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TO CORRESPONDENTS.

Communications have been received from Mr. C. F. BARRETT, Mr. G. M. HUMPHRY, Dr. JAMES EDWARDS, Dr. R. C. R. JORDAN, Dr. MCINTYRE, Mr. MALLETT, Dr. G. P. MAY, Mr. PRIOR, Dr. SWAYNE, and Dr. S. THOMSON.

BOOKS RECEIVED. [** An Asterisk is prefixed to the names of Members of the Association.*] 1. WILSON (George, M.D.) Researches on Colour-Blindness. pp. 180. Edinburgh and London: 1855.

ORIGINAL COMMUNICATIONS.

LECTURES ON INSANITY, DELIVERED AT THE BRISTOL MEDICAL SCHOOL DURING THE SUMMER SESSION OF 1855.

By J. G. DAVEY, M.D.

LECTURE IV.

RECAPITULATION OF DISCREPANCIES IN THE PATHOLOGY OF INSANITY. NEUROPATHOLOGY. VIEWS OF DR. BILLING. OBJECTIONS OF PAGET, SIMON, AND WHARTON JONES. ORIGIN OF INSANITY IN THE VESICULAR NEURINE: SECONDARY NATURE OF VASCULAR CHANGES. TREATMENT OF IDIOPATHIC INSANITY. SYMPTOMATIC INSANITY. INSANITY FROM UTERINE DERANGEMENT. PUERPERAL INSANITY. TERMINATIONS OF INSANITY: IMPROVED TREATMENT OF LUNATICS. STATE OF LUNATIC ASYLUM IN CEYLON. STATISTICS OF RECOVERIES.

YOU will remember that I concluded my last lecture by pointing out the very palpable discrepancies to be found in the recorded opinions of Bayle, Calmeil, Prichard, Solly, and others. I referred you to the "new doctrine of mental diseases", as taught by Bayle, to the effect that the proximate cause of mania is to be found not in the brain, but in the membranes thereof. These, in cases of mental alienation, Bayle teaches, present signs of an increased vascularity, which is relieved either by an appropriate treatment, or by effusions into the sac of the arachnoid. In the one case, the patient is cured of his malady; in the other, there succeeds dementia, or paralysis. I drew your attention to the views of Calmeil, who wrote in direct opposition to Bayle, and with the view of proving his "new doctrine" unsound and irreconcileable with all the facts of the case. I told you that, according to Calmeil, mania is the direct effect of an inflammation of the cortical substance of the brain, which, if not remedied, leads to a "want of cohesion in the grey substance, the discolouration of which is a peculiar phenomenon." The many reasons assigned by him for rejecting the opinions of Bayle you will, perhaps, not have forgotten.

I instituted some comparison between the views of Calmeil and Foville, and demonstrated that those morbid appearances which the former restricted to the "general paralysis" of the insane, the latter associated with mental derangement (mania); and that, according to both Calmeil and Foville, the state of "the cortical substance of the brain" was of the first importance in inquiries of the kind which now engage our attention.

I endeavoured to impress on your minds the very extraordinary circumstance that Bayle, Calmeil, and Foville, have each of them assigned a distinct cause for the general paralysis which belongs to insanity; and that, moreover, these writers have each of them found a separate locality for this form of disease; thus Bayle locates "general paralysis" (primarily) in the meninges, Calmeil in the cortical substance of the brain, and Foville in the medullary (fibrous) or white substance of the cerebral mass.

I pointed out the varied results of the investigations of Drs. Conolly, Prichard, and Hitchman, and Mr. Solly, in so far as the colour of the cineritious neurine is concerned, and quoted from each of these writers, in order to shew you that whilst the first has described it, *i. e.*, the cortical substance of the brain, of a pale colour, the second has found it more brown than usual; the third says that the convolutions, if seen, would present a roseate hue; and the fourth, viz., Mr. Solly, declares the same to present (in the same disorder, viz., mania) a dark plum colour.

The concluding words of my last lecture promised an attempted explanation of the foregoing contradictions, and more even than this, a sanguine hope that the same may be made the means of demonstrating the *bond fide* nature and seat of mental derangement in all its various phases.

I must again call your attention to those four tabular forms:* they contain a vast mass of facts, which, if you will be at the trouble to analyse, must convince you, first, that Bayle has egregiously erred in attributing the exclusive importance he did to the meninges of the brain. However frequently these are found diseased in cases of mania and general paralysis, nevertheless there are exceptions, neither few nor far between—exceptions, moreover, in which the membranes are not only in all respects healthy, but the abnormal appearances are confined to other structures not enumerated by him (Bayle), in spite of his reputed pathological acumen. The researches and opinions of Calmeil we are, I fear, called on to treat with a similar discourtesy. Where to seek for a practical illustration of his position, which ascribes to an inflammation of the cortical substance the proximate cause of the general paralysis of the insane, I must confess myself entirely at a loss; nor have I been able to discover the relationship insisted on by Foville and others between this same cortical substance, or grey neurine, and acute cases of madness, as represented by its intense red or rose colour. That mania, as complicated with general paralysis, may exist without any hardening of the fibrous portion of the brain, *i. e.*, morbid adhesions between the cerebral fibres, is shown by Foville himself, who admits that he has found these adhesions wanting in only two cases; and, by referring to table No. iv, it is seen that, in one remarkable case of general paralysis, combined, not with mania, but with dementia and epilepsy, the white substance of the brain was found free from all appearance of disease (induration).

I may add that, if we will be at the trouble to observe what particular portion or portions of the brain and its investing membranes, etc., are found diseased, whether it be in cases of mania or dementia, or melancholia, complicated or not with either epilepsy or general paralysis, it will be seen that the appearances *post mortem* are such, and so united the one with the other, whether of this or that structure, that nothing definite can be made of them, regarded only as causes of mental derangement and its complications. For example, mania may be and is found both with and without appreciable disorganisation of the membranes; with and without effusion into the sac of the arachnoid; with and without appreciable disintegration of the vesicular neurine, or grey matter; with and without abnormal changes in the white or medullary matter; and similarly of de-

* See JOURNAL for September 7th, pp. 834-5.

mentia, and so also of melancholia; and similarly, too, of both the complications of mania and dementia, with either epilepsy or general paralysis. The tabular forms, which are here shewn you, may be said to furnish too much for any exclusive doctrine; for if certain facts, contained in table No. IV (p. 835) for instance, were isolated from the others therein registered, the theorist may stand a chance of convincing one of the truth of his peculiar views; not otherwise. If Bayle were to be told that the majority of the cases of mania herein recorded presented signs of disease of the meninges, he would view the fact as demonstrative of his own exclusive system. If Calmeil or Foville were to be told that in about two-thirds of the cases of mania herein recorded the grey substance was found disorganised, they would insist on it that the fact plainly favoured their own peculiar doctrines, and so on. But Bayle would err, I think, in not taking into his consideration the influence of a depraved calvarium, or that of an abnormal condition of the grey and white substances, to say nothing of the disordered state of the heart and lungs, etc.; for these are known to have been diseased in nearly three-fourths of the instances of insanity enumerated. Calmeil and Foville, in particular, can hardly be held as altogether inexcusable for omitting to take into their consideration, so completely as they should have done, the effects on the cerebral functions of the other disorganisations contained in these tables.

