptoms, but the physical appearances of erethism are evanescent, and frequently not to be seen in post-mortem examinations, whether of the brain or any other organ, although indications of its presence were very evident during life. Those cases of insanity in which the brain is reported to have been to all appearances healthy must have died in the erethismic stage, if the inflammatory degeneration already described were not present.

Every one is familiar with the acuteness of perception, easy flow of ideas, and geniality of feeling resulting from the healthy stimulation of the brain by mental labour, or the varied and agreeable impressions of cheerful society. Some also know but too well how prone the sleepless night is to follow the too long burnt lamp, and to accompany the still reverberating echoes of the fine chorus, or the lasting vibrations of some powerfully agitating emotion. The former are the results of the cortical matter under moderate excitement, and within the bounds of health; in the latter, morbid irritability is present, and the first step towards insanity is made. The gloom of the hypochondriac, the flattering hope of the marked victim of phthisis, and the irascibility of the gouty sexagenarian, are examples of morbid irritability from physical causes which often lay the foundation of insanity. If the causes of this undue irritability, whether physical or moral, continue long in operation, erethism of the cortical matter is induced, which, if largely diffused, evidences itself in general insanity, if limited in extent, in partial insanity. This condition of the cortical matter being prolonged, or often excited, gives rise to the slow inflammatory process before described, which is always intimately associated with disease of its nutrient membrane, the pia mater.

Watchfulness, and a rapid flow of ideas, with emotions not readily under control, are the most prominent mental phenomena of the first stage, that of undue irritability of the grey matter. In the second stage, that of erethism, (also the stage of invasion,) a rapid succession of illusions and false perceptions, and their quick obliteration, are the most salient features. These, however, are always in proportion to the amount of cortical matter implicated. As structural lesions take place the illusions and perversities of character become less transitory, and are more or less numerous in proportion to the superficial extent of the disorganization, and more or less permanent and complete in proportion to the depth to which the cortical matter is diseased. This constitutes chronic insanity, which, when the inflammatory action ceases, (as is often the case,) may be termed fixed chronic insanity, in contradistinction to the still-extending disease, which may be designated progressive chronic insanity. These forms are very distinct in symptoms as well as in the treatment required. In the former, there are certain fixed delusions and oddities of character, without the watchfulness, excitability, and hurry of ideas characteristic of erethism; in the latter, these fixed delusions are still prominent, but the indications of erethism are superadded. In the former, the general health may remain good for years; in the latter, the organic nervous system may soon become deranged, and the patient fall a victim to some abdominal or thoracic disease. At length, when the vesicular neurine of the convolutions is both extensively and deeply disorganized, the various grades of dementia, ending in a total obliteration of the mental faculties, supervene.

Another form of dementia, of an acute character, is sometimes observed to follow immediately on the erethismic stage, without passing through the grades of progressive chronic insanity. It is not unfavourable as regards prognosis, and is probably due to the capillaries relieving themselves from congestion by inter-vesicular effusion, (œdema of the grey matter,) and thus causing suspension of the intellectual functions by mechanical pressure of the vesicles.

Diminished nutrition and vital stimulus of the grey matter from imperfectly-filled capillaries produces simple delirium, (present in the course of many exhausting diseases,) but if long-continued, and especially if the blood is in an impoverished state, it also furnishes one of the pathological conditions of senile insanity.

It has not been sought, in the limits of this paper, to point out all the morbid conditions of the cortical matter in connexion with insanity; sufficient data are not yet obtained; but merely to show, that, to the extent of my observations, all mental aberration depends essentially and necessarily on perverted nutrition of this portion of the grey matter, and that whenever lesions of other parts of the brain or nervous system (producing epilepsy, paralysis, &c.) are associated with insanity, they can only be regarded as co-existing diseases, or at most as remote causes.

Grove Hall Asylum, Bow, 1849.