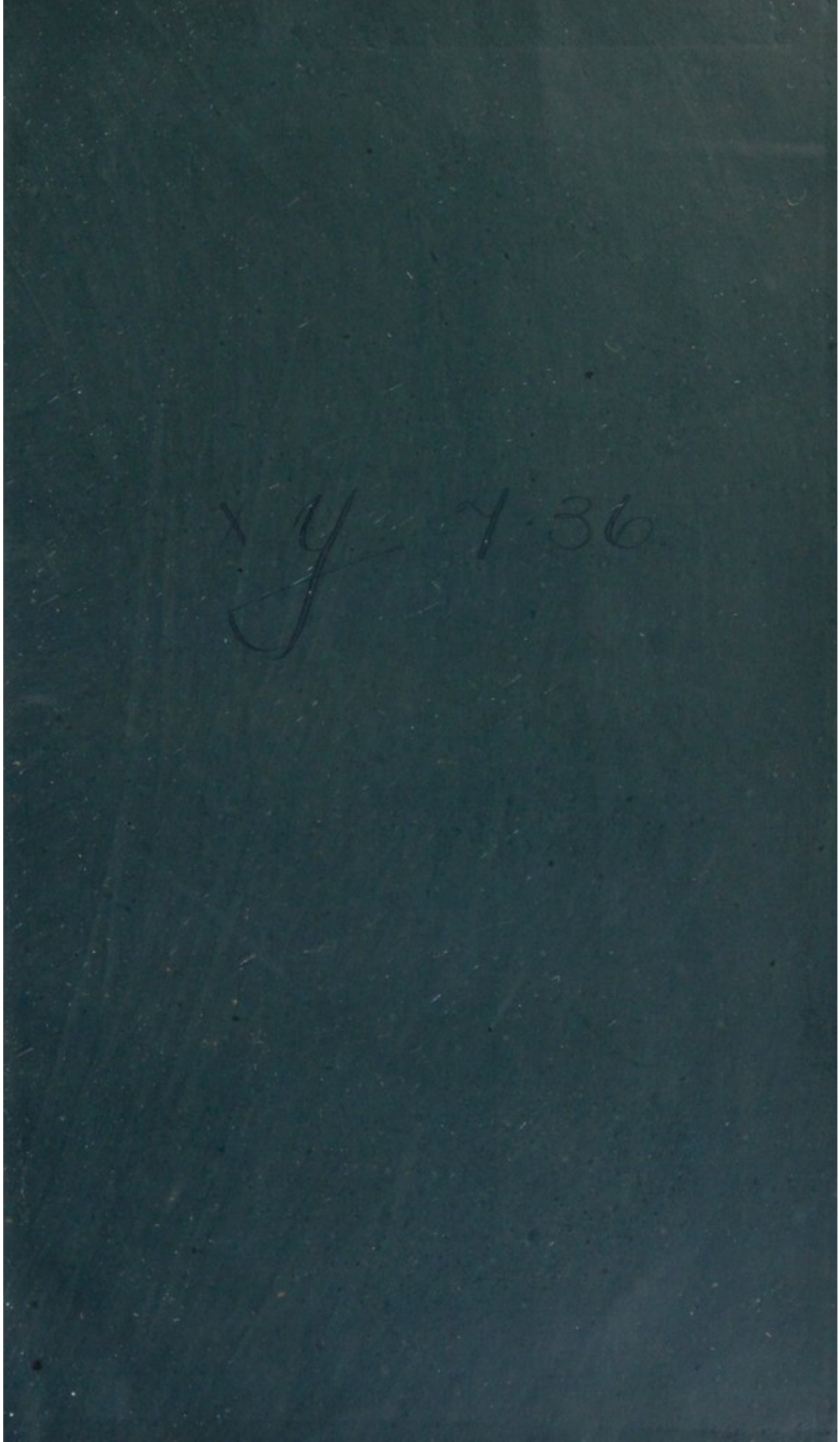
**On cerebria and other diseases of the brain / by Charles Elam.**



# ON CEREBRIA

AND

# OTHER DISEASES OF THE BRAIN

# ON CEREBRIA

AND OTHER

# DISEASES OF THE BRAIN

BY

CHARLES ELAM,

M.D., LONDON,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS;
ASSISTANT PHYSICIAN TO THE NATIONAL HOSPITAL FOR PARALYSIS AND EPILEPSY;
AND HONORARY PHYSICIAN TO THE SHEFFIELD GENERAL INFIRMARY.
AUTHOR OF 'A PHYSICIAN'S PROBLEMS;'
'MEDICINE, DISEASE, AND DEATH,'
ETC. ETC.




LONDON
J. & A. CHURCHILL, NEW BURLINGTON STREET
1872

# PREFACE.

THE design of the following pages is to bring into notice, more prominently than has been done heretofore, the distinctive phenomena of Inflammation of the Substance of the Brain Tissue, as contrasted with similar affections of the membranes. Any further objects that I may have had in view are so fully set forth in the introductory chapter, that they require no recapitulation here.

Two of these chapters,—those on "Cerebria" and "Partial Acute Cerebritis,"—were read in abstract before the Royal Medico-Chirurgical Society in the sessions of 1870 and 1871; the rest appears now for the first time.

It was my intention, as intimated near the close of the second chapter, to add an appendix on the inter-relations of Brain and Mind; but as in the body of the work I have treated the Brain almost exclusively in its physical relations, I have decided to defer such a discussion to some future occasion; when I hope to resume the subject in a more extended aspect.

75 HARLEY STREET, CAVENDISH SQUARE,
*May* 1872.

# TABLE OF CONTENTS.

## CHAPTER X.



## CHAPTER XI.



## CHAPTER XII.



## CHAPTER XIII.



## CHAPTER XIV.

# CHAPTER I.

## INTRODUCTION.

During the last thirty years there has been a very large increase in the mortality from "Diseases of the Brain." In the year 1839 there were 1495 deaths registered from this cause, and in 1869 there were 5517. Thus, whilst the population in England has increased 30 per cent, the mortality due to this cause has been multiplied nearly fourfold.

In the same period the deaths from Paralysis and Apoplexy have considerably more than doubled—viz., from about 10,000 annually to 22,000 in the nearest round numbers. The deaths from "Insanity" have also nearly doubled.

The causes for this portentous phenomenon are not mysterious, nor far to seek; nor, when found, are they difficult to understand. The great development of railway and telegraphic communication has resulted in an enormous increase of business transactions, entailing a vast augmentation of the cares, worries, and anxieties of life. The brain, receptive of all impressions, and originating all volitional impulses, has a double load to bear in the economy. The "struggle for life" is ever increasingly severe; every throe of this struggle implies disintegration and waste of brain tissue; and whilst the chances of irregularity or disorder in the nutritive changes increase in a geometrical ratio, the increase of disease is a logical sequence.

It is interesting to trace an illustration of these principles in the correspondence of sudden increases in the rates of mortality with the social and commercial disorders of certain epochs. No one will find any difficulty in recalling the convulsions that agitated the commercial world in the years 1845 and 1846. Bear-

ing this in mind, it does not surprise us to find that immediately after this period—viz. in 1847—we find the registered deaths from "brain disease" to be more than doubled—from 1495 to 3012; whilst the mortality in paralysis and apoplexy is increased 50 per cent.

The calm that succeeded was accompanied by a corresponding improvement in nervine health; for from this year until 1852 there was no increase in the mortality from this class of causes. Since 1853 there has been a gradual increase, represented by these figures. For every million persons living in 1853 there died from "disease of brain, etc.," 196; and in 1869 there died 254. It is again worthy of notice that in 1866-7, years of great agitation, the average of deaths from this cause (267 per million) was higher than in any year before or since.

It is also worthy of observation, that it is in these, the diseases of adult and advanced life, that the increase of mortality is marked; whilst in those diseases of the nervous system which chiefly affect early life there is no increase, and in some cases a decrease. Thus "hydrocephalus" decreased from 463 per million in 1852 to 344 in 1869; and in the same period "convulsions" decreased from 1371 to 1190 per million.

I adduce these facts and figures as my reason for thinking that there is still much to be done before our knowledge of diseases of the nervous system is complete; and that we are not likely to lack opportunities for observation.

I do not think that the time has yet arrived when a complete history of these diseases can be attempted. When that time does arrive, the task will be by so much the easier, if those who have had exceptional opportunities for observation put on record faithfully and conscientiously that which they have seen and known; and such is my intention in presenting the following pages to notice. I have made no attempt at a complete treatise on diseases of the brain; but have confined myself, at least as to any detail, to the description of inflammatory affections in three forms;—the General Acute, which I have called "Cerebria,"—the Partial Acute Cerebritis,—and Chronic Cerebritis. It has

also been necessary to discuss the general principles of "Softening," as contrasted with these affections.

If any apology be necessary for venturing upon so well trodden, and yet so difficult, a field of research as this, I offer it upon these grounds:—(1) that the nosology of this class of diseases is certainly as yet imperfect; indeed it would scarcely be going too far to say that it is in a chaotic condition, as I shall have occasion to indicate in the sequel; and (2) that I have something to say, upon the subject of inflammation at least, which has not been said before; and which, if my observations, and the deductions from them be trustworthy, will certainly supply one "missing link" in the logical completeness of our knowledge in this department. I refer to the description of general acute inflammation of the substance of the brain, uncomplicated with meningitis,—a disease hitherto unrecognised and undescribed; the very existence of which has been formally denied, and one which presents many very remarkable and instructive phenomena. For the verification of these phenomena, I can but assure my readers that they have been drawn at the bedside during life, and from the morbid tissue after death. If they admit, notwithstanding, of an interpretation different from that which I attach to them, still they are not the less worthy of careful investigation, as indicating an order of facts not hitherto registered in our clinical records.

One more reason why this little work may possibly be deemed not superfluous, may be found in the fact (as it appears to me) that inflammatory affections of the brain have not recently met with the amount of attention, amongst English writers at least, that they might appear to deserve. In the *System of Medicine*, edited by Dr. Russell Reynolds, a work of great merit and portentous dimensions, amounting already to nearly 3000 pages, only *three* of these are devoted to the special discussion of cerebritis. It is true that the reader is referred for further information on the subject to "Meningitis," "Abscess," and "Softening" of the Brain. But on turning to the last-named article, we there find that only in exceptional cases is

softening due to inflammatory action. So that the whole subject of *simple* (that is, non-suppurative) inflammation of the *substance* of the brain, is exhausted in barely three pages; the diagnosis, prognosis, and treatment occupying but eighteen lines.

In that very comprehensive and almost equally voluminous work, Dr. Aitken's *Science and Practice of Medicine*, the same subject only occupies two pages. I do not call attention to these facts with any view of pointing out shortcomings in these works, which are in truth very marvellous achievements in learning and science; but merely to indicate my reason for thinking that, as the brain is at least as important an organ as any other, so its pathological changes, and especially its inflammatory conditions, which are at the root of so many of these changes, are as worthy of exhaustive discussion as those of other organs.

It is with great hesitation and misgiving that I have suggested a new name for one of the diseases here mentioned, and so added one more word to our already overloaded terminology. In proposing "CEREBRIA" as the synonym of "General Acute Idiopathic Inflammation of the Brain substance, uncomplicated with any affection of the membranes," I am not unaware either of the evils attendant upon multiplying words, or of the fact that this individual word is a hybrid and uncouth production, sharing these faults with the old name of "Cerebritis." When I come to treat formally of the disease, I shall probably be able to show that the name is not only admissible but desirable, and that the use of the hitherto recognised appellations would tend to misleading. Meanwhile, the word is short, and being clearly defined, will serve at least to obviate periphrasis in description; and for purposes of reference may be used as an algebraic symbol for a known quantity, if of no further value.

The substance of the following pages is the condensed result of some years of thought and observation. I ask my readers to believe that both what is advanced and *what is omitted* have been the subject of great care. From numerous cases collected

from hospital and private practice, I have selected a few types for description somewhat more minute and detailed than is customary. If I have dwelt upon these at an undue length, and discussed them more argumentatively than is usual, it is that in introducing, as I suppose, a new, that is a hitherto undescribed disease, I have to demonstrate as clearly as possible its claim to individuality, and make my position plain and impregnable. How far this has been accomplished it must be left to my readers to decide.

On the other hand, two orders of facts will be noted in the following pages as "conspicuous by their absence,"—these are minute morbid anatomy, and the revelations and evidence of the ophthalmoscope. With regard to the former, I have entered only so far into the morbid changes observed after death as to justify the nomenclature, *i.e.*, to establish the existence of inflammation. To do more than this would have led me away from my special object, which is the *clinical history* of certain forms of disease. The pathology and morbid anatomy of the nervous system have been worked out almost exhaustively by many of our own countrymen, conspicuously Dr. Bastian, and on the Continent by Hayem, Virchow, Jastrowitz, Kölliker, and many others, with a minuteness to which I can make no pretence. To their most valuable labours I refer those who are disposed to pursue this branch of the subject farther. Meanwhile I believe the time is not far distant when the living phenomena of disease will be deemed of more importance than the ruins of the structure in which it was manifested.