There remains yet another circumstance to be remarked in connexion with the said tabular forms; it is this, viz., that rather more than nine-tenths of the whole number of cases examined revealed appearances, *post mortem*, which are plainly referrible to either past or present inflammatory action of the brain, or of its investing membranes. How, it may be inquired, do you reconcile this fact with your theory of irritation or morbid sensibility of the grey neurine? I will, then, if you please, anticipate this very important question, and proceed to its solution or reply, premising, however, that the numerous morbid products named are merely the effects and not the causes of insanity.

A marked feature in the progress of medical science, within these past ten years, has been the steady and sure recognition of the dependence of the integrity of the vascular system on that of the nervous system. The fashion for referring diseases so exclusively to vascular derangement, and overlooking the morbid movements or state of the nervous system, is fast passing away. All experience goes to show that "not only are the primary impressions of morbific causes sustained by the sentient system of the human fabric, but that in this system the primary morbid movements first begin, and are thence propagated to the vascular system; which, from that moment, reacts upon, and is again influenced by, the nervous system."*

The foregoing opinions are rapidly gaining ground, and must, ere long, command the best attention of pathologists. If we will, in this instance, be content to trust to the revelations of physiological science, we shall speedily embrace the neuro-pathological, or neuropathic doctrine. A knowledge of the uses of the nervous organism must prepare us for the most correct appreciation of its diseased conditions. If the nervous system supplies the whole body with energy, if it be the regulator of its varied and complicated movements in a state of health, then must it preside over its diseased conditions, its abnormal manifestations; and that it does so in this particular instance is most certain.

We have the high authority of Dr. Billing in favour of the neuropathological or neuropathic theory. He has these words, viz., "All diseases commence by disturbance of the function of the solid parts of the machine; and, first of all, of the nervous system. This is 'solidism' or 'neuropathology.'" He adds: "The nervous system regulates and supplies all with energy; there is no organic sensibility, or organic contractility, independent of the nerves. Every natural impression is received by the nerves; every morbid agent is first felt by and operates on the nerves. Inflammation of cellular tissue, bone, conjunctiva, etc., through mechanical or other violence, result in consequence of injury to the peripheral nerves and to the capillaries; fever, from injury to the centres of the nervous system, which arises either from peripheral injury propagated to them, or through lesion by miasma, which, by the route of the circulation, directly poisons them; most probably by chemical combination and alteration, instantaneously lowering their power or energy. I have shown throughout, that the immediate effects of the lowering of the power and energy of the nerves or nervous system is inflammation, or congestion of the capillaries,—the first degree of inflammation." . . . .

"Irritation, continued excitation of the nerves, *i. e.*, nervous tissue, of a healthy part, at last produce inflammation, by exhausting that nervous influence, which gives the capillaries power; they become weakened, allow of over-distension, and the part is in the state of congestion or inflammation." . . . .

"Thus, in a part inflamed, there is a diminution of organic action, in consequence of which the blood is admitted in excess. As long as the capillaries are supplied with nervous influence, as long as they possess perfect organic action, they preserve a due size; when they lose it, either from the influence not being supplied from the nervous system, or robbed of it by heat, electricity, cantharides, or other cause, they give way, and admit more blood than before. Taking this view of the proximate cause of the enlargement of the capillaries, we can account for all varieties of congestion, from a simple transient blush to the stage with which inflammation commences; and it must be impossible to draw a line between congestion and inflammation—one passing into the other by insensible shades. Hence the numerous terms used by authors to express the gradations of distended capillaries; congestion, active and passive, engorgement, hyperæmia, erythæmia, passing to erysipelas, etc." . . . .

"As soon as a want of that harmony between the nerves and capillaries which is necessary to organisation takes place, their fine tissue begins to decompose, the particles which were held together by this inscrutable agency begin to be precipitated from one another; and this takes place in every shade and degree, from the slightest scorch of the fire, or blush from the wound of an insect, to mortification and putrefaction."

We shall presently see that these principles of medical science are, in an eminent degree, applicable to such abnormal conditions of the brain, which either precede or accompany insanity. I may, however, remark here, that an objection has been taken to the theory thus propounded by Dr. Billing, and even by men in our profession of the very highest character. I feel satisfied, nevertheless, that the said objection is most easily got rid of. You shall judge if this be or be not the case. I would refer you to a highly interesting article in the *British and Foreign Medical Review* (1850), where you will find the theory of inflammation, known as the neuropathic or neuropathological, most ably treated. Mr. Paget, it would seem, has taken an objection to the views of the neuropathologists, inasmuch as the firmest tendons and articular cartilages are liable to inflammation; and these, he says, have no nerves. Now, gentlemen, this would seem, on the mere face of it, to settle the question at issue; for without nerves how shall we get at the diminished organic action of the capillaries? from what source obtain the relaxed and enlarged capillaries—the immediate antecedent to congestion and inflammation? Now, the firmest tendons and articular cartilages may be without nerves, *i. e.*, cerebro-spinal nerves; but Mr. Paget himself is, I take it, hardly prepared to question the fact that the same structures are liberally supplied with ganglionic nerve-matter.