With regard to the ophthalmoscope, I believe that its revelations are, in many cases of brain disease, most valuable, and that they would doubtless be so in that class of which I am now more especially treating—*i.e.* acute inflammations. Unfortunately the practical difficulties which beset these observations are well nigh insuperable. It is sufficiently difficult in any acute affection of the brain to ascertain with accuracy the condition even of the pupil, on account of the great intolerance of interference with the eye, which is almost a constant symptom; and I confess

that I have never been able to apply the ophthalmoscope in any one such case. Naturally this difficulty only applies to the acute cases; but in chronic diseases the ophthalmoscopic phenomena are so inconstant that I have thought it best, in the present imperfect state of our knowledge, to say nothing on the subject.

Many other deficiencies will be found in these pages, some doubtless from inadvertence, but for the most part intentional. This chiefly applies to the descriptions of well-known diseases, and to the discussion of individual symptoms. The ground that has been well occupied before I have studiously avoided, not wishing to swell these pages with familiar ideas. In describing cerebria and partial cerebritis I have been somewhat minute, because the one has not been described before, and the other does not appear to have been accurately portrayed. But in treating of softening and other affections, apart from those alluded to, I have done little more than notify those points in which my observations and deductions do not agree with those of previous writers. The same remark applies, and with still greater force, to the notice of individual and special symptoms of brain disease, as coma, convulsions, delirium, and paralysis, the nature and bearings of which have been over and over again exhaustively treated.

In conclusion, if my descriptions of the phenomena of disease appear to differ from those usually contained in our systematic treatises on the subject, I can only say that as they have presented themselves to me in actual practice, so they are here set down; and if it be found impossible to reconcile them with received theories, I can only hope that the ultimate verdict will not be "so much the worse for the facts."

# CHAPTER II.

## GENERAL OBSERVATIONS ON THE STUDY OF AFFECTIONS OF THE BRAIN.

THE study of diseases of the brain is beset by peculiar and especial difficulties, both as to the observation of the phenomena during life, and the determination of the significance of the morbid changes observed after death. As to these difficulties it is due that, notwithstanding the incessant and intelligent labour that has been brought to bear upon the subject, our knowledge of this class of diseases is still so incomplete—(might I not say *incoherent?*)—some detailed notice of them may not be out of place.

1. The most prominent bar to our investigations is found in the fact that the brain is, under normal conditions, entirely removed from physical examination. The adult brain is shut up in a hard unyielding case, through which we can neither feel its proportions and consistence, nor inspect its colour, nor hear its sounds. Some vague attempts have been made in the last-named direction, but as yet it can only be said that they have ended in nothing practical. From this cause alone it would result, that our knowledge of cerebral disease must always be less perfect than that of the thoracic or abdominal organs.

2. But supposing even that the brain was amenable to direct investigation by all our senses, we should still be but at the beginning of our troubles. To comprehend disordered function we must understand something of its normal mechanism, which is, in the present state of our powers, impossible in this case ;—probably will ever remain so. There is no *obvious* adaptation of means to an end in the central arrangements of the nervous

system, as there is in other organs. Of course this is only true in a certain sense. That there is obvious arrangement, of the most wonderful character, cannot for a moment be doubted. The special, precise, and constant characters of the nervous system, in the various classes of animals, indicate this beyond question. But we cannot trace the *adaptation*, mechanically, chemically, or any otherwise dynamically. We have even no outside analogies whereby we can illustrate their action. In the case of the heart, we can speak of it as a force-pump, and can effectually imitate its action ; thence it results that we can comprehend the disorder produced by any alteration in its mechanical conditions. The lungs we can describe as a complicated apparatus for purifying the blood by endosmosis and exosmosis ; and we can imitate their action in the laboratory sufficiently for illustration. But we have no analogies to lead us even to an apparent understanding of brain function. Our knowledge of centric nerve action has to be derived from itself, and itself alone. For, even granting, for the sake of the argument, that by a perverted use of dialectics the motor function was supposed to be due to some most complicated and "highly differentiated" electrical arrangement, there would still remain the whole vast domain of Sensation, Will, and Emotion, unapproached and incomprehensible. It is probably safe to affirm that this difficulty will always remain insuperable. For, let us assume (which is not probable) that we could arrive at an accurate demonstration of the last physical phenomenon leading to or attendant upon sensation—as, for instance, that each sensation was immediately preceded by the impinging of some one granule upon some other, or some alteration of form or direction in an ultimate organic molecule ; still, the translation of this into consciousness would remain as difficult as ever.*

3. As by the absence of obvious (*i. e.* comprehensible) adaptation of structure to function, we are left in almost total igno-

* I think Mr. Herbert Spencer has pointed this out in his *Elements of Psychology*, but am not certain of the formula, and have no immediate means of reference.

rance of the mode of action of brain substance, it follows necessarily that our knowledge of the effects of disease upon the tissue must be purely empirical, *i.e.* the result of observation, and not to be reasoned out by *à priori* considerations. And here again we meet with fresh elements of uncertainty in the fact that there is no *constant relation* between the morbid changes observed after death and the symptoms of the living disease. The same symptoms during life are found after death to be due to different pathological conditions; and morbid appearances very similar in nature are preceded by very diverse phenomena during life. And again, very slight morbid changes are sometimes attended by the most serious train of symptoms; whilst in other cases the most terrible, even malignant diseases, scarcely betray their presence until shortly before death. Thus, I have seen cases of hemiplegia, where only microscopic changes of tissue could be detected after death; and, on the other hand, I have the notes of one case of very extensive scirrhus of the right hemisphere, involving the ganglia in the lateral ventricle, and nearly one-fifth of the substance of the hemisphere, where there was no paralysis whatever, and where, until a few days before death, the only prominent symptom was facial neuralgia.

4. Our knowledge of the physiology of the brain is also very incomplete. What we know is chiefly derived from two sources—(1) observation and experiment upon animals, and (2) comparison of the modifications of function in man with modifications of structure in disease. The latter source has just been shown to be variable, and consequently unreliable. The former has unquestionably given us data of great value, but can confessedly throw light only upon a very limited range of function. We have, therefore, little certain knowledge of the *centric* position of the sensory and motor functions; we have *none* of the intellectual and volitional.

A good illustration of the imperfection of our knowledge, and of the doubts and difficulties that beset these investigations, may be found in the attempts made of late years to localise the faculty of speech. The opinion has been held very extensively

that its seat was in some of the convolutions of the left cerebrum; and this view has been greatly supported by the frequency with which aphasia has been associated with, or a symptom of, hemiplegia of the right side. I do not wish at present to give any opinion as to the absolute truth of the hypothesis, or the reverse. Let it suffice for my present purpose to state, that from the cases appearing at the Hospital for Paralysis, I have notes of not one or two, but of many cases, where aphasia has occurred along with *left* hemiplegia;* and others where there has been complete right hemiplegia, with perfect power of speech.† All this is not, of course, conclusive, one way or other; but serves to illustrate my present position.

Another striking instance of the difficulty experienced in deducing the laws of cerebral physiology from pathological investigations, is found in the records of dissections of lunatics and imbeciles. If we examine these, especially those of the Continental schools, we find the greatest diversity of revelation and commentary. Some of the most careful observers assert

* The two following cases in briefest outline will illustrate this position. They both appeared on one day at the above-named hospital as out-patients :—

(1.) J. V., aged 35, by trade a cooper, was attacked, June 6th, 1871, by complete hemiplegia of the *left side*. He was in good health up to the moment of the attack. There was no insensibility, but "an odd sensation," with entire loss of power. He was completely speechless for six weeks, and now speaks imperfectly.

(2.) T. C., aged 42, was attacked suddenly, whilst reading, with "dizziness" and complete loss of power of the *left side*, six months ago. No insensibility, but entire loss of speech for *six hours*. It also continued very much impaired for several weeks, and is still imperfect.

† The following cases also bear on the point :—

(1.) W. B., aged 35, traveller, attacked suddenly with giddiness and loss of power of *right side*, but no unconsciousness. The speech was never affected in the least.

(2.) E. G., male, aged 46, has suffered eight months from *right hemiplegia*, coming on gradually during five or six weeks, at the end of which period the loss of power was complete. He had suffered for some months previously from "neuralgia" of the right eyebrow and forehead. There was a syphilitic history, and many indications of organic change within the cranium. At the time of his appearance there was much restoration of action in the limbs. From the beginning there has been no affection of the speech.

See also a note in Chap. IX.

that they have never examined the brain of an insane person without finding some morbid changes. Others, equally careful, state that some few brains are found perfectly normal. All agree that there is *no constancy* in the morbid anatomy, even when the cases have been very similar in nature,—that there is no one part of the brain that is always affected,—and that many of these changes from the normal condition are by no means essential concomitants of the insanity; but belong rather to the co-existent disease of which the patient has died. All this tends to prove that we cannot as yet hope to localise function by means of pathology; and it may be stated as a short corollary to all this, that our knowledge of cerebral physiology, and pathology *proper* (as distinguished from morbid anatomy), is still almost to construct *ab initio*.

5. The extremely diverse views that have been promulgated by physiologists as to the statical and dynamical condition of the circulation in the brain, and the curiously illogical manner in which these views have been made to influence our practical treatment of disease, will receive attention in the next chapter. I allude to them here for the sake of order, as one of the difficulties in the way of our perfect comprehension of the subject under discussion.

6. Another hindrance in the course of these studies is the absence of speciality in the objective symptoms—that is, the same symptoms may occur in diseases of other organs. Even those most characteristic of centric nervous trouble—as coma, convulsions, delirium, or paralysis—may be of distant and reflex origin. Hence arise considerable difficulties in the way of diagnosis, some of which will receive illustration in the subsequent chapters.

7. Again, the *subjective* symptoms—those which we alone learn from the statements of the patient, and which, in many other diseases, are such valuable aids to a correct comprehension of the case—are, in diseases of the brain, the subjects of much doubt. They may be overstated; but this is rare. They are frequently understated, on account of the sensibility and the per-

ceptions being oppressed and dulled by the very existence of the disease. Thus I have repeatedly been assured by patients that they had no pain in the head ; when, at the same time, the frown, the general expression of countenance, and the gestures, have assured me that pain did exist, and not lightly ; and where the post-mortem revelations have satisfied me that such an amount and nature of disease could not have existed without pain. The same has often been noted about pain in other parts of the body, where it must have existed ; as in the case of a supervening attack of peritonitis, where the patient denied all pain.

8. Some of the difficulties attendant upon our investigations that have been passed in review, are common to other diseases besides those of the nervous system ; but there is one that must now be noticed, that is special and peculiar to the brain alone. The brain is a double organ, bilaterally symmetrical, presenting a highly-elaborated arrangement for functional activity, accurately repeated on the two sides. Under ordinary conditions of life and health, and during our waking hours, this double organ acts as one, neither thought, perception, nor volition suggesting any idea of double action, any more than in the normal condition the two eyes or the two ears carry double impressions to the sensorium. But, as the physical conditions of the eyes may be altered so that they no longer act consentaneously, so the condition of the brain may be altered, so that its two halves no longer act in unison, and the phenomena that result are noteworthy in the extreme. One of these is that curious mental state, often described, but never satisfactorily explained,—that feeling, which many experience occasionally, of having witnessed, or taken part in, the passing scene of the moment at some previous time ; as if they had heard all that is passing before, and could almost predict the next act or word ; or, as though the play were now being performed which they had previously seen rehearsed.

Some few years ago I offered the following explanation, in the chapter on "Reverie and Abstraction," in *A Physician's Problems;* and I reproduce it here chiefly because I find vir-

tually the same interpretation given with great elaboration and minuteness in the *Archiv fur Psychiatrie* for July of the present year :—

"Whatever may be the truth as to the duality of the *mind*, there can be no doubt whatever that its organ, the brain, is dual and symmetrical, and receives constantly double impressions and images. Under ordinary circumstances of innervation these impressions strictly coincide, and convey but one idea to the mind, as the images on the two retinæ convey but one object to the sensorium, so long as the axes of the eyes coincide. But under circumstances of exhaustion, or other influences producing irregular innervation, the one half of the brain receives a perfect, and the other a dim and imperfect, impression of what is going forward ; and this dim and indistinct phantasm, occurring side by side with the correct image, is interpreted involuntarily by the mind into the semblance of a memory, a fading impress of a long past event."

This mental state, as commonly brought under our notice, is more frequently the result and the indication of fatigue of brain and temporary exhaustion of nerve energy than of actual disease. That it does very frequently accompany and characterise many forms of unilateral affection of the brain is not to be doubted ; a position which may receive illustration hereafter ; but in these cases it is frequently overshadowed and masked by symptoms of much greater urgency, and so escapes formal notice.

But further, some modern physiologists assert that during sleep only one half of the brain acts in dreaming, and they go so far as to define which it is, viz. that of the side upon which we lie. I do not remember any allusion to the difficulty arising from the practice of lying upon the back. They also assert that in many forms of insanity only one side of the brain is in action. Into these points it would obviously be out of place to enter at any length in this chapter. Much interesting detail may be found in Dr. Wigan's *Duality of the Mind ;* and more recently in two elaborate essays by Dr. Huppert, from one of which I

have given an extract in the footnote;* the other is entitled "Ueber das Vorkommen von Doppelvorstellungen," in the *Archiv für Psychiatrie und Nervenkrankheiten* for July 1871.

But the one point which I have especially to refer to in connection with this subject is this,—that in cases of disease of the brain, limited to a part of one side of the brain, the two hemispheres appear to act, at certain times, separately and exclusively. Thus, in partial acute or sub-acute cerebritis, as I shall have occasion to show hereafter, there are periods when coma, delirium, or convulsions, absorb the entire being. At this time it would appear as though the diseased hemisphere was altogether predominant as to power, and if the healthy side is energising in any degree, its activity is completely overshadowed and quelled by the more powerful influence of the disease. Again, there are periods when this morbid activity is less intense, and is to some extent kept in check by the healthy action of the other side. Then results a condition very characteristic of cerebral disease,—a dull, half-stupified, wholly puzzled expression of countenance and gesture,—an utter impatience and intolerance of interference in any form,—irritability of the special senses,—recognition of persons, and comprehension of questions to a certain extent,—but the answers, intelligent enough for a few words, are either left altogether unfinished, or ramble off into half-muttered and inarticulate incoherence.

And lastly, there is the most remarkable phenomena of all,—the temporary triumph of health over disease. The unsound hemisphere seems to sleep, perhaps worn out with its previous

* I subjoin, in the original, one quotation illustrative of this statement, on the authority of Dr. Huppert.

"Wenn ich im Vorgehenden gesagt habe, dass nur die eine Hemisphäre im Traume thätig ist, die andere nicht, so ist dies selbstverständlich dahin zu verstehen, dass, wie ich auch schon angedeutet, die eine Hemisphäre in Folge des vermehrten Blutzuflusses in erhöhte Thatigkeit versetzt ist, die andere dagegen in eine sehr verminderte; . . . . . die eine blutreiche Hemisphäre sieht gleichsam die Vorstellungen und Bilder schärfer, voller, mehr in der Nähe, die andere blutarme dagegen dieselben nur sehr blas, verschwommen, mat, mehr wie aus der ferne, oder fast gar nicht," u. s. w.—*Zeitschrift für Psychiatrie*, Band 26, pp. 545-6.

over-activity, and the healthy brain resumes its normal functions—motor, sensory, and volitional—to an extent and perfection difficult of belief without the actual experience of it. There is for a certain period, often for more than twelve hours, an entire cessation of all morbid manifestations, and a condition which approaches, more or less nearly, to the appearance of perfect health. One or two striking instances of this marked remission will be found in the chapter on "*Partial Acute Cerebritis;*" suffice it here to say that I have repeatedly seen these singular appearances of amendment in so pronounced a form, that, even with the remembrance of their previous occurrence and the subsequent relapses fresh in my memory, I have found it difficult to believe that I was to be again disappointed. It is not necessary to dwell upon the doubt that these alternations throw upon the nature of the disease, and the difficulties that result both as to diagnosis and prognosis.

9. An entirely new order of difficulties and complications arises out of the fact that the brain has a double relation in ontology,—a somatic and a psychical one. That, in the popular philosophic jargon of the day, these relations are but one,—that body and mind, matter and spirit, are identical,—that we know nothing about either one or the other,—and that the only certain principle in the universe is "Evolution,"—may be instructive and explanatory, but can scarcely help us out in any practical emergency. As I purpose investigating this question in some detail on a future occasion, I shall here only state that, whilst the tendency of the modern school of philosophy is to recognise in all the "complicated activities of man" nothing beyond nutrition (growth), motion, and propagation of the species; and to teach that all *thought* is "but* the expression of molecular change in that matter of life which is the source of our other vital phenomena,"—I feel compelled still to adhere to the divided and (supposed to be) exploded doctrine of a consciousness, a will, and an intellect, existing in a region beyond matter, that is *meta*-physical.

* I quote from Professor Huxley on Protoplasm.

I have thus gone, at some length, through those difficulties which meet the student of brain disease at almost every step in his investigation,—difficulties which have caused this field of research to remain, although more laboured, yet more imperfect, than almost any other in our nosology,—in order to arrive at the true and only method by which our knowledge can be advanced and made reliable. Precluded from physical examination; ignorant for the most part of special physiology; knowing little more of dynamics; and concerned with signs and symptoms that are not specific or pathognomonic; but one road is open to us, viz. that of careful and unbiassed observation. Disease must be described as *it is*, and not as it might be expected to be, in accordance with foregone physiological and pathological conclusions. Facts must be accepted, if proved to be such, although they appear difficult to classify, and may be subversive of some cherished principle. Living phenomena must be compared with, but not made to bend to, morbid appearances. We must be satisfied to let many things remain undecided, until the weight of testimony is adequate to their decision. Deductions must only be drawn, when fully warranted by the phenomena. Speculations must be indulged in but very sparingly. Indications, whether as to diagnosis, prognosis, or treatment, must be diligently sought after, and accumulated for confirmation. The temptation to supplement our imperfect knowledge by fancy sketches is strong, and should be combated.

By these rules I have endeavoured to be guided in the descriptions of inflammation of the brain substance that will be found in future chapters. If they differ from those commonly found in our systematic treatises, it is perhaps due to the restrictions just enunciated. That there is nothing new—nothing that is not altogether obvious—in these principles, I most fully admit; that they have always been acted upon, possibly, is subject to doubt, as I shall proceed to illustrate, after having first devoted a few pages to the investigation of the conditions of the circulation in the brain.

# CHAPTER III.

## ON SOME CONDITIONS CONNECTED WITH THE CIRCULATION IN THE BRAIN.

In the previous chapter, in the enumeration of the various difficulties we meet with in the course of our investigations into diseases of the brain, I made a passing allusion to one connected with the circulation in the brain which has been much and warmly discussed ; which has been decided at various times in directly opposite ways ; concerning which the greatest diversity of opinion still exists ; but upon which, I think, the last conclusive word has not yet been said. I refer to the question of the amount and distribution of the blood contained in the brain at various times. It has been upheld, on the one hand, that the cranium being a closed cavity, its fluid contents must always be the same, unless the amount of solid matter varies inversely. The practical corollary from this view was, that bleeding, either local or general, could have no immediate effect upon the amount of blood in the brain. On the other hand, it has been urged that the cranium is not strictly a closed cavity, and that, moreover, the tissue of the brain itself may be compressed so as to admit more blood. Both parties to the controversy have supported their position by experiments which appeared to them conclusive. Into these it is unnecessary to enter,* as a few *à priori* considerations will be sufficient to show clearly what are the physical possibilities of the case.

* The experiments may, however, be briefly summed up in a note.

Dr. Kellie finds that, in animals bled to death, "the brain presented its usual appearance, its blood-vessels being well filled." In other cases the appearances were still more remarkable and conclusive. The sinuses were "loaded with dark blood, and the vessels of the pia mater were delicately filled with florid blood, . . . and the vessels of the choroid were remarkably turgid." It appears also that these

As no such thing as a vacuum can exist in the body, the cranium must always be full of something—fluid, solid, or gaseous. For practical purposes we may reject the latter, and say that the cranium is always filled with fluid and solid matter. We may further assume that within short periods of time, represented by hours or days, the capacity of the skull is constant; and therefore it is certain that the *sum* of the amount of solid and fluid is also constant.

So long, then, as the skull *remains closed*, what are the possible methods by which the circulation can be modified as to *amount* or distribution?

(*a*) The arteries may be fuller than usual, and the veins less full.

(*b*) The veins may be more or less gorged, and the arteries proportionately small.

(*c*) The entire mass of blood may be reduced (still with either venous or arterial congestion) by effusion of fluid into the ventricles, or on the surface of the brain; or by the presence of some abnormal growth or foreign body

phenomena were only manifest so long as the cranium was a closed cavity; for if, whilst the animal was bled to death, a small opening was made through the skull, as with a trephine, the brain was drained, and its vessels were as empty as those in the body generally. Conversely also, in animals killed by hanging, it was not observed that the vessels of the brain were more distended than in ordinary deaths, whilst those of the external parts were much congested.

On the other hand, Dr. Burrows, and those who contend for the variability of the contents of the cerebral vessels, find that there is a great difference in the appearance of the brains of animals, according as they are hung up, after death, with the head upwards or downwards; and also according to the presence or absence of a tight ligature round the neck. The facts upon which Dr. Burrows relies are perfectly accurate, I believe. The interpretation of them, and the deductions to be drawn from them, may be subject to doubt. Weight will be attached to one or other series of facts, in all probability, according to the bias of the inquirer. It may be asked, however, If there be *less* fluid in the brain after than before bleeding, what has entered to supply its place? For there can be no vacuum. Liquid will not flow from a closed vessel unless something be introduced to supply its place. And if, from any cause, there be more blood introduced, what has it displaced? All this is sufficiently familiar to physiologists; the greater part of whom adhere at present to the former view.

within the cavity; or by the more or less gradual increase in quantity or density of the actual substance of the brain itself, as in sclerosis or induration. Of this position clinical illustrations are constantly occurring.

(*d*) Lastly, the mass of blood may be increased by absorption of solid matter. This is a physical possibility, but the clinical illustrations are rare and doubtful.

Is there any other mode in which the quantity of blood in the closed cranium can be modified?—I think not. What can be said as to the alleged compression of the brain substance? I think this phrase has come into use, in relation to this question, from want of due consideration of the laws of matter.

Gaseous matter is compressible, almost indefinitely. Liquids (as water) are quite incompressible, or so nearly so as to be, for our purpose, considered as not susceptible of being reduced in bulk by any known amount of pressure. Many solids are popularly supposed to be compressible, but are not so in reality. Thus, we take a large sponge, and squeeze it readily into a very small compass. But, in doing this, we have merely obliterated the pores, the interstices of the solid substance, and in no degree compressed the substance itself into a smaller space. A sponge soaked with water is as incompressible as an equal volume of water itself; and can only be diminished in size by pressing the water out. The same is true, in all probability, of all solid matter whatever. When we apparently compress it, we merely press together more closely the particles, and so obliterate the pores, filled with some form of gaseous fluid which exists in all solids. True compression of solids is altogether incomprehensible.

Now, the living brain* may be aptly compared, as to its

* The idea of compressibility of the brain, and the phraseology attached to it, are so firmly rooted in our minds and in our modes of thought and expression, that it will be difficult for many to conceive, or to receive, the doctrine that it is absolutely incompressible. It will naturally be objected, "Is not the brain elastic; and is not compressibility the very essential attribute of elasticity?" The answer is, Yes, and No. The brain *is* elastic, and, like other elastic bodies,

physical conditions, to an equal volume of soaked sponge; therefore it has to be considered as practically incompressible. But although it cannot be compressed, in the sense of reduction of size, it can be *subjected to pressure* from the blood. An illustration will make the distinction more clear. Glass is sufficiently incompressible to be considered altogether so; yet glass may be subjected to pressure; and the effects upon its molecular structure are very striking and suggestive. Even the slight pressure that may be exerted by the fingers is sufficient very materially to alter its optical properties, especially as to its relation to polarised light; and this change continues so long as the pressure is continued. This phenomenon was very beautifully illustrated recently at the Royal Institution, by Dr. Tyndall, in his suggestive lecture on light and radiant heat.

And now, I think, we are prepared to understand, in a manner not before recognised, the effects of blood-pressure on the brain substance. There can be no actual compression (in the sense of reduction of size) in the tissue itself, whether from direct arterial force, or reverse venous obstruction. But the cells and fibres are *subjected to pressure* dynamically, and thereby their molecular arrangement is changed, and their functions altered. If this applied force be transitory, the effects will, in most instances, be transitory also. But if, from any cause, the pressure be prolonged, the molecular structure is permanently modified, and *absorption* of tissue results. In many chronic

will yield in one direction so long as there is a possibility of expansion in another, or so long as there is a mode of exit for some of its fluid contents. But neither of these conditions is fulfilled so long as the brain is shut up in the closed cavity of the cranium. The cavity is always full, and cannot be fuller; any more than we can force 25 ounces of water into a closed vessel whose capacity is 24 ounces.

The compression of the brain by effusion, by a clot, or a tumour, is doubtless true compression in a sense; but the *diminution in volume* of the brain does not indicate a reduction in the absolute mass of the solid portion of the brain, but a pressing out of some of its fluid contents from the arteries or veins.

Dr. Abercrombie remarks that it is unnecessary to introduce, in such an investigation, "the question, whether the brain is compressible; because we may safely assert, that it is not compressible by any such force as can be conveyed to it from the heart through the carotid and vertebral arteries."

diseases of the nervous system, in which the primary pathological change has been of a hyperæmic nature, the microscope very constantly reveals the phenomena of absorption, in the disintegration, more or less complete, of some of the cells, and the disappearance, or breaking, of the central nerve axis in the ultimate fibres; which changes, we can scarcely doubt, have been produced in the manner just suggested. It is, indeed, almost certain that alteration of molecular structure, by varying pressure, always precedes any actual absorption or disintegration of tissue.

This question, as to the variability or constancy of the amount of blood in the brain, has not been a mere physiological contest, but has curiously, and as I have before hinted, illogically influenced practice. In diseases of the brain, as in those of other organs, there have always been those who have upheld depletion as the proper treatment, and those who have opposed it. These latter have supported their views by attempting to prove that as the brain can hold, at any given time, but the same quantity of blood, neither more nor less, therefore depletion, either local or general, must be useless, ineffective, and consequently hurtful. On the other hand, those who believe in the propriety of depletion have appealed to that class of observations which tends to prove that the quantity of blood in the brain is not constant, but may be varied by depletion.