This is a very material point, and plainly enough throws the amount of evidence very strongly in favour of the neuropathic theory, as propounded by Dr. Billing. Mr. Simon has expressed himself similarly to Mr. Paget; and, in confirmation of his opinion, this gentleman does not,

* These words occur in an old number of the Medico-Chirurgical Review.

like Mr. Paget, cite what he supposes to be nerveless structures, viz. tendons and cartilages, but paralysed parts, and those rendered nerveless by operation, or division of nervous trunks—cerebro-spinal nerves. Mr. Simon gives a case of anæsthesia of the fifth nerve, dependent on organic disease, wherein the local contact to the conjunctiva of a few grains of Cayenne pepper caused violent inflammatory symptoms. Mr. Simon adds: "No nervous excitement could have preceded this said inflammation, because the fifth nerve was annihilated; the patient operated on suffered neither from pain nor from lachrymation." This fact is an important one, and very significant; it points directly and conclusively to the ganglionic nerve matter as the recipient, so to speak, of the morbid agent, *i. e.* the "few grains of Cayenne pepper". The nervous excitement was expended solely on the said ganglionic nerve matter, because the "fifth nerve was annihilated", and conjunctivitis was developed in the patient. Mr. Wharton Jones, in his lectures, adopts a very similar line of argument to Mr. Simon; but he would seem to agree with Dr. Billing in supposing that capillary congestion or dilatation (Henle), *alias* the stagnation of the blood, is in some way directly dependent on the suspension of the nervous influence upon the arteries, and not on nervous excitement. You will, I feel confident, agree with me, when I add that the neuropathic theory has well sustained its integrity, and, what is more, its fair claims to our consideration, in spite of the criticisms of Messrs. Paget, Simon, and Jones.

Let us look at the circumstances under which, as a general rule, an individual becomes the subject of mental alienation; we shall then see in what manner it happens that the nervous system is the first to suffer in insanity, and how it is that the disorder, though essentially and primarily confined to the nervous rather than the vascular system, at length not unfrequently involves the latter in abnormal action; and hence the fact just now stated, in reference to these tabular forms, viz. "that rather more than seven-tenths of the whole number of cases examined, revealed appearances, *post mortem*, which are plainly referrible to either past or present inflammatory action of the brain, or of its investing membranes."

For the sake of illustration, we will imagine an individual of health more or less delicate, abruptly exposed to any sufficient cause of great alarm, and that, instead of her recovering after a short time from the ill effects so induced, they are continued, and with an aggravated severity. The faintest sound which now reaches her ear is construed into a renewal of the first cause of her deep affliction; and the gentlest wind which may happen to blow seems to her perverted feelings but to threaten yet more sorely. Every surrounding object appears at length tinctured with the cause of her misery; and each succeeding effort of herself and friends to shake off the horrid incubus is in vain. Time rolls on, only to prove how much she is the instrument of her involuntary emotions; and ere long the judgment is betrayed into acquiescence. The patient not only experiences the dire acuteness of her feelings, but she is impelled to seek a cause for the same—one which shall not only excuse them to herself, but be in strict harmony with the predominant character of the disorder so matured in her. And thus, in passing from bad to worse, she realises the precise condition of one labouring under acute mania. Now the disease is, in such a case, the necessary effect of a morbid sensibility of a portion or portions of the vesicular neurine; and this the consequence of nothing more or less than the application, through the medium of one, two, or more of the external senses, of a stimulus or stimuli so intense or manifold as to be found incompatible with the normal physical capacities of the structure or organ affected. If, then, the said morbid sensibility persist, if it remain unrelieved, nothing is more likely than the occurrence of inflammation of the meninges (Bayle), or of the cortical substances (Calmeil), or of the fibrous or medullary structure (Foville), and this more or less insidious; which, progressing, must necessarily induce those palpable disorganisations of structure, effusions, and so on, seen enumerated in the tables submitted for your inspection. To put the case in a less artificial and more practical manner before you,—suppose an individual labouring under any intense mental emotion—not fear only, but avarice, veneration, or pride—it would follow that the increased and increasing physical action of the same portion or portions of the grey matter of the brain would beget such a state of susceptibility, or morbid sensibility, of the said structure, that at length the volition would become suspended; or, what is the same thing, the organism itself assume a condition of being wholly incompatible with its normal action; and, if such continue unabated, the brain, and not less its coverings, may be expected to become affected with disease, and hence the opacities of the arachnoid, the serosities, so named by Bayle, and so on.

If you bear in mind the preceding observations, I think you will have no difficulty in admitting, from henceforth, that the essential and proximate cause of insanity is, to all intents and purposes, a morbid sensibility of a portion or portions of the vesicular neurine, or cortical substance of the brain; and in acquiescing, also, in the opinion which ascribes the dependence of the normal action of the vascular system to the integrity of the nervous power. On these grounds, moreover, you will be prepared to realise the fact already submitted to you, viz. that in all cases wherein the latter is interrupted from any cause, the former, *i. e.* the vascular system, cannot escape the consequences. If morbid sensibility occur to the nerves of a part, the effect either of the application of an external stimulant, or the result of some accidental and internal or organic change, the capillaries, although they may resist more or less, and for a given time, the injurious effects of the same, are ultimately rendered incompetent to the proper discharge of their offices in the animal economy; and, losing the tonicity natural to them, and through the instrumentality of which the blood is forced onwards through their delicate textures, they become congested, their parietes yield to the pressure of the contained fluid; and, unless this be relieved, inflammation, more generally of an asthenic character, is set up, and the chances are that a certain amount of disintegration (of the tissues involved) follows; to this succeed the various microscopical appearances so frequently referred to. All these, as has been before remarked, must be looked on as the effects of insanity, and not its first cause.

In recent cases of mental derangement which have terminated fatally—*i. e.*, in cases wherein the cerebral disorder is confined to the nervous rather than to the vascular structures, or wherein the morbid affection of the former has not yet involved the latter portion of the organism—we may not expect to find else than the most superficial changes, and even these doubtful. The signs of congestion, or of an increased vascularity, if any, are just as likely to be the mere concomitant of death; or, what is the same thing, the mere effects of the cessation of vitality in the parts themselves as anything else. If, however, the mental disorder has passed beyond its first stage, viz., that of morbid sensibility, and death should then occur, the presence of congestion, the direct antecedent of inflammatory action, may be anticipated. The continued excitation of the cineritious neurine, and with it that also of the medullary portion of the brain, mutually dependent as these two structures are on each other, must almost necessarily and to some extent involve the capillaries of the parts named in the disorder primarily affecting their nerve-matter: nevertheless, the not infrequent absence of all signs of disease of the brain and meninges among the insane, is a fact recorded by almost all writers on this branch of medicine—a circumstance which recalls to one's mind the forcible and truthful language of Dr. Copland; viz., "changes may take place in the nervous system, not only sufficient to produce disease, but even to subvert life, without being so gross as to be demonstrable to the senses."