The truth is, that the practical question must be decided, not on physiological, but on altogether distinct grounds, clinical, rational, and, I may add, advisedly, empirical. Experience of results is far more valuable than *a priori* reasoning. Both parties to the controversy seem to have too much overlooked, or neglected, the consideration of the effects of *potential* pressure. Another illustration will make my meaning more plain.

Let a vessel containing say 100 cubic inches of water communicate by a strong tube with another vessel into which air can be forced, the whole apparatus being otherwise completely closed and air-tight. Now, we may force into the second vessel air to the amount of 100 or 1000 atmospheres, and yet no sensible

diminution in the volume of the water will take place. Yet we know, positively, both by analogy and by experiment, that this water is *pressed upon*, and that every single particle of the fluid is pressing against every other contiguous one with 100 or 1000 times more force than natural. This may also be demonstrated by allowing the water vessel to communicate with a pressure gauge. It is not probable that, so long as the liquid is homogeneous, there will be any alteration in its molecular structure ; but it is certain, reasoning from analogy, that any solid, or quasi-solid, matter contained in it *will be* so altered.

Transferring the analogy to the brain, we shall then understand how it may be affected by pressure and by depletion. The water and solid matter in the first vessel will represent the brain, and the air in the second will represent the blood. If, from any cause, either the arterial supply be too active, or the return by the veins be impeded, the brain will be *pressed upon*. No actual diminution of bulk will occur in the tissue ; no more blood will be contained in the vessels ; but it is in a condition of tension, its particles pressing upon each other with an augmented force exactly proportionate to the pressure within the external blood-vessels, and its functions impeded to a corresponding extent. It is evident, then, that if the erring vessels on either side can be relieved, the required relief is also afforded to the oppressed organ, and the practical result is exactly the same as in other organs not so situated.

It must be understood that I am not arguing, in this place, either for or against depletion, but merely attempting to indicate that the arguments against it, deduced from *a priori* physiological considerations, are valueless ; and that our practice must be regulated on altogether different principles. I shall have to refer again to the subject when I come to the treatment of various forms of hyperæmia of the brain.*

It may be observed, again, that the question as to the abso-

* An excellent resumé of the physiological argument, with a sketch of the experiments, on both sides, is contained in Sir Thomas Watson's *Lectures*, in the introductory remarks on Diseases of the Brain.

lute aggregate amount of blood in the brain, however interesting in an abstract or physiological aspect, can have little practical interest, as compared with the consideration of the disturbed relations and proportions of the contents of the arterial and venous system. Of the reality of this disturbance no one can entertain any doubts ; and it seems almost certain that these varying relations are at the root of all those diseases which are characterised by errors of nutrition, to which indeed they stand in relation of cause and effect.

In conclusion, I wish clearly to disclaim any pretension to originality in this chapter. I have attempted merely to set forth the state of the controversy in a plain light, and to indicate both how much and how little value it may have as to its practical bearings.

# CHAPTER IV.

## ON THE RECEIVED NOSOLOGY OF THE BRAIN.

I HAVE hinted previously that our nosological classification of diseases of the brain is very imperfect; and I now proceed to indicate in what that imperfection consists, and how it has probably originated.

The one great deficiency with which I shall be chiefly occupied is this;—that there is not, in any systematic treatise on this subject, any recognition or description of General Inflammation of the Brain Substance apart from Meningitis.

It may fairly be considered that so serious a hiatus is not to be found in the diseases of any other important organ. If we take the lungs as an illustration, we find that Pneumonia, or Inflammation of the Substance of Lungs, is described as a special and independent affection, existing either in connection with, or totally apart from, inflammations of the pleura. And, conversely, these last inflammations are by no means considered necessarily to involve pneumonia proper. Again, Carditis, Pericarditis, and Endocarditis, are not only separate diseases, but have their special etiology and symptomatology. Not to accumulate illustrations unnecessarily, I may say, that in scarcely any instance, except that of the brain, has inflammation of the substance of an organ been considered inseparable from, and invariably described along with, inflammation of its membranous coverings.

How far this has been the case with the brain must now be indicated.

One of the latest and most complete systematic writers on this subject, Dr. G. Hayem,* furnishes us with a very concise

* *Etudes sur les diverses formes d'Encéphalite*, par le Dr. G. Hayem. Paris.

scheme of the present state of knowledge and opinion on this class of diseases.

He classifies* all inflammations of the brain (*Encéphalite*) under three primary divisions :—

1. *Encéphalite Suppurative.*
2. *E. Hyperplastique.*
3. *E. Sclerosique.*

The first is acute, the second sub-acute, and the third chronic. Each of these classes comprises a division into "limited" and "diffuse;" and each of these divisions is still further subdivided into "primitive" (idiopathic or spontaneous) and "consecutive," that is, consequent upon wounds or previously existing disease in other parts.

Now, under none of these divisions do we find any disease corresponding to that which I propose, for convenience, to refer to by the name of "CEREBRIA;" which, once for all, I may state to be the synonym in these pages for an "*acute, idiopathic, diffused inflammation of the entire Brain Substance, uncomplicated with meningitis.*"

The third of M. Hayem's divisions may be at once excluded from the inquiry, as comprising only chronic diseases. The first division treats of acute affections, but none presenting the characteristics of Cerebria, either in symptoms or morbid appearances; for although a few pus globules are found occasionally in cerebria, it is, as will be seen hereafter, not essentially, or even frequently, a suppurative affection. This division also comprises scarcely anything beyond encysted abscess and traumatic encephalitis.

It is then only in the second division that we have any prospect of meeting with the subject of these observations, and if it corresponds with any one of the forms there included, it must be with that described as "*Encéphalite hyperplastique diffuse, sans lesions des Méninges,*" a definition which seems in some degree to correspond to that of cerebria; but a little

* P. 198.

further inquiry into its characteristics will show that there is no real resemblance. This *encéphalite diffuse* is a sub-acute disease, whilst cerebria is essentially acute; which difference, however, would be but of small importance, as perhaps involving only diverse opinions on terminology, if the other requirements of correspondence were fulfilled. But the *encéphalite diffuse* includes only "*congenital encephalitis*," and the *encéphalite* that is consecutive to other diseases occurring in the course of fevers or general maladies,—(*Encéphalite des fiévres et des maladies generales*).

But further, it is not merely that there is no mention of Cerebria in the general classification, but the pathological condition corresponding to it is either directly denied an existence or mentioned as being almost unknown. Thus, the author just quoted says (p. 77) that "*les formes spontanées de l'encéphalite diffuse sans lesions des méninges sont presque inconnues*,"—acknowledging, however, subsequently (p. 85) that "it is very probable" that some such lesions may occasionally develope themselves in the adult under diverse conditions, and further concludes that the history of diffuse encephalitis is "*encore mal connue*"* (p. 101). This "*lacune*," as it is termed in the work quoted, I hope to be able to fill in the course of these observations.

The writings of German pathologists contain, so far as I can discover, no allusion to the existence of such a disease as the one now in question. The elaborate essays of Virchow and of Huppert have thrown great light upon *cerebritis* in infants, but they make no mention of a similar affection in the adult.

The author of the treatise on "*Encéphalite*" in the *Bibliothéque du Médecin-Praticien* considers our knowledge of the various forms of inflammation of the brain to be in such a

* From one other remark by this writer, I should infer that an absorbing devotion to pathological research had been allowed in some measure to supersede very careful observation of symptoms during life. He concludes some preliminary remarks on encephalitis by saying, "*A ce point de vue symptomatologique nos experiences ne nous ont fourni que des renseignments insignifiants!*" (p. 46).

chaotic condition that it is "very difficult to know what maladies should be included" under this head. He decides to recognise two forms only,—one, which is true cerebritis, but is always "distinctly circumscribed in a limited part of the brain;" the other, more diffused and superficial, involving several convolutions in various parts; this latter, however, is stated to be so nearly identical with meningitis, that its description is included with that of this latter disease.

In our own country all writers are agreed in accepting the same incomplete nosology. As a matter of *theory*, some few speak of the existence of cerebritis as an isolated affection, but it is never described; and it is almost invariably stated that *clinically* it is always complicated with meningitis. Thus, Dr. Russell Reynolds, in his work on *Diagnosis of Diseases of the Brain and Nervous System*, in the section on Cerebritis (p. 82), says that "this inflammation occurs in two very distinct anatomical and clinical forms; the first is general, and is commonly combined with meningitis . . .;" and this is afterwards defined as "meningo-cerebritis, phrenetis, or encephalitis," which is a well-known and distinctly characterised form of disease; but totally different, both as to symptoms, progress, and pathology, from the cerebria which I shall have occasion to describe.

In the *System of Medicine*, under the heading of "Cerebritis," Dr. Bastian states that "the diffuse form, or general cerebritis, is a more or less wide-spread affection of the cortical substance or grey matter of the convolutions, and *is always associated with inflammation of the meninges.*" It is further described as arising from wounds, and also "from injury to the skull, when conjoined with it, there is inflammation of the dura mater and arachnoid . . ;" also as consecutive to the "more limited meningitis, not of traumatic origin, which affects the pia mater principally, . . ."—(Vol. ii. p. 432.) In the earlier portion of the same chapter, the writer, speaking of the symptoms, says that "these are, *of necessity*, associated with those of meningitis."

In the *Cyclopædia of Medicine* there is a very elaborate

description of the symptoms of cerebritis (to which I shall probably refer hereafter for purposes of comparison) which is thus commented upon :—"A great resemblance is apparent between the preceding delineation of general cerebritis and that of arachnitis. . . . The diagnosis between the two cases is extremely difficult, the one generally giving rise to, or terminating in, the other." . . . "Cullen was decidedly of opinion that we could not, by any reference to the symptoms during life, or the appearances presented after death, assign exactly the seat of the acute affections within the head; and therefore he included, under the term phrenitis, the inflammation of the different structures contained in the cranium, no matter whether seated in the substance of the organ or its investments."

Mason Good's views seem to be nearer to what I conceive to be the truth. He draws the distinction very clearly between the "membranous inflammation," which is "accompanied by acute and rousing pain, great heat, and a pulse permanently and considerably quickened," and "parenchymatous inflammation," which is "distinguished by a heavy and often stupifying pain, slight increase of heat, pulse irregularly quickened, or sometimes, on the contrary, below the natural standard." He thinks also that if the inflammation *were to confine itself* to the part first attacked, instead of spreading from one to the other, "there would perhaps be no great difficulty in determining from the symptoms before us its actual seat." It would appear, however, that this "parenchymatous inflammation" to which he alludes (*inflammatio profunda*) is only a synonym for "acute dropsy of the head" or hydrocephalus, and therefore not the Cerebria of my observations.

Dr. Abercrombie, our classical authority on diseases of the brain, gives it very clearly as his opinion that "our knowledge is not sufficiently matured to enable us to say with confidence what symptoms indicate inflammation of the substance of the brain as distinguished from that of its membranes."

Dr. Aitken, in his treatise on the *Science and Practice of Medicine*, states that "while dissection demonstrates the fact

that inflammation may exist either in the brain alone, or in the membranes alone, yet clinically it is found that *meningitis* generally complicates *cerebritis*, and thus the phenomena proper to each of these morbid states become combined, and especially in that form of the disease in which the lesion is extensive, commonly known as *general cerebritis, phrenitis*, or *encephalitis*."—(Vol. ii. p. 294.)

Sir Thomas Watson does not, I believe, allude to the question of pure cerebritis (cerebria) at all in the recent edition of his Lectures. To his vivid and classical description of *encephalitis* I shall have occasion to refer afterwards.

In a late highly elaborate work by a distinguished American physician, Dr. Hammond, there is no mention made of any inflammation of the brain substance, except such as terminates in abscess, or at least suppuration.

It is thus evident, without citing further authorities, that hitherto there has been no recognition nor description of general inflammation of the substance of the brain without meningitis; and that, although some writers have spoken of *cerebritis* proper, the description of it has always been identical with that of *encephalitis* or *phrenitis;* and in the majority of instances the very possibility of its existence as an isolated affection has been denied.

As I trust to demonstrate hereafter that such a disease does exist, and that its phenomena are sufficiently noteworthy, and different in almost every particular of invasion, progress, and general symptomatology from those of *phrenitis*, it becomes a question worthy of consideration as to how this break in our nosological chain has arisen and been allowed to continue. For, on *a priori* grounds, it would be difficult to show cause or reason why there should be more difficulty in distinguishing inflammation of an organ itself from that of its membranes, in the case of the brain, than in that of the lungs or heart. The structure of the substance and that of the coverings are not more diverse in the one case than in the other, and their functions are equally distinct. Why then should we be able to recognise a pneumonia

proper, a pleuro-pneumonia, and a pleuritis proper, yet be unable to distinguish between pure *cerebritis* and *encephalitis?* Certainly there is no logical reason ; but it must be entirely a question of observation ; and I can but suggest how it appears to me possible that this state of opinion may have originated.

It has already been shown that the study of diseases of the nervous system is beset by many and serious difficulties, proper and special to themselves, besides those which appertain to diseases of internal organs generally. This consideration has doubtless contributed largely to the imperfection of our knowledge. In the case of cerebria, moreover, this is very marked, inasmuch as, although it is an extremely fatal disease, its symptoms are characterised by comparative mildness and want of specific significance. In some instances also they closely resemble the symptoms of certain stages of continued fever, for which, I doubt not, this disease is often mistaken. This is the more likely, as cerebria, essentially an acute and very rapidly fatal affection, is rarely met with in hospital practice ; and in private it is not always practicable to make the post-mortem inspection, which alone, in the present state of our knowledge, will enable us positively to recognise the disease. We may be morally convinced of its existence, but in the absence of any symptom that can be called pathognomonic, some uncertainty must remain. And in even some of those cases where an examination has been made, it is not impossible that the case may have been mistaken for continued fever, and the alteration in the brain tissue may have been thought to be consecutive to the fever, and not to be the sign of a spontaneous or idiopathic inflammation.

And again, where the difficulties attendant upon independent observation are so great, there is a strong temptation to rest satisfied with those classifications and descriptions of disease that have been handed down to us, with the great weight of authority that attaches to many of the names previously quoted. Many men *might* think it a presumption to assert that they could distinguish between morbid conditions which Cullen or Abercrombie pronounced undistinguishable ; and meeting with

forms of disease apparently cerebral, which did not accord with the portraits of *cerebritis* given by these high authorities, they *might* hesitate to put them on record, or perhaps doubt their own observations. I say such things *may have been;* but I offer it merely as one suggestion tending to account for a phenomenon which has long baffled my comprehension—viz. that a disease, clearly wanted to complete our nosology of the brain, and existing in a form not easy to mistake when once seen, should have so long escaped formal recognition.

There are other, and perhaps more potent reasons, for the slow advance of our knowledge in this direction, upon which I will not at present dwell. They belong to what Bacon would probably have called the "*idola specus;*" and, should space remain, I shall recur to them in a future chapter. Meantime, I propose now to bring before the notice of the reader the phenomena of Cerebria; and afterwards to give my reasons for placing it in the vacant niche in our classifications of brain disease.

# CHAPTER V.

## ON CEREBRIA.

DEFINITION—*A spontaneous, acute, general inflammation of the Substance of the Brain, uncomplicated with Meningitis.*

I MUST preface my account of this disease by a few words in explanation of my reasons for suggesting an additional name to our already over-crowded nosological list. I have done this chiefly to avoid the necessity for frequent repetition of the definition given above. The only recognised appellation that I could have adopted would have been "Cerebritis;" but this disease has been so often and so fully described as a compound inflammation of brain substance and membranes—*i.e.* as synonymous with encephalitis and phrenitis, from which cerebria differs almost as much as if they were diseases of different organs,—that a new name seemed desirable, if even not absolutely necessary, for a new thing; or at least a thing not hitherto clearly recognised. That it has not only not been recognised in terms, but has had its existence formally denied, has been shown in the last chapter. To complete my argument here, I subjoin one more quotation from Dr. Reynolds' *System of Medicine* (vol. ii. p. 432). The writer says:—"Of uncomplicated cerebritis *we have no knowledge.* When inflammation of the brain substance exists, it is either associated with a more marked change of the same kind in other parts, *such as the meninges,* in which case it is treated of as a concomitant condition, and not as a primary affection; or else it speedily lapses into other distinct pathological states, such as abscess or softening, which, on account of their importance, are usually treated of as independent affections of the brain."

As the work from which this quotation is taken is usually and justly esteemed as affording a complete compendium of our

knowledge up to the present time, I need adduce no further demonstration that the disease Cerebria, as I have defined it, has not hitherto found a place in our systems.

As to the word itself, I have nothing to say in defence of its classical construction. That it is of Latin origin, with a termination usually and conventionally only applied to Greek derivatives, is an objection certainly, but one shared with the indispensable name of "Cerebritis," which cannot be replaced by any other with so few objections. In its favour I may urge that it is short; that it is not *very* uncouth, although not strictly correct; that it suggests its own meaning, by its terminal relation to other inflammations, as pneumonia, metria, ophthalmia, etc.; and finally, that as names are only "to know things by," and as I have vainly sought for one more classically appropriate, this will answer the purpose, and avoid constant periphrasis, as well as any other.

Without further preface I pass on to the consideration of Cerebria in detail. It is a disease which *may perhaps* occur at any period of life, although I have never seen it before 8 nor after 36 years of age. It is certainly much more frequent between 10 and 30 than at any other ages. It is uniform in its commencement and its termination. It begins with vomiting, and ends with death. The intermediate phenomena are not very striking, and the duration is from 36 hours to 12 days. It differs, in the most marked manner, from the forms of encephalitis hitherto described, in its causation, its mode of invasion, its progress, and its morbid anatomy; all of which will be fully apparent, after passing in review, as briefly as is consistent with precision, the cases by which I propose to illustrate these remarks. In doing this I shall keep in view, especially, the natural history of the disease, referring but very slightly to the treatment, for reasons hereafter given; and only so far to the morbid anatomy as may be sufficient to identify clearly the nature of the affection.

Case I.—H. F., a boy, aged 10, previously in good health, vomited once on the morning of June 10th. In the evening I saw him, and was

informed that he was then much better. He had complained slightly of headache at the moment of vomiting, but there was little or no remains of the pain afterwards. He was not in bed, and seemed very much in his usual state, except some little languor. The pulse was about 70, regular and moderate in tone. The tongue was slightly furred, and the bowels not quite so regular as in ordinary. He denied positively and repeatedly having any pain in the head, or feeling ill in any way. I could detect no such alteration in the pupils, nor such modification in any visible or perceptible function or organ, as to lead me to suspect serious disease. My prescriptions were little more than formal directions as to diet and general management.

For reasons unnecessary to mention, I called at the house the next day about 11 A.M. The mother said, in answer to my inquiries, that her son must be better, he had slept so well ; and was in fact asleep still. This at once excited my suspicions, and, going up stairs, I found the boy pulseless, rather cold, and unable to be roused to any degree of consciousness. From this condition he never rallied, and he died the same afternoon about 32 hours after the vomiting.

*Post-mortem Examination—35 hours after death.*—No trace of disease in the stomach, or any of the abdominal or thoracic organs. *Head.*—The sinuses a little more full than usual ; but the membranes showing no signs whatever of disease. There was no effusion, except to a very trifling amount in the lateral ventricles. The brain substance alone showed marks of pathological change—being very closely dotted with red spots ; the grey matter was darker than usual, and the white matter slightly rosy. The texture of the brain seemed to be about normal, neither being softer nor harder than the average. There was no microscopical examination made of any part of the brain ; but no doubt remained on the mind that this was a case of pure, uncomplicated, idiopathic, inflammation of the brain substance.

Case II.—W. L., a boy aged 13. The commencement of this case, on February 20, 1867, was as nearly as possible identical with that of the last. He had been previously well, and without any premonitory signs had vomited once, a few hours before my first visit. He also was dressed and following his usual boyish avocations. He confessed to a very slight headache, but rather declined to admit that he was at all out of health. His mother in some sort apologised for sending for me on what she called "such trivial grounds," but she was nervous and fanciful (she said) owing to losses of other children.

I observed nothing in the pulse, the eye, or the state of the skin, to direct my attention to any danger ; and was rather disposed, from the condition of the tongue, which was whitish, to ascribe the sickness to the ordinary indigestion of boys.

On the 22d the state of matters was much the same. There had been no more sickness, the bowels had acted freely, he had taken some food, and had slept moderately well, occasionally saying a word or two in his sleep. The pulse was 68, regular, but not of very good volume. There was some indisposition to be examined, especially as to the eye, and a general slight languor, which was unlike the natural temperament. Still there were no marked or pathognomonic symptoms, and I confess that at this time I suspected no danger.

From this period there was a gradual decline in strength, but no paralysis. There was an increasing tendency to semi-stupor, but no coma. There was occasional slight wandering and muttering during sleep, but no constant delirium. He could always be roused to answer coherently, until the last two days of life. The organic functions were performed with due regularity, and the excretions were evacuated consciously. On the 26th he surprised the attendants by suddenly getting out of bed to use the chamber utensil; he seemed to be in full possession of his muscular power, getting out of and into bed again without assistance.

Four days after this, on March 1st, he died;—that is, on the tenth day from the original sickness. Death was not preceded by convulsions, nor any phenomena more marked than those already described.

I should have mentioned that the pulse was not much affected until three days before death, when it became quicker and not so regular, and that there was no marked sensory disturbance throughout. He always stated that he had no pain, in his head or elsewhere; but a slight frown often occurring seemed to point to some uneasiness, which he could not define, or would not be troubled to dwell upon.

*Post-mortem*—22 *hours after death.*—There was nothing worthy of note in any of the abdominal or thoracic organs.

The membranes of the brain were quite healthy. This was a matter of surprise to me, as, from the family history and tendencies, I was prepared and expecting to find some evidence of tubercular meningitis. However, there was none. But abundance of mischief was found in the brain substance itself. The whole mass of the brain was so altered in texture by inflammatory action, that it could not support its own weight, nor hold together. No sooner was it removed from the head, and placed on a dish, than it gave way, falling from together, and flattening like an imperfectly-made mould of jelly. The commissures were all ruptured by the weight of the hemispheres. The white matter of the brain was throughout soft, and pinkish in colour. On cutting it, it smeared the knife with a streaked stain.

Microscopically examined, there was no pus, but an abundance of exudation corpuscles.

There was no excess of fluid in the ventricles, nor in the meshes of the pia mater.

I have never on any occasion seen a brain so thoroughly disintegrated by idiopathic acute disease; and it was a subject of most perplexing consideration to compare this entire destruction (so to speak) of the whole brain, with the comparatively slight and undistinctive symptoms during life.

Case III.—Mrs. J., a married lady, aged 26, the mother of three children, on the 3d of April 1867 was confined of her third child. She had been quite well during her pregnancy, and for the most part had enjoyed good health all her life. There was no special pathological history.

For three weeks there was nothing to distinguish this present confinement from the previous ones. Everything—so I was informed—progressed in the most satisfactory manner. The milk was moderately abundant, the lochia gradually subsided, the appetite was much as usual, and the secretions and excretions normal.

On the 24th, without previous warning, she vomited, and complained of some slight headache, which soon subsided. The vomiting did not recur, and for a few hours no apprehension existed in the mind of her attendants.

On the 25th I saw her for the first time. I learned that about 12 hours after the vomiting there had been observed some hesitation or difficulty in speaking. This was now greatly increased. She *could* speak to some extent; but could not, apparently, command sufficient energy to articulate more than the beginning of a sentence. After the lapse of 48 hours more this power appeared to be gone, and she never spoke more, although apparently conscious of the meaning of anything addressed to her. When spoken to, she would turn her eyes towards the person speaking, and smile as though she understood. But when urged to answer, she only replied by another smile. Perhaps I may be deemed fanciful; but my impression was that the faculty of speech, mechanically or muscularly considered, remained; and also that the will to do so was present; but that the medium of connection, the power of translating volition into physical energy, was lost.

The same seemed to be the case with the general muscular power. This gave way synchronously with the speech, and when the latter ceased, voluntary motion ceased also until death. And yet there did not seem to be *paralysis*. The limbs occasionally moved slightly, as those of a person in sleep may do,—not with a twitching motion or a convulsion, but a gentle automatic action, simulating volition.

In this state she lay for 9 days, dying on the 4th of May.

She never moved, but as above described; she never spoke, yet seemed to be conscious. The whole aspect was calm and painless in the extreme, a slight smile generally pervading the features.

The pupils were natural; the pulse was 90 throughout, good and regular, until the last 36 hours. The tongue was thinly smeared, perfectly white, as if with cream.

There was to the last no convulsion, no coma, no delirium, no paralysis.

The post-mortem examination, made 24 hours after death, revealed no trace of disease in the abdominal and pelvic organs. The uterus and its appendages were strictly normal, considering the period after confinement. The whole body was well developed and nourished, and the organs were all healthy.

The membranes of the brain showed no signs of inflammation; but the substance of the brain itself was intensely injected, and of a slight rosy tint throughout, with a very great number of bloody points. The texture of the brain was not softened, but rather appeared to be hardened, as if compressed, and the surface of the convolutions appeared slightly flattened also.

There was no effusion into the ventricles, nor at the base of the brain.

That these three cases belong to the same order of diseases cannot be doubted; it is equally evident that the disease in each case was cerebral inflammation. That this inflammation was confined to the brain substance, and did not extend to the membranes, is merely a matter of post-mortem observation. The idiopathic nature of the affection is indicated by the history of the cases.

On these grounds, then, I ask for the recognition of a special cerebritis, uncomplicated, general, and idiopathic, called CEREBRIA.

It will now be necessary, and not uninstructive, to contrast the natural history of this disease, for which I claim a place in our nosology with that of those affections described by systematic writers as cerebritis, encephalitis, phrenitis, etc.

1. First, as to the *Causation.*

General cerebritis is described by authors as due, most frequently, to injuries to the head, as sabre-cuts; to disease of the bones, as caries and otitis; to sun-strokes, to intemperance, to surgical operations, to "morbid poisons associated with zymotic diseases" (Aitken); to "prolonged mental exertion or moral excitement" (Reynolds). The cerebritis which I describe is totally unconnected with any of these causes, and seems to

ally itself only to constitutional and hereditary predisposition. It is not possible to demonstrate this in all cases; but in my first case it was strongly suspected to be so. The subject of the second lost three brothers from various forms of tubercular disease, and his father died subsequently of partial sub-acute cerebritis. The affection is essentially idiopathic,—the causes being inherent in the system.