It must be remembered in connexion with the foregoing, that of the 100 cases reported on, there are eight per cent. without any appreciable lesion of the parts within the

cranium; although, in each instance of the kind, the investigation was conducted with great care. I may add, it was rarely I had not the aid of my colleague Dr. Begley, and not infrequently that of Dr. Conolly. As a remarkable exception to a very general rule, it once occurred to me to make a *post mortem* examination of a female who had been insane so long as eighteen years, and in whom I was unable to discover the slightest vestige of disease of the cranial contents.

I have ever found that the insane under my care are somewhat liable to be attacked with meningeal inflammation; and this it is which not unfrequently proves the immediate cause of death. In such cases, the general symptoms which indicate the existence of inflammatory disease within the cranium assume the same asthenic character which belongs to pneumonia, enteritis, erysipelas, etc., when occurring to nervous and delicate subjects. Such patients, so attacked, have "passed beyond the first stage, viz., that of morbid sensibility," and have entered on the second stage, or that one indicated by a loss of power, a comparative inaction of the oft named nerve-matter, and wherein the capillaries of the part or parts affected, having parted with the contractility natural to them, admit of over-distension (congestion); and this morbid condition being realised, the transition to an inflammation of the tissues involved is a certain sequence: and, on these grounds, we come to understand why, in the examination of the heads of persons dying insane, more than nine-tenths of the whole number should present such unequivocal marks of disorganisation as they do.

I may remark here, that both Pinel and Jacobi appear to have been so struck with the disproportion observed between the morbid changes in the brain and the mental disorder manifested during life, that they have been induced plainly enough to conclude that insanity is but rarely the result of idiopathic cerebral disorders, but generally the offspring of disease of the heart, or lungs, or liver, and so on. The former, according to Dr. Millengen, has declared that, in the examination of the brains of the insane, he never met with any other appearances within the cavity of the skull than are observable in opening the bodies of persons who have died of apoplexy, epilepsy, nervous fevers, and convulsions. However, both Drs. Pinel and Jacobi may have known not only that the integrity of the nerve-matter of the brain is of the first importance to a sound mind, but that its disorder is, as a very general rule, the first cause of insanity; and hence, as has been above shown, the uncertainty of the pathological changes observed by them. Haslam, whose experience in this matter was very great, asserts that nothing decisive can be obtained, in reference to insanity, from any variations of appearance that have hitherto been detected in the brain. I cannot forbear quoting the following few lines from Esquirol; they are pregnant with truth, and deserve therefore our best attention. "The inspection of bodies of lunatics offers numerous varieties as to situation, number, and kind of morbid appearances. The lesions of the encephalon are neither in relation to the disorder of the mind nor to the maladies complicated with it. Some lunatics, whose mental and bodily disease had given suspicion of extensive organic lesions, have presented but slight changes of structure in the brain; while others, whose symptoms had been less severe, have been the subjects of great and numerous alterations. But what disconcerts all our theories is, that not unfrequently, even in the instance of patients who have passed through all the stages of insanity, and have lived many years under derangement, no organic changes whatever have been traced, either in the brain or its containing membranes."

In my last lecture, I pointed out a strongly marked identity in the essential nature of mental disease and that of neuralgia, tetanus, asthma, hooping-cough, etc.; and it may not be considered out of place to mention here that the morbid appearances noticed in those who have died of the first named affection hold, for the most part, the same relation to each other that those common to asthma, hooping-cough, and angina pectoris, do to these several diseases respectively. In fact, in cases of insanity, and not less in cases of asthma,* hooping-cough, and angina pectoris, the pathologist not unfrequently verifies the fact conveyed in the following quotation, viz.: "Changes may take place in the nervous system not only sufficient to cause the most acute disease, but even to subvert life, without being so gross as to be demonstrable to the senses." If these same changes should not realise the second proposition—should not prove sufficiently intense to destroy the life of the individual subject to them—the chances are, they become eventually succeeded by others of a very palpable and demonstrable nature, which are not only capable in themselves to very seriously impair the healthy function of the part or parts concerned, but, existing, as they may be presumed to do, in common with their first cause, viz., a morbid sensibility, necessarily aggravate all the symptoms of the disorder. Among the insane, this precise state of things it is which progressively robs the whole nervous system of its power, and, as a consequence, every vital function becomes more and more impeded and enfeebled; and the suffering party is left only to vegetate and die.

To conclude this part of our subject, it may be said that, in regarding insanity (uncomplicated) as an affection of the nervous rather than of the vascular structure of the brain, and in viewing the disorganisations observed in the light of effects only, or accidental complications, we can then easily account for the various opinions expressed by Bayle, Calmeil, Foville, and others; whilst, at the same time, we are in every way prepared for the very opposite experience of Pinel, Haslam, and Esquirol.

I may here observe, though merely *en passant*, that the treatment found most efficacious in idiopathic mental disease—for to this do the preceding observations refer—is in an eminent degree confirmatory of the views I have had the privilege to submit for your consideration. That treatment is, in the main, of a tonic character; it comprises a due regulation of the alvine and renal excretions, as well as the adoption of whatever means are calculated to counteract the debilitating influences of diseased action in the system. The employment of antispasmodics or sedatives is now and then suggested for the relief of particular symptoms: in fact, idiopathic insanity requires, for either its relief or cure, very much the same as the "neuroses" generally, by whatever name these may be recognised. Speaking apart from the complications of mania, chorea, pertussis, and so on, the indications of treatment in each one are precisely alike in kind. It will be, I apprehend, readily conceded that in all it is of the first importance to establish a normal action of the prima via, thereby ensuring a healthy state of the secretions and excretions, both as regards quality and quantity; in all, the necessity to counteract the debilitating influences of diseased action in the system by the use of tonic remedies, as quinine, steel, etc.; and so to maintain the constitutional powers as far as possible unimpaired,—is sufficiently apparent to every practical man. In each one and all of these affections, the adoption of that physical regime calculated to supply pure air to the lungs, appropriate food to the stomach, power to the muscular system, agreeable and varied occupation to the mental faculties, and tone to the perspiratory apparatus, will be held as essential elements of treatment.

Now, gentlemen, you are quite aware that the diseased conditions of the brain, like to those of any other part or organ of the body, may be either idiopathic or symptomatic. That "all are but parts of one stupendous whole," is clearly shown in the origin and history of disease, of whatever kind, and wherever located. The brain is not invariably the part first affected in insane persons: to the biliary and digestive organs in man, and the ovaries and uterus in woman, are to be referred very many instances of mania, melancholia, etc. The exciting causes of insanity are manifold, and these must ever command our best attention.