2. As to its Invasion.

In some writers on this disease I find a formidable list of premonitory symptoms of a mental, sensorial, and motor kind, in which pain, tingling, numbness, partial paralysis, and various special sensory phenomena figure largely.

According to my observation, this cerebritis of which I am treating comes on absolutely without any premonition. I do not venture to assert that there is no symptom ever preceding the actual establishment (marked chronologically by the vomiting) of the inflammation; but I believe that practically there is nothing occurring in such cases that can reasonably, and in the present state of our knowledge, awaken our perceptions to the coming trouble.

3. As to the Symptoms and Progress.

These are totally distinct in Cerebria, such as I am describing, from those characterising the previously noted forms of encephalitis. Systematic writers on this disease mention as essential symptoms or concomitants of the affection, active modifications of the sensory, motor, and intellectual functions, as illusions of the special senses, hyper- and an-æsthesia, coma, convulsions, delirium, and paralysis, partial or general. These are often, also, described as divisible into two stages—one of excitement, and the other of depression. Some writers notice even three periods that may be distinguished one from the other.

The reason for this is obvious. As I have before indicated, it has been generally assumed that cerebritis was practically inseparable from meningitis; and the cases that have been described have been mixed cases—viz. of general encephalitis.

In Cerebria none of these active symptoms present them-

selves. They only occur when meningitis is present. There is no *coma*, properly so called. The faculties are oppressed and benumbed, but not entirely lost until the patient is almost *in articulo*.

The special senses are variable as to condition; sometimes they are unaffected, and at other times one or more may be to some extent modified. The subject of my second case had slight intolerance of sound, but not of light. In the third case, that of the adult, there was no change perceptible in any of the senses.

One phenomenon is very characteristic and peculiar. Perception is very slow, as though outward impressions were with difficulty transferred to consciousness. A question asked will sometimes be answered, quite coherently, after the lapse of many seconds, or even two or three minutes.

The delirium is of the lightest and most easily dissipated character,—scarcely more than is often observed for a few minutes in some slight febrile affections of early life.

There are no convulsions. In Cerebria I have never seen convulsions, until close upon the end of life. This must be understood as applying *only* to *general* cerebritis; when it is *partial*, convulsions are frequent and severe.

The same observation applies to paralysis. In cerebria it is absent; in the partial form it is a constant symptom, or nearly so. In the form now described there is an indisposition for muscular action that closely simulates paralysis; but that it is not really such is shown by a consideration of the second case quoted; where the boy, three days before death, after some days of inaction, got out of and into bed without assistance.

The general symptoms are not very marked. The pulse is not materially affected until near the end. The tongue is smeared and whitish, but only becomes brown and furred when the quasi-typhoid condition supervenes towards death.

The state of the pupil deserves a passing notice. Its general condition is about half dilated. On the approach of a bright light it contracts slowly, but also slowly dilates again to its

previous size without removal of the light. There is often much difficulty in determining the existence of this state, owing to the unwillingness of the patient to be disturbed.

What further is necessary to consider as to individual symptoms will be found in a subsequent chapter.

Such are the phenomena of pure acute cerebritis as they have frequently presented themselves to me. It must not be inferred that, because I have only referred to three cases, these are solitary instances of the disease. In some very similar cases I have been unable to verify the diagnosis after death by post-mortem examination, and therefore they have not been alluded to here. Some, again, have been found to be slightly complicated with meningeal affection, and are therefore excluded. And finally, others have been so closely identical in phenomena and morbid anatomy with the first two cases described, that their history would simply have been the same, with change of name and date.

As to diagnosis, cerebria is only liable to be mistaken for encephalitis of an irregular character, and for typhus fever.

From encephalitis it is at once distinguished by the absence of symptoms of excitement and of headache. There are none of those symptoms which are generally described as characteristic of the predominance of meningeal complication; there is not the increased heat nor rapidity of pulse, nor sensory irritability. But the pain in the head is the most certain diagnostic mark. In encephalitis there is always, in the outset at least, great and deep-seated pain. In all the cases of cerebria that I have seen, where the patient could give a clear account of the symptoms, there has been a slight headache accompanying the first vomiting, but it has passed off,—at least so the patients have *said*, so long as they could answer coherently. My opinion is that the pain is there, but that the sensibility or consciousness of it, or power of translating it into words, is benumbed or lessened. There is often an expression of face, a frown, or other outward sign, that suggests the existence of pain when the patient utterly denies feeling any.

From typhus fever also the diagnosis is not difficult. The fever usually has a period of incubation, during which more or less mild symptoms of disorder manifest themselves ; and the absolute invasion is rather gradual, and accompanied by headache, loss of appetite, and general uneasiness ; perhaps also with rigors. Cerebria begins, so far as I have ever been able to ascertain, suddenly, without previous disorder or observable prodromata of any kind, and its commencement is uniformly with vomiting,—generally only once. The *duration* of typhus fever is said to be from 14 to 26 days. I have never seen a case of cerebria last more than 10 or 12 days at the utmost. The *temperature* in typhus rises to 105° or more ; some writers say as high as 107°. I believe that in cerebria it is never above 101·5° or 102°. The mulberry rash of typhus is absent in cerebria ; but as it is not absolutely constant in the fever, this is not conclusive. It may be acknowledged that in some respects the general aspect and symptoms are not very dissimilar ; but the above considerations will generally serve to establish the real nature of the disease.

The prognosis is unfavourable in the extreme. Whether it is possible to modify in any degree the statement I have before made as to the absolute and uniform fatality of this disease, I do not know. It must be remembered that there is no *absolute demonstration* of the existence of cerebria until after death. Our conviction of its existence may be strong, even overwhelming ; but sufficient doubt must remain to make us hesitate in pronouncing a case to have been cerebria, which has recovered. And yet it *may be* that cases of this sort have got well, and been set down as congestion. I will give, in the merest outline, two cases that may possibly have belonged to this category.

Case IV.—J. C., aged 4, female child, in good health apparently up to the time of attack, vomited once and largely soon after breakfast. For an hour or two she recovered, and seemed pretty well, except for a flushed face and a little lassitude. (One grain of calomel was given at this time.) At the end of two hours she became drowsy and heavy, and fell into a sleep from which she could not be roused. There was some heat of head,

but not much ; and a slight flush on the face. The breathing was rather interrupted and suspicious for a while, but finally settled into a deep steady respiration. The pulse was 100, rather full, but not irregular to any great extent. There was nothing else noteworthy. This deep sleep lasted just 24 hours ; then the bowels were freely moved, and the child awoke apparently well.

Case V.—R. H., aged 38, a surgeon in considerable practice, and of very active habits, was the subject occasionally of hepatic derangement. On the 12th May 1868 he was in better health than usual in the morning ; but about noon, without having taken anything, and without previous nausea, he vomited copiously, and had some dull frontal pain. When I saw him, about two hours afterwards, he was duller in manner than usual, but did not complain much, and said his head was better. The pulse was 80, soft and rather irregular ; the tongue was furred, but that was almost always the case. Towards evening some tendency to stupor appeared, with heat of head and injected conjunctivæ ; the pupils also were flickering and variable. There was some jactitation, but no violence. There was no detectable loss of power on either side.

This state continued with little variation for four days and nights. He could always be roused to some comprehension, and to *the beginning* of an intelligent answer to a question ; but after a few words he went off into an incoherent mutter, or *blowing whisper ;* a kind of semi-articulation very common in these affections of the brain. He rolled from side to side occasionally, and breathed heavily and rather *sobbingly*, but not stertorously. After a very free evacuation of the bowels, produced by two drops of croton oil, this condition disappeared ; not all at once, but rather rapidly, and in a few days more the patient was as well as usual. He has had no recurrence of the attack up to the present time (1872).

I give these cases without comment,—*valeant quantum.*

The *System of Medicine* pronounces that "the prognosis is as bad as it is possible to be. There is no probability of recovery when symptoms such as those above described have been developed." (Page 433, vol. ii.)

Concerning treatment, I fear there is nothing satisfactory to be said. In the outset, if convinced of the existence of cerebria, I should give a dose or two of calomel, adapted to the age ; more with the intention of acting on the secretions, than with any idea of its specific action. I should by this, and if necessary by other means, insure a complete and full action of the bowels. I should keep the head *damp* and evaporating ; but not covered

with cloths or ice-bags. The question of depletion, local or general, would have to be decided on the merits of each case separately, and chiefly by the two considerations of constitution and apparent vascular action. On this subject I would refer my readers to Sir Thomas Watson's remarks on the treatment of cerebritis, where the question of blood-letting is judicially and authoritatively reviewed. All these things I would suggest, because they are useful in some other analogous affections ; but I must frankly confess that up to the present time I have seen no obvious effect produced by any form of treatment in this affection. I shall, however, have something to add hereafter, when treating of Partial Cerebritis.

## CHAPTER VI.

### ON CEREBRIA—(*Continued.*)

In further investigating the claims of cerebria to recognition as a distinct and individual disease, I must necessarily refer to the descriptions of "Cerebritis," as given by previous writers; and upon these I have one or two observations to make, which will not, I trust, be misunderstood.

In comparing the descriptions given of brain diseases in some of our systematic treatises with the actual phenomena of these affections as observed at the bed-side, I have been struck with a curious sense of incongruity, or want of correspondence. It is not so much that the symptoms are not described, but that they are, perhaps, more than described; involving a want of special portraiture by which to recognise a special disease. All the features are there, but there are so many others that may be, or might have been, that we seem to lose the force of specific distinction.

I think this has perhaps been due to a mental tendency, to which I have before alluded when speaking of the obstacles in the way of the advancement of our knowledge,—that is a tendency towards the "*idola specus;*" in reference to which Bacon says that "*infinitas errorum et falsitatum imagines haurire necesse est, si e specu sua raro tantum et ad breve aliquod tempus prodeant, et non in contemplatione naturæ perpetuo, tanquam sub dio, morentur . . . quod homines scientias in mundis propriis, et non in mundo majore, quærant.*"—De Augmentis Scientiarum.

I cannot avoid the impression that some of the descriptions alluded to have been rather the result of reason than of observation; and that the array of phenomena portrayed has represented rather what *ought to be* from some preconceived physio-

logical or pathological point of view, than what had been actually observed in individual cases. It has been before hinted that those who are chiefly or exclusively devoted to these branches of investigation do not always observe the living symptoms of disease with the greatest accuracy; and as the eye "sees only what it brings with it the power of seeing," the physiologist may perhaps see in brain disease only the natural and logical sequence of a disturbance of functions such as he predicates of the brain.

Thus, recognising that the brain is the seat of motor, sensory, and mental functions, he naturally (and justly) concludes that the organ will not be greatly diseased without all these functions suffering. Pathologically he traces the progress of the affection, and predicts or sees a corresponding progress or change of symptoms. Hence arises a description that reminds us of a diagram of possibilities, rather than a history of events. There is a period of "incubation," with its divisions into phenomena of the motor, the sensory, and the intellectual order; followed by two, three, or even four stages, of the actual invasion and progress of the complaint, each stage having its three classes of symptoms as before; under these various headings being comprised every possible modification of nerve function.

By this process we certainly get a sufficient catalogue of possible symptoms; but, so far as I have observed, only an imperfect portrait of disease. All the real features are there, but so overloaded with other matters that we lose sight of them.

Contrasted with these are other delineations, obviously from the life, of this class of disease; and the best of them, that by Sir Thomas Watson, I give here *in extenso*, that I may be able afterwards to compare with the symptoms here given, those of cerebria as just described.

"Phrenitis, or encephalitis, or acute and general inflammation of the brain and its membranes, as it occurs in adults, presents two periods, which are marked by different symptoms, and in most instances are very distinctly observable. In the first period what are called symptoms of excitement predominate;

the functions of the organ are exaggerated as well as disordered; in the second period those symptoms appear which are comprised under the term collapse. Sometimes these two sets of symptoms, instead of following each other, are more or less mixed and confounded together. But the distinction is real, and requires to be attended to. The symptoms that characterise the *period of excitement*, are, pain in the head, often intense and deeply seated, or extending over a large part of it; a sense of constriction across the forehead; throbbing of the temporal arteries; flushing of the face; injection of the eyes, which have a wild and brilliant look; contraction of the pupils; preternatural sensibility to external impressions, amounting frequently to impatience of light and of sound; wild or raving delirium; want of sleep; paroxysms of general convulsions; a parched and dry skin; a frequent and hard pulse; a white tongue; thirst; nausea and vomiting; constipation of the bowels."

As to the mode of invasion, three or four different forms are described. The first is with "alteration of manner," pain in the head, and the patient "becomes all at once and furiously delerious." This, however, is not a very common accompaniment of encephalitis.—(Watson.)

The second form commences with "nausea or vomiting," which may soon cease, or "continue several days, and even sometimes throughout the whole course of the disease. . . . With this state of matters there is generally much constipation, and the bowels refuse to act except under the stimulus of strong purgatives."

The third mode of invasion is by "a paroxysm of general convulsions, such as often ushers in an attack of meningitis."

A fourth class will commence in "some irregular or obscure manner, or with some unusual phenomenon," as perhaps "a sudden loss of the power of speech."

The phenomena of excitement "continue for a variable period, from 12 hours to 2 days or more, and then they are succeeded by others which characterise the *second stage* of the complaint, or the *period of collapse*, as it is called. . . . The

patient ceases to complain of headache; instead of being excited or delirious he mutters indistinctly and falls into a state of stupor, from which it is difficult and at length impossible to rouse him. His vision and hearing are no longer painfully acute, but dull or perverted; strabismus and double vision are not uncommon; and the pupil, from being contracted to the size of a pin's head, becomes first oscillating, then widely dilated, and ultimately motionless, or the two pupils may be unequal in size. The patient is not shaken at this period with violent convulsions; but twitchings of his muscles and startings of their tendons come on, and some of the limbs are agitated with tremors, or become powerless and palsied; the countenance is ghastly and cadaverous, cold sweats break out, the sphincters relax; at length the coma becomes profound, and life ceases."

That this is a life and death portrait all must recognise, and it will serve well to indicate the contrast between encephalitis and cerebria. In the latter there is no division into periods of excitement and depression or collapse. There is no period, however short, wherein "the functions of the organ are exaggerated." Continuous depression is the characteristic throughout. There is but little pain in the head; in fact, there are scarcely any *subjective* symptoms. There are no general convulsions, and but little heat and dryness of skin. The pulse, which in encephalitis is frequent and hard, in cerebria is rarely above 100, and generally soft. The tongue is slightly white; there is not much marked thirst, and but little nausea after the first vomiting. Constipation also is much less obstinate than in encephalitis.

In the modes of invasion the above sketch mentions four forms. In cerebria I have seen but one—viz. that by vomiting. So far also as I have observed, there is no paralysis of any limb in cerebria. There is often much *indisposition to motion*, but never, I believe, the actual and complete loss of power.

Many writers, as was observed before, describe two, three, and even four stages of this disease—cerebritis—characterised

by various forms and degrees of excitement and collapse. In cerebria proper there is no division into stages, nor any particular variation until the last day or two of life, when a typhoid condition often supervenes; a circumstance common to most febrile affections that end fatally. Sir Thomas Watson makes the following practical remarks on this subject:—

"For my own part, I conceive that for all practical purposes it would be quite enough to make two stages only of this disease. In the first the symptoms are those of inflammation of the parts within the cranium, or of some of those parts; in the second, we have the symptoms that result from the consequences and products of that inflammation, from softening and from the effusion of lymph or of serum. And frequently these sets of symptoms are, in some respects, common to both these causes; and more frequently still, the causes coexist,—effusion taking place, yet the inflammation going on. And we may understand how the whole collection of symptoms may vary and fluctuate, and assume an uncertain character, according as the inflammatory process has ceased, or is still in progress; according as it exists alone, or is mingled with the further source of cerebral disturbance that is furnished by its own events; and according as the inflammation may have come to an end while its events remain behind, and declare their presence by appropriate signs in proportion to their place, their extent, and their various kinds and combinations."—(P. 400.)

The next point of distinction between encephalitis (cerebritis) and cerebria is a most important one, viz. that relating to the post-mortem appearances. For purposes of comparison I extract the following account from the distinguished writer just quoted, as it has the merit of being perfectly clear, without entering unnecessarily into microscopic minuteness of detail:—

"The morbid appearances met with in the dead body are very various. Serous or puriform effusion into the ventricles, or into the meshes of the pia mater; layers of coagulable lymph between that membrane and the arachnoid; softening of the cerebral substance, with pus infiltrated into the softened parts;

or great vascularity, shown by a pink or purplish mottling of its cut surface, giving it a stained appearance."—(Pp. 349-353, vol. i., *Lectures on the Principles and Practice of Physic*, 5th edit.)

Now, the appearances here mentioned of the brain tissue itself exactly accord with my observations, except that pus-globules are rare in my experience of cerebria proper. But the presence of meningeal mischief distinguishes the one from the other completely. The great characteristic of cerebria is its freedom from meningeal complication.

My attention was most especially directed to this point by having given an erroneous opinion as to one of the cases related. The second case mentioned was the first in point of time that I saw in that marked form. I was not then familiar with the disease as a distinct pathological condition; and in some impromptu (and, as it proved, *premature*) clinical remarks soon after the death of the patient, I committed myself to the opinion that, notwithstanding that the symptoms were so very unlike those of ordinary encephalitis, we should meet with general cerebritis and indications of tubercular meningitis. This arose from a long knowledge of the tubercular history of the family. Having said this, I was a little anxious to see it confirmed by the inspection; but although, with this in view, the membranes were examined by sight and touch with the greatest care, neither I nor a very skilful pathologist who aided me could detect the least departure from their normal condition; although the brain itself, as before stated, was so altered in texture and consistence that it would not hold together, but fell nearly flat by its own weight.

I have omitted to mention, in its proper place, that in this case the cerebellum was *less* affected than the cerebrum, although it was much softer than in its normal state. In the third case it was very deeply injected, and the grey matter very dark. In the first case the alteration was not so marked.

Thus far, then, it is evident that cerebria is very different, both as to symptoms and anatomical characters, from cerebritis as ordinarily described, encephalitis, or phrenitis; and its claim to be considered a distinct disease would appear to be established.

When this subject was brought in 1870 before the Royal Medico-Chirurgical Society, there were certain objections urged, in the most courteous and friendly spirit, against these views, which I will here notice, and as briefly as possible answer.

1. It was alleged that this was no new disease, inasmuch as the conditions and symptoms in question were well known to, and recognised by, practical men. To this I could only reply that I had nowhere met with any description of such cases in our clinical records; nor had I ever seen, in any pathological work, any account of a brain such as was described in Case II., so utterly softened and disintegrated throughout, yet without change in the membranes. If the prototypes of these could be shown to me, I should have but to apologise for inflicting upon my readers a "twice-told tale."

2. It was suggested that the fact of inflammation was not fully established, and that the formation of pus was necessary to constitute inflammation. To enter upon the controversy as to what is and what is not inflammation, would be interminable. It must suffice to say that my intention was to describe essentially a *non-suppurative* inflammatory affection of the brain. That pus, moreover, is not an essential accompaniment of inflammation is evident when we consider how very large a proportion of inflammations, superficial and internal, appear and disappear without suppuration.

3. It was said that I had classed together cases under one anatomical title, that had no common anatomical characteristic. To this I would suggest, in reply, that the three cases were selected expressly because they illustrated successive stages of the same disease; and that they probably had as much community of character as the different stages of pneumonia, tubercle, or cancer. In the first case, which terminated in 36 hours, there was little change of texture. In the third there was some additional firmness, the patient being an adult, and having, as a consequence, a brain-tissue more capable of resistance to disintegration than that of the boy who was the subject of the second, and by far the most characteristic case.

The condition of the brain in this adult was such as might be expected in any inflamed tissue in an early stage, where the density is generally increased. In the second case the brain was softened throughout its entire extent, and disintegrated, this patient having survived longer than either of the others, and having a less resistant brain-tissue to begin with.

In all this there seems to be nothing to prevent the cases being classed together; but even were the anatomical characters more diverse, I might support my alleged error by the high authority and example of Dr. M. Jastrowitz, who, in his elaborate treatise on *Encephalitis and Myelitis in Infants*, confesses that he has classed together numerous cases under this title that have not the same anatomical characteristics.*

But, again, if these affections be not examples of true acute inflammation of the brain substance, *what are they?* That the essential seat of the disease was the brain, is evident from the symptoms during life, the appearances after death, and the absence of any morbid change in any other organ. That they were *acute*, in the strictest sense of the term, seems hardly to admit of even verbal dispute. They were not simply congestive; neither the symptoms nor the anatomical appearances accord with that view; nor does congestion result in the entire disintegration of tissue remarked in the second case. They do not accord with any known form of softening, which, when acute, is always limited to a *portion* of the brain; whereas the morbid changes in these cases were manifest throughout the whole substance of the brain. Moreover, actual *softening* was only present in one case. *Degeneration* is essentially a chronic process, and the appearances characteristic of this affection were not present in these cases.

If, then, my facts and observations be trustworthy, Cerebria is an independent inflammatory disease, different in symptoms

* "Sie scheinen mir von Wichtigkeit, obwohl eine anatomische Begründung, wie ich vorweg nehmen will, nicht eigentlich gelang." See the *Archiv fur Psychiatrie und Newenkrankheiten* for April 1871; *Encephalitis und Myelitis des ersten Kindesalters*, von Dr. M. Jastrowitz.

and essential characteristics from the forms of inflammation hitherto described, and entitled thereby to a distinct place in our nosologies. The general feature which chiefly characterises it is *oppression,* with lowering of the volitional and intellectual functions ; and this is quite in accordance with what we know, or think we know, of the functions of the cerebral lobes. I cannot enter upon the very extensive and difficult field of comparison between the symptoms of this disease and the results of physiological experiment. Those who pursue the subject in this direction will meet with much that will repay their exertions. But the confirmation or refutation of the views here set forth must not be a matter of argument or physiological induction, but one of carefully conducted clinical observation.

# CHAPTER VII.

## ON PARTIAL (OR LOCALISED) ACUTE CEREBRITIS.

PURSUING my design of only treating upon those forms of disease which have either not been described before, or the descriptions of which have not appeared to me to correspond with their clinical aspects, I proceed to discuss the very remarkable and complicated phenomena of partial inflammation of the brain substance ; a disease which has either not received the attention which it seems to deserve, or has been classified and described along with other forms of brain disease, as softening, from which, as will appear in the sequel, it differs widely both in symptoms and essential nature.

It will be observed that I do not call this affection partial *Cerebria;* but retain its old name of cerebritis ; as this, especially when the inflammation is near the surface of the hemispheres, is almost always complicated with meningitis ; and I wish, for the sake of accurate distinction, to use Cerebria only as the synonym for an affection existing without this complication. Moreover, as partial cerebritis has often been described before, though I venture to think with some imperfection of detail, I have no wish to change the name by which it is, and has been always, known.

The connection of this disease with that before described, if viewed anatomically or pathologically, is very close. In a *clinical* aspect, the contrast between the two is most emphatically pronounced. In order to indicate in the clearest light both the connection and the contrast, I must refer, in as few words as practicable, to the characteristics of cerebria before given.

I described, in the foregoing chapters, a disease occurring suddenly, without obvious cause or *any* premonition, commencing uniformly with *vomiting*, terminating also uniformly, in a few days, in *death*,—the symptoms of which are not characterised by any great urgency or speciality, but proceed with unbroken continuity to the fatal termination. The anatomical characters were described as those of universal *non-suppurative* inflammation of the white and grey matter of the brain, the meninges being unaffected. Partial cerebritis differs completely from the disease before described—(1) in its general characteristics, (2) its prodromata, (3) its method of invasion, (4) its progress, and (5) its special symptoms.

1. *General Characteristics.*—The disease which has already been described is not, in its superficial aspect, a *severe* one. Its symptoms are mild, and devoid of any special significance—that is, *apparently* so. On the other hand, the various forms of Partial Cerebritis are distinguished by phenomena of the greatest variety and intensity; and each case sums up in itself perhaps as great a range of organic and functional disturbances as can by any possibility occur in the course of any one disease. This statement will receive ample illustration afterwards.

2. *The Prodromata.*—These are entirely absent in cerebria. I have never observed anything which could fairly be termed a "warning," before the actual invasion of the disease. In the partial form there is almost, if not quite, invariably, an alteration in some function, bodily or mental, which indicates the approach of some cerebral disorder. This, in by far the greater number of cases, consists in an alteration of temper, spirits, or general disposition, frequently manifested by *depression*, but also in some remarkable instances by an *exaltation*, such as not unfrequently attends the onset of "General Paralysis." When depression is the chief characteristic, it is not unusual to cast about for some tangible cause, either in the circumstances or surroundings of the patient, to account for the melancholy; and as few lives are free from some disturbing element, this is not very difficult to find or to imagine; so that, when the disease is fairly developed,

it is often attributed to this insufficient influence,—a not infrequent example of the reversal or confusion of cause and effect. Beyond this, the prodromata consist chiefly of slight headache, and some persistent disorder of the nutritive functions, as nausea, with *occasional* vomiting, this latter being, in my experience, rare.

3. In its *Method of Invasion* partial cerebritis differs from the general form very materially. The latter *always* begins with vomiting—(of course I speak of it *only* as I have seen it) ; the former *never* begins thus, without some previous disorder. The most usual mode of invasion, when not very gradual, is by a momentary fainting, or approach to fainting, a swimming or dizzy sensation in the head, or a very slight and transitory apoplectic seizure, followed by a period of vague and indescribable "*ill*-feeling," of which the patient can give little or no account or definition.

4. The *Progress* of the disease.—This presents some very remarkable features, and *one in particular*, hitherto not specially described, which appears to me *pathognomonic* of this affection ; distinguishing it not only from Cerebria, but from every other disease of which I have any knowledge, unless I may except some extremely marked cases of "remittent fever." I described cerebria as pursuing a seemingly mild course, yet from bad to worse, from its commencement to its termination, unchecked and unmodified by external or internal influence. This is not the case with the disease now under consideration. Every case (and again I speak only of my own personal experiences) is marked by *remissions*, sometimes regular, at other times not so ; sometimes numerous, sometimes having only one in its course ; sometimes *complete*, and sometimes incomplete.

It is this *complete remission*, occurring sometimes when dissolution appears to be imminent in a few hours, that I allude to as being pathognomonic of this affection. In one case, which I propose to relate in detail, it will be seen that the patient was, to all appearance, moribund on one particular evening, and yet, the next morning, was in a condition not to be distinguished from one of perfectly restored health ;—a state of matters which

lasted through the day. Doubtless, variations in the urgency and intensity of symptoms are often noted in affections of the brain; but I am not aware that this *marked* characteristic has received any systematic attention from writers on the subject.