* See Laennec's views on asthma.

The contents of my second lecture demonstrated in what way it is that hereditary predisposition to mental disorder is brought about. In the last lecture and the present one, I have treated of the proximate cause of alienation. Between these two extremes, if I may so call them, there lies an intermediate organic condition, *i. e.*, an exciting cause; and this is realised in certain abnormal states of the liver, or stomach, or uterus. In individuals possessed of an inherent tendency to a morbid sensibility of the grey neurine or cortical substance of the brain (or, in other words, to idiopathic insanity), the same, though it may remain dormant for long years, may every now and then, and under circumstances of perhaps mere functional derangement of either the biliary and digestive organs, or the uterine system, pass into a state of active disorder, and so realise, it may be, an attack of acute mania or melancholia. This is called symptomatic insanity. Dyspepsia is frequently, then, the exciting cause of mania; and so of various morbid states of the liver, and so of the uterus. Whatever local injury or disease produces delirium, temporary or otherwise, the same may prove an exciting cause of cerebral derangement; that is, presuming the coexistence of the aforesaid hereditary predisposition. The tabular forms yet once again must come to our assistance: these, as you will perceive, show that in thirty-six per cent. there was discovered disease within the abdomen. It is not certainly in my power to tell you in how many of these cases the organic mischief revealed on an inspection of the liver, stomach, intestines, etc., was the cause, or in how many it was the consequence, of mental alienation; or in how many of the individuals so afflicted the organic mischief existed as a simple and accidental complication: nevertheless, the fact of thirty-six lunatics in a single hundred having been proved to labour under abdominal disease is an important and interesting feature in psychological medicine. I do not possess any form of table calculated to show the per centage of ovarian and uterine disorganisations in insane women; but I find, on making a calculation from certain notes I have by me, that in five out of the twenty-three last inspections, *post mortem*, which I made at the Colney Hatch Asylum, in Middlesex, averaging somewhat under twenty-five per cent., there were present very palpable signs of disease of the ovaries or uterus, including the appendages of the latter organ. In one, a small polypus was found within the uterine organ; in another, a cyst was attached to the left ligament of the uterus. In one case, both ovaries "were somewhat enlarged"; in another, "the left ovary was converted into a cyst containing a soft pultaceous matter"; and in a third case, "scirrhous depositions" were present "in the ovaries". The "apparent cause of death" of these several patients stands thus (I give them in the order above indicated), viz., "epilepsy", "general debility", ditto, "general paralysis", "cancer of the mammary gland". The form of insanity which they severally manifested were, "dementia", "mania", "dementia", "mania", "dementia".

In Gooch's work, entitled *On the most important Diseases of Women*, you will find some admirable remarks on the "irritable uterus", regarded as a cause of mental disorder. The "irregularities of the uterine functions" which coexist or display themselves in connexion with various disorders of the brain, may be considered under several heads, viz., 1. Dysmenorrheal affections; 2 Suppression of the catamenia; 3. Cessation of the catamenia. As remarked by Dr. Prichard in reference to the first named, "Some females, at the period of the catamenia, undergo a considerable degree of nervous excitement; morbid dispositions of the mind are displayed by them at these times—a wayward and capricious temper, excitability in the feelings, moroseness in disposition, a proneness to quarrel with their dearest relatives, and sometimes a dejection of mind approaching to melancholia. These symptoms may or may not be the prelude of a far more permanent disease. A case is reported by Gall, of a young girl, of quiet and inoffensive disposition, and whose character had hitherto been most exemplary, who made seven different attempts to burn houses in a village near Cologne. When interrogated as to the motives which had prompted her to act so wickedly, she burst into tears, confessing that, *at certain periods*, she felt her reason forsake her; that then she was irresistibly compelled to the commission of a deed of which, when done, she bitterly repented. She was acquitted by a jury of all criminal intention. In this instance, the monomaniacal disorder seemed to be the effect of the persistence of a natural function. More generally, however, such is an attendant on a suppression of the catamenia. The fact is one of the very highest importance in a medico-legal point of view, and you will do well to bear it in mind. It is generally found that, in ordinary cases of mania occurring to the female, the catamenia, if not altogether suppressed, are become more or less irregular in the periods of their recurrence. You will not always be able to make out in a satisfactory manner, from the history of a given case, whether or not this suppression or irregularity is the cause or the effect of the alienation. In certain cases, however, you will find good and satisfactory reason to conclude that the exciting cause of the mental disorder is located in the uterus. Whilst Esquirol mentions the case of a young female, the subject of mania, who was suddenly restored to her reason on the spontaneous recurrence of the catamenial discharge, and who, to the surprise of those about her, announced her own recovery; the late Dr. Burrows has detailed a case in which a suppression of the periodical secretion, brought on by manifest causes, was directly followed by mania. "Facts like these", observes Dr. Prichard, "so decisive in their bearings on pathology, are not of very frequent occurrence, but their evidence reaches further than the individual cases recorded."

As an additional and remarkable illustration of the morbid sympathy existing now and then between the uterus and brain, I may tell you that Dr. Gall has known so many as four instances of females, who, when pregnant, were afflicted with a vehement desire to steal, though quite free from any such disposition at other times.

In my report of the Colney Hatch Asylum, are these words, viz.:—"Here I may remark, perhaps, that the medical charge of nearly eight hundred females presents such frequent illustrations of the mutual dependence and endless sympathies of the brain and uterus, that, in the treatment of disorders of the former, those of the latter claim an almost equal attention; it is therefore necessary to have especial regard to the condition of the uterus if we would be secure in our diagnosis and prognosis of cerebral affections. .... The peculiar organic changes which attend both the first appearance of menstruation, and its cessation in women, prove not unfrequently the direct and immediate cause of mental disorder. There are two young girls now in the asylum under treatment, in both of whom the brain and nervous system are out of order, plainly because nature has been, up to the present time, endeavouring in vain to establish the periodical discharge; and there is good reason to believe, that when the uterus shall have been encouraged to assume the offices to be expected of it in the animal economy, these young women alluded to will quickly recover their mental health, and be allowed to return to the homes of their respective families: and there are many more females, between the ages of forty and fifty, whose recovery may be expected when the uterus shall have fairly resumed its original inaction and inutility—the characteristics of early life—and when also the brain shall have so lost a fertile source of irritation and disease."

"It happens, unfortunately, that females of the poorer classes are much too unmindful of their health at the critical periods of life, and pay too little attention to the means whereby the uterus may be assisted in its efforts to preserve its due influence in the human economy. It is from this neglect, in a very great measure, that insanity so frequently occurs among them; and that the number of female patients now in the asylum exceeds that of the males in proportion of almost *seven* to *four*."

Puerperal insanity is a very common form of symptomatic cerebral disorder. Of 212 female patients, concerning whose histories I took much trouble, I found that in so many as 20 the mental disorder was to be referred to the puerperal state—something under 10 per cent. Esquirol records that, of 600 women at the Salpêtrière, there were 52 cases of this description. In another report by the same writer, according to Prichard, there were 92 similar cases among 1119 insane females admitted during four years into the above mentioned hospital. M. Esquirol is of opinion that the proportion is still greater in the higher classes of society, since, out of 144 instances of mental disorder occurring in females of opulent families, the symptoms had displayed themselves in 21, either soon after childbirth, or during the period of lactation. Dr. Haslam enumerates 84 instances of puerperal mania in 1644 cases admitted at Bethlem. Dr. Rush, however, reckons only 5 such cases in 70 received into the Hospital for Lunatics in Philadelphia.

A question has been raised, as to whether puerperal mania is the consequence of the parturient process, or of suckling; and from certain tables published by Esquirol, which record the period after delivery at which symptoms of mental disturbance were manifested, it has been concluded by Dr. Burrows that the disorder must be more frequently than otherwise regarded as "a consequence of delivery". There can be no doubt that, under certain circumstances, the occurrence of pregnancy, or delivery, or nursing, constitute in women the exciting causes of madness, in virtue of the existence of a certain and abnormal susceptibility of the grey neurine of the brain to such ordinary and external stimuli. The proximate cause of alienation becomes, in such instances, an effect or consequence of an antecedent casualty.

Dr. Ferriar thus explains his theory of the occurrence of madness in pregnant, puerperal, and suckling females. He says:—

"I am inclined to consider puerperal mania as a case of *conversion*. During gestation and after delivery, when the milk begins to flow, the balance of the circulation is so greatly disturbed as to be liable to much disorder from the application of any exciting cause. If, therefore, cold affecting the head, violent noises, want of sleep, or uneasy thoughts, distress a puerperal patient before the determination of blood to the breasts is regularly made, the impetus may be readily converted into the head, and produce either hysteria or insanity, according to its force and the nature of the occasional cause." However, if we consider the frequent changes or disturbances occurring in the balance of the circulation from the varying and quickly succeeding processes which are carried on in the system during and soon after the periods of pregnancy and childbirth, we shall be at no loss to discover circumstances under which a susceptible constitution is likely to suffer. The "conversions", or successive changes in the temporary local determination of blood, which the constitution, under such circumstances, sustains and requires, appear sufficiently to account for the morbid susceptibility of the brain.

From the observations already made in this and the preceding lecture, you will doubtless have concluded that the "new doctrine of mental diseases" of Bayle constitutes but one of the many exciting causes of insanity; instead of being, as he declared it to be, the proximate source of the mischief. The close contact of the membranes with the grey or cortical surface of the brain, must prepare the pathologist to expect that in cases wherein the meninges are in a state of inflammation, and from whatever cause, whether physical injury, rheumatic metastasis, exposure, etc., the latter structure will consequently give evidences, more or less palpable, of its derangement. "In madness so developed, there is no room for doubting that the whole disease, from its commencement to its termination, will be one of an inflammatory nature." (Prichard.)

There remain many other exciting causes of mental disorder, which the limits prescribed by these lectures must prevent me noticing. However, I prefer to conclude these my remarks on symptomatic insanity in the following words taken from Guislain's *Treatise on Mental Disorders*, a valuable work, which you will do well toperuse.

"I consider insanity to be a disease which has its seat in the brain; but when I place it in that organ, I refer to the disease itself, and not to its cause. It has been held by some that insanity may have its local seat in the liver, in the heart, or in any other organ; but can it be said with propriety that the seat of the disorder is in such organs? and is it not rather the cause of the disorder which has been discovered in such various situations? To be in a state of derangement is to have the understanding disturbed, and no person imagines the understanding to be seated in the breast or in the abdomen; the viscera may, however, undergo morbid changes which react upon the brain and give rise to madness. I therefore hold", he adds, "that mental derangement is always a disease of the brain, but that in many cases it has for its cause an irregular condition of some other organ, and in such instances the disorder is termed 'sympathetic insanity.'"

The termination of insanity is a subject which embraces much interesting matter. I need hardly say that its termination in recovery is a very much more common occurrence now than formerly. The very existence of county asylums presupposes an increased care of, and attention to, the insane. The insane are not now shut up in the poor-houses as they used to be; they are no longer left to be farmed out to the lowest bidder. The government has most considerately and kindly taken the care of the lunatic into its hands; and not only the pauper lunatic, but him in the higher walks of life. Now that the necessary supervision is exercised over both the public and the private asylum; now that the first is duly officered and organised, and science, and not less humanity, are made the ready and available instruments of the relief and cure of this most distressing of all maladies (insanity), and the second is no longer in the hands of the mere trader, who, if not ignorant of the art and science of medicine, is too ready to sacrifice the same to a mere love of gain, the amount of cures to be looked for is most encouraging. You are, of course, quite aware that no asylums *were* what they now *are*, and that in so far as lunatic accommodation is concerned we have entered on a new era. The insane *were* treated very differently to what they *are*. The use of manacles of various kinds, the waistcoat, and close seclusion in dark and dirty apartments, are no longer tolerated. Harsh treatment, unkind words, and coercion of whatever kind, have ceased their inflictions.

The non-restraint plan of treatment, of which you have no doubt heard, does not take cognizance of such means of control (?); it embraces rather a kind and considerate attention to the positive requirements of individual patients. Gentleness, kindness, and sympathy, are the mainsprings of the present treatment; to these are added a sure and earnest attention to the physical necessities of our being, including bathing, personal cleanliness, an appropriate diet, air, light, exercise, occupation, amusement, including of course a discriminative medical treatment. When I tell you that, as a most general rule, it is even since I entered our profession that the lunatic was allowed the privileges and advantages just enumerated, you will be prepared to learn, that the terminations of insanity were widely dissimilar to what they now are.