The only passage that I distinctly remember as treating on this subject, is the following, from Sir Thomas Watson's Lecture on Acute Hydrocephalus :—

"This (the second) stage may last a week or two. And what is remarkable, it is often attended with remissions, sometimes sudden and sometimes gradual,—deceitful appearances of amendment, and even of convalescence. The child regains the use of its senses; recognises again its attendants; appears to its anxious parents to be recovering; but, in a day or two, it relapses into a deeper state of coma than before. And these fallacious symptoms of improvement may occur more than once" (p. 400).

But there is no reference to such a phenomenon in the description of inflammation of the adult brain in these lectures. Dr. Abercrombie has not overlooked "the deceitful appearances of amendment" that occur in diseases of the brain. But I think that the phenomena which he so graphically describes are of a different nature from that now referred to. His observations will be found afterwards, in the chapter on Symptomatology. Further comments on this point will come with more force after the relation of the case referred to.

5. *The Special Symptoms.*—In cerebria the disturbances of functions and of special organs are comparatively slight, and devoid of obvious significance. In partial cerebritis it is almost invariably the case, that the organs are morbidly implicated almost throughout the body. The stomach, liver, and bowels, are affected early in the disease; the kidneys are usually next involved, as indicated by the appearance of albumen in the urine. Later on, the whole mass of blood shows signs of disintegration,—a hæmorrhagic tendency being manifested; first, from the bowels, next from the kidneys or bladder, and lastly from the throat and lungs.

In the symptoms more directly referable to the brain, the

contrast is quite as marked. *Convulsions* do *not* occur, or only at the termination, in cerebria. In the *partial* form they are rarely absent at some early period of the disease. And here another important distinction may be noticed, to which perhaps this presence or absence of convulsions may be due. Cerebria was described especially as *un*complicated with meningitis. Partial cerebritis is, so far as I know, *always* complicated with it. There may possibly be cases free from it, but I have not met with them ; and to this fact may perhaps be traced the greater urgency and complexity of the symptoms as a whole.

*Coma* is a late and not distinctive feature of cerebria, occurring only towards the close of life, as it may in any other disease. It is often an early, sometimes the earliest, symptom of partial cerebritis,—not persistent, but appearing and disappearing frequently in the course of the affection.

*Delirium* bears also different relations to the two diseases. In the former, as already noticed, it is late in occurrence, mild in character, and not constant. In the latter it is earlier, intermittent, and of a more urgent, irritable, or violent character. Coma, delirium, and a marked remission, often occur with some regular sequence, over and over again.

The *Pulse* is but little affected in the earlier stages of cerebria, and never attains any very remarkable frequency. In the partial form it is very early affected ; usually being very slow at the commencement, then rising to a greater frequency than it ever after attains, until a few days before death ; and generally being very variable, not only from day to day, or from hour to hour, but in different parts of the same minute.

Other differences are these :—The *general* inflammation occurs most frequently in early life, rarely after 30, never after 40, so far as I have seen. With the same limitation the *partial* cerebritis never occurs before 40. The *general* form lasts only from 48 hours to 12 days ; the partial form terminates never under 3 weeks, and rarely lasts beyond 6 weeks.

I have said that cerebria (with doubtful limitation) *always* terminates in death. With much reservation, I would express

my belief that partial cerebritis is not so uniformly fatal; but the reasons for this belief, and the arguments necessary for their illustration, must be reserved for another occasion.

The principal case that I select especially for the illustration of this disease is one of considerable interest in itself;—one also which I had quite exceptional opportunities of observing, from the actual moment of its invasion, with one slight interval, to its termination in death.

## CASE I.

*Summary.*—Early scrofulous history. Subsequent good health up to within a year of death. Prodromata chiefly of a psychical order. First attack, momentary fainting. One month after this an accession of stupor, followed by some excitement. Rapid progress to a typhoid condition, in the midst of which occurred an apparent *perfect recovery* for 12 hours. Death in three weeks after this event. Inflammation of brain tissue limited to a patch on anterior lobe of right hemisphere, with considerable meningeal effusion.

T. F., aged 43, by profession a teacher of music, was the subject of this history. In his boyhood he had been much afflicted with various indications of a scrofulous tendency, which had finally resulted in inflammation of both elbow-joints,—not ending in suppuration, but on its departure leaving both joints anchylosed, one completely, the other nearly so. At this time he was about 15 years of age; and from the period of his recovery, for about 25 years, he enjoyed almost uninterrupted good health until within three months of his death. Under difficulties that may easily be imagined, he became a highly accomplished musician, and acquired a very extensive connection as a teacher, in which avocation he was engaged above 12 hours every day, taking also three full organ services every Sunday. He was of extremely temperate habits, as active also as was consistent with his incessant work. I mention these circumstances, because I think that his constant labour (against which, knowing him well in the last few years of his life, I often warned him) had a considerable effect in hastening the onset of his disease. He married rather early, and had a healthy family, most of whom are alive and well now.

About two years before his death there occurred two circumstances, which attracted but little notice at the time, but which had a marked significance when viewed by the light of after-events. The first was of a psychical character. Up to this time, without being at all miserly, he had been of careful and economical habits,—always keeping in view the necessity of making provision for his family. At this time he began to be more lavish in his personal expenditure, purchasing quite extravagant articles of jewellery, and in other ways evincing some alteration of nature. There was no alteration of *temper*, which was always good and equable.

The second circumstance alluded to was of a bodily nature. He began

occasionally to point to one spot, about the middle of the *left* side of the forehead, saying that he had a "sensation" there, rather than a pain. He did not actually *complain* of it much, speaking of it rather as a curiosity than a source of suffering. It is worth a passing notice that this spot did *not* correspond to any change discoverable after death. The seat of disease was on the *right side* of the brain.

On January 1st, 1868, it chanced that I met T. F. at dinner, where there was music afterwards. He had seemed perfectly well, and in his usual spirits; but whilst playing on the violoncello he quietly laid it aside, and rose to leave the room. On reaching the hall he stumbled and fell, but immediately got up, and said he had fallen over the mat. He looked slightly "dazed," as though after a momentary insensibility; but beyond this he would acknowledge to no ailment or discomfort whatever, and seemed just a little annoyed at being questioned. For some time I saw him, by accident or by design, rather frequently; but he would never acknowledge to feeling otherwise than in his usual health. He was still fully occupied with his ordinary duties; and, so far as I could learn, ate, drank and slept quite as usual.

On the 29th of January, exactly four weeks after the occurrence just mentioned, towards evening, his wife noticed something which alarmed her, and sent immediately for the nearest surgeon. He found him in a dull, oppressed, apathetic condition, not easy to rouse, still not quite comatose, refusing to make any complaint, and rather impatient when roused. His pulse was 40 in the minute, and the head was hotter than natural. This was succeeded by one or two hours of an almost comatose condition, followed by a night of very disturbed, restless sleep.

The next day, when I first saw him, the pulse had risen to 100; there was much heat of skin, some headache, and a rather furred tongue. He was restless, apparently quite conscious, but unwilling to acknowledge any illness. He answered questions readily, for a moment; but very soon showed a tendency to "trail off" into an unmeaning jumble of half-muttered words, until the attention was recalled by another question. (This is almost constantly observed in this disease, as though intelligent thought were constantly giving place to unconscious cerebration.)

From this time, for the three following weeks, the case presented an aspect, and pursued a course, not very unlike what is observed in continued fever, with cerebral complication. Occasional attacks of stupor alternated with restlessness and jactitation, and these sometimes gave place to an appearance of quiescence and general improvement. Now and then there was a shudder and some general tremor; and after the 13th of February there appeared some involuntary chorea-like jerks of the left arm and leg. About the 17th, stupor and muttering delirium became constant, with occasional convulsive movements of the left side. The urine and fæces were discharged involuntarily, and were of the most intolerably offensive character.

On the evening of the 20th February the situation appeared utterly hopeless; and dissolution seemed imminent in a few hours, or even minutes. The general aspect was as that of one dying of typhus. The body was bathed with clammy perspiration; the eyes were half closed, revealing only the whites; the mouth and tongue were hard, dry, and black, covered with sordes; the lips were drawn back over the blackened teeth; and the whole aspect was ghastly in the extreme. Insensibility had been complete for twelve hours, and all the limbs were slightly but constantly convulsed. The pulse was gone, or only felt occasionally as the feeblest flicker.

On the next morning, February 21st, we found the patient sitting up in bed, looking rather worn, but otherwise appearing perfectly well. The most attentive examination failed to detect any departure from ordinary health. Sensibility and consciousness were perfect, and the power and command over the muscles normal. The mouth and tongue were quite clean and healthy looking. The pulse was under 70, regular, and of moderate volume. The temperature of the surface was natural; and the bladder and bowels had been evacuated naturally and consciously. Without entering further into details, I may say that three medical men who were present entirely failed to discover any trace of illness or disease.

This condition lasted almost through the day. Towards evening there was a *very slight* accession of febrile excitement, but he passed a night of fairly quiet rest.

From this time there was a steady, gradual, uninterrupted relapse into the above-described typhoid condition. The pulse rose, and became variable, irregular, and weak. The tongue became again furred, and then dry and baked. Occasional stupor occurred, and became more frequent and enduring as time progressed, accompanied by low muttering delirium. On the 26th there appeared a convulsive action of a few muscles, which afterwards increased, and never ceased until death. It began simply with an exaggeration of what had been a habit or *trick* in health, viz. a rotatory rubbing together of the thumb and first finger of the left hand, followed then by a rubbing together of the balls of the great toes. This action very gradually spread over the whole of the left side first, and then, invading the right side, became universal and incessant.

Albumen appeared in the urine, then blood in large quantities. There was after this, successively, hæmorrhage from the bowels, then from the mouth and throat. The bowels were moved involuntarily; but the urine was retained, and the catheter was required frequently.

Coma supervened, and death occurred on the 15th of March; ten weeks from the first momentary fainting; six weeks from the actual onset of the disease in its active form; and exactly three weeks after the complete remission above described.

*Post-mortem examination*—40 *hours after death.*—The meninges gener-

ally were much congested and presented a dark appearance. There was rather more fluid than usual in the lateral ventricles, and there was a considerable amount of gelatinous appearance from effusion at the base of the brain, and most particularly about the pons. But the focus of the disease was on the surface of the right anterior lobe of the cerebrum, where there was found a flattened dark-looking round patch of disorganised brain tissue, about an inch in diameter, and half-an-inch in depth. The fibrous matter appeared as if broken up, mixed with an abundance of blood-discs, some minute coagula, many exudation-corpuscles, and some imperfectly-formed pus-corpuscles. There was much effusion into the arachnoid over this patch. The brain tissue around it was much injected ; but the alteration of texture was well defined, and limited to the space mentioned. To enter further into details would occupy too much space. I may mention, in conclusion, that the kidneys were much congested, and nearly double the natural size. But all this *seemed* to be of recent date. I should also state that no *masses* of tubercle were found in any organ.

An interesting side-light was thrown upon the very remarkable remission noticed in this case, by another of different origin, that occurred to me some time afterwards.

J. N., ætat. 35, a mechanic, was knocked down one Sunday evening by a blow from a pewter quart pot on the head. In falling he struck his head also against a wooden bench, and was taken up insensible. It was stated by some bystanders that there was bleeding from the right ear ; but I cannot speak positively either on this point or his history for the next three days, as I saw him for the first time on the Wednesday following. At this time he presented the appearance of a severe apoplectic case. He had never manifested any consciousness since the original fall, could not be roused by any means, and was now stertorous and apparently moribund. Some ordinary treatment was adopted, unnecessary to dwell upon. On our visit the next morning, we learnt that about two hours before, he had suddenly awoke from his stupor, got out of bed to empty the bladder, and begun talking quite sensibly. We found him sitting on the side of the bed, quite coherent and collected, able to answer any questions, suffering no pain or discomfort whatever,—and apart from a rather dishevelled and disreputable appearance, seeming in good unexceptionable health. His tongue was clean, and his pulse 65.

In six or eight hours he passed again into a comatose state, from which he never recovered, but died on the Saturday, the seventh day after the injury.

On examination after death, a fissure was discovered extending from the middle of the left parietal bone to the foramen magnum. The skull was very thin. In the meninges and brain substance there was nothing

to distinguish this case from others of similar injury, dying at the same period. I shall, therefore, not detail the appearances. There was no pressure from depression of the bone in any part.

Though, in all cases of partial brain inflammation that I have observed, remissions more or less complete have occurred, I have never seen anything so perfect as shown in these two cases.

In the next case the remissions occurred with tolerable regularity on alternate days, and were for a fortnight very marked,—so much so that on more than one occasion considerable doubt began to be entertained as to the nature of the case. Death resulted in about four weeks from the first accession; and after death a portion of the right anterior lobe was found to present an appearance very like ulceration.

### CASE II.—Partial Cerebritis.

**Injury to head fifteen years before. Casual attacks of gout, apparently alternating with head symptoms. Tremors, delirium, and semi-coma without paralysis. Marked remissions on alternate days. Death. Apparent loss of brain substance.**

J. D., aged 45, merchant, was the subject