That I am not using the language of exaggeration will appear from the subjoined statement of facts; these, you will perceive, are within my own experience. An Indian journal thus records the state of the insane in confinement at Colombo in Ceylon, so lately as 1843. "The insane are confined in gloomy cells, into which light and air are admitted by a small iron barred opening in the door, through which they may be seen gazing, or may be gazed upon like wild beasts." The same journal tells us that the insane were without the opportunities of exercise or recreation else than what of either could be obtained in "a small

yard common to all the cells, and not above a few yards wide;" that "the most lawless and immoral conduct prevailed;" that "the deficient cleanliness was such" that "a certain receptacle of filth has been allowed to accumulate until it is almost intolerable;" that the Asylum—if such a place could be so called—"resembled a pig-stye in design;" and that the inmates slept "on filthy pieces of old mat on the dirty brick floor of the cell." The following short quotations from an official report presented to the local government, will reveal the then terrible state of the insane I am alluding to: "Cassim, the occupant of one cell, afflicted with paralysis of the lower limbs, sleeps on the floor, which is damp, and has in many places deposits of his own evacuations." "The floor in each cell slopes towards a grated aperture in the centre of the room, beneath which is a drain extending along the middle of the cells in one range; every drain is choked up to the surface of the grating." "The smell of the urine, which can no longer pass off by the sewer, and is absorbed in the bricks, is most offensive." The cells are ill-ventilated, and nearly dark when the door is closed. Numbers of bats continually fly about, and their excrement adds considerably to this stench. Some of the patients have their fixed abode in those cells." "All the patients are represented as being occasionally violent; and on such occasions the means of restraint are the straight-waistcoat, and sometimes handcuffs, the stocks, and chains. The more violent are kept confined in the cells."

Now, gentlemen, you will have gathered from the preceding remarks a tolerably fair impression of the state of the insane and of lunatic asylums in 1844 in an old-established British colony. Public sympathy having excited the attention and energies of the government, both colonial and at home, I was sent to Ceylon in 1844 to remedy so shocking a state of things—one so truly disgraceful to all parties concerned. I devoted some few of the best years of my life to the amelioration of the insane there, and succeeded, in spite of prejudices and oppositions incalculable, in realising the objects and intentions of my appointment. On my retirement, and on taking a review of my past labours, I saw much reason to feel satisfied with their results. I will tell you what these were, and you will then conclude for yourselves whether or not the old or the new treatment of insanity is the better calculated to give a favourable character to the "terminations of insanity". I found the mortality among the insane in 1844 at 33 per cent.; and when I left Ceylon, in 1849, it was reduced to 7 per cent. per annum. I found the cures at 0 in 1844, but I succeeded in raising them, after some time, to nearly 40 per cent. On making a comparison of the mortality among the insane inmates of the government lunatic hospital at Colombo, within the five years preceding my arrival in the colony, with that of the five years succeeding, or during my sojourn in the East, I found a diminution in favour of the latter period of upwards of 20 per cent. per annum. I found also that a like comparison of the rates of cure gave an increase in favour of the latter period of 40 per cent.

Presuming then that an asylum is all that can be wished for, that its organisation is replete with comfort, adapted in every way to the requirements of the insane, and in the care of an experienced and accomplished medical man, you will be justified in anticipating yet a greater success than I have mentioned, provided only that your list of "incurables" is not a very long one—for these constitute the bulk of the patients in all establishments for the insane; unless, like St. Luke's and Bethlem Hospital, recent cases only are admitted. Dr. Burrows has reported from his own experience 240 cures in an aggregate of 296 cases of various descriptions:—221 cures from 242 recent cases; 19 cures from 64 old cases; affording a proportion of 81 in 100 of all cases, and of 91 in 100 of recent cases.

Certainly, the success of Dr. Burrows seems almost incredible; however, under favourable circumstances, the per centage of recoveries in general ranges from 40 to 70 per cent. In the Memoirs of the Royal Academy of Medicine, Paris, we are informed that out of 12,592 of cases of insanity which were treated in the Salpêtrière and the Bicêtre, 4968 cures were registered. (*Prichard.*)

The following statements were collected by Esquirol from English lunatic hospitals:—

	Admissions.	Recoveries.
In Bethlem Hospital from 1748 to 1794	8874	2557
In Bethlem Hospital in 1813.....	422	204
In St. Luke's from 1751 to 1801	6458	2811
In York Asylum	599	286
In the Retreat near York from 1801 to 1814	163	60
Total	16516	5918

In a statistical report of The Retreat, near Leeds, drawn up with much care and judgment by Mr. Hare, I find that "of the 172 patients who had left the asylum during ten years, 74 were considered as recovered". This is in the proportion of 43 per cent. I may add that at the Retreat, as at the lunatic hospital at Colombo, under my own care, the patients are admitted indiscriminately, and without any reference to the character or duration of the disorder.

Drs. Sutherland and Philp's report of St. Luke's Hospital for 1851, is a very satisfactory and promising document, and from which it appears that—

From 1821 to 1830, was 47.33 per cent.
From 1831 to 1840, was 56.25 „
From 1841 to 1850, was 60.6 „

The per centage of recoveries during the last ten years was as follows:—

1841 ...	60.91	1846 ...	57.60
1842 ...	70.37	1847 ...	56.11
1843 ...	60.82	1848 ...	56.38
1844 ...	50.60	1849 ...	64.33
1845 ...	62.22	1850 ...	65.69

In the present year (1851), the per centage has been 74.01.

It is worthy of remark, that the recoveries among the male patients were in the proportion of 63.08 per cent.; and that those among the females were equal to 80.36 per cent.

The foregoing is eminently suggestive of the ameliorations which have been carried into effect at St. Luke's since the first ten years specified, and confirms the advantages of the new over the old system of treatment.

In coming to a conclusion as to the probable issue of a given case of insanity, you will of course consider whether or not the disorder is complicated in any way—with either epilepsy or general paralysis. The force of disease, too, is a matter of some importance: mania, it is well known, is more frequently cured than either monomania or dementia. Out of 209 recoveries at Charenton, we learn from Dr. Prichard, the numbers were as follows:—

Mania . . .	115 cures out of	226
Monomania . .	91 „	289
Dementia . .	3 „	99
Total . .	209	614

The period of the disease, age, sex, season, circumstances of the constitution, cerebral organisation, etc, are important items—each one of which must command a share of your attention ere you venture on a prognosis.

The rate of mortality, like that of the cures, depends, of course, and as you have already seen, on the character of the asylum, and the kind of treatment found for the insane.

The annexed table is from the report by Dr. Conolly, of the Hanwell Asylum. During the latter years only, the *non-restraint* plan of treatment was in full operation, and hence the diminished proportion of deaths.

Annual per cent. of Deaths, from the opening of the Institution, 16th May 1831, to 30th September 1843.

Years ending 30th Sept.	Average number of patients.	Number of deaths.	Per centage of deaths.
1832	369	87	23.58
1833	519	86	16.57
1834	562	65	11.57
1835	572	63	11.01
1836	609	66	10.84
1837	609	48	7.88
1838	617	74	11.99
1839	798	92	11.53
1840	835	69	8.26
1841	883	83	9.39
1842	943	91	9.65
1843	970	68	7.01

At this time, the mortality is about 7 per cent. On the opening of an asylum, and for some time after, the per centage of deaths will be high, on account of the unfavourable cases admitted from the union houses and other places. Thus, at Colney Hatch Asylum (opened in 1851), there died in 1852, 189 patients, out of an average number of 1177, being at the rate of (about) 17 per cent.

The mortality at St. Luke's is generally between 7 and 8 per cent., very similar to that at Hanwell; though at the former hospital the cases admitted are recent, and probably curable; and at Hanwell all insane are received indiscriminately.

As illustrative of the circumstances under which death occurs more generally to the insane, I may add, that of 243 fatal cases at the Hanwell Asylum, 109 were caused by apoplexy or epilepsy, or allied diseases; 38 by pulmonary consumption; and 46 by a gradual decline and exhaustion of the vital powers, called in the clinical register "general debility". The per centage being, therefore, in the first instance named about 43, in the second 15, and in the third 20 per cent.

It is worthy of mention, that the insane are, as a body, not only not insusceptible to the ordinary endemic and epidemic disorders, as fevers, cholera, diarrhœa, etc., as has been asserted, but that they are especially liable to be affected by every kind of morbid influence, however and wherever developed.

Northwoods, Bristol, September 1855.

INJURY OF THE ARM, FOLLOWED BY DEATH OF THE HUMERUS: AMPUTATION: RECOVERY.

By HENRY ALFORD, Esq., F.R.C.S., Senior Surgeon to the Taunton and Somerset Hospital.

JOHN BROOMFIELD, aged 14 years, agricultural labourer, was admitted into the Taunton and Somerset Hospital Jan. 5th, 1855. His own account of his case was as follows.

On Jan. 3rd, whilst turning a machine for cutting roots, he felt something suddenly give way with a snap about the right shoulder; it was attended by great pain, and quickly followed by swelling of the whole upper arm. No treatment had been used but the application of stimulating liniments.

When admitted into the hospital, the whole of the upper arm was swollen, red, hot, and very tense, with a board-like feeling to the touch; the forearm and hand were œdematous; there was considerable irritative fever, with an anxious countenance. No fracture or displacement could be discovered. Fomentations were applied to the arm; saline medicines with opiates were given; rest in bed and low diet were enjoined.

Jan. 6th. Twelve leeches were applied to the shoulder. The fomentations were continued. Calomel and opium were given every four hours.

Jan. 9th. There was no improvement; the arm was intensely hard; he had great pain, and a very anxious countenance; he had little or no sleep. A free incision was made from the upper part of the shoulder to the insertion of the deltoid on the outer aspect of the arm, through the skin and subcutaneous cellular tissue; the parts cut were of almost cartilaginous hardness. The bleeding from the wound was moderate.

This incision was followed by some diminution of the swelling and tension; but in a day or two it was obvious that suppuration was going on beneath the muscles; and a copious discharge soon took place through the wound by a small opening in the deltoid muscle. The suppuration was very great; sinuses ran deeply through and beneath the muscular structure in all directions; but, on careful examination with a probe, we were not able to touch the bone. About ten days later, a counter-opening was made at the posterior margin of the axilla, so as to establish a dependent exit for the pus as he lay on his back; and a few threads were drawn through from the upper opening.

During this time his health was rapidly giving way; the suppuration was very profuse, the whole of the upper part of the arm being burrowed with sinuses; there was great emaciation, hectic, excessive pain, increased by the slightest motion, and very little sleep. His strength was supported by beef-tea, wine, quinine, and mineral acids; and opium was given freely. Poultices and fomentations were applied to the arm.

Feb. 6th. On examining the arm, a small ulcerated opening was found at the anterior part of the shoulder, with a portion of bone presenting at it; this opening was enlarged to the extent of an inch, for the purpose of removing what was supposed to be an exfoliation of dead bone, as it was felt to be moveable; but it was found to be the entire shaft of the humerus, separated at the epiphysis, with its rough edge tilted forward against the skin, and producing the ulcerated opening. On examination with a probe, the shaft of the bone was found to be denuded of periosteum as far down as the probe would reach; the articular head remained in its natural connexion with the glenoid cavity.

On the following day, Feb. 7th, after a consultation on the case, amputation was performed at the shoulder-joint. The patient was put fully under the influence of chloroform, and complete insensibility was kept up during the whole of the operation and dressing the wound. Some difficulties occurred in the operation; it was found impossible effectually to command the subclavian artery, in consequence of the shoulder being raised above its natural position, from the separation of the humerus, and the disorganised state of the muscles of the shoulder. The large ulcerated wound where the first incision had been made prevented the making a full sized anterior flap in the usual way by transfixion; a common straight bistoury was therefore used, and a rather narrow flap made from the cracoid process and the anterior margin of the axilla to the anterior edge of this incision. The arteries were tied as divided, as it was important to avoid loss of blood as much as possible. An amputating knife was then carried behind the separated end of the humerus, and a good sized posterior flap made; the hands of an assistant following the knife, to seize the arteries. The axillary artery was immediately secured, and several others required ligature; a number of small arteries bled freely, and the structure was so softened that it often broke down under the ligature. As many as twenty ligatures were applied in the whole; and, notwithstanding every care, he must have lost from sixteen to twenty ounces of blood. When all the bleeding vessels had been secured, the head of the bone was removed from the glenoid cavity. The cartilage and synovial membrane of the head of the humerus were inflamed and altered in structure, but that of the glenoid cavity was healthy, except a small spot of the size of a split pea in the centre of the concavity. Several portions of semiosseous and semi-cartilaginous matter were removed from the surface of the stump; they appeared to be the results of attempts to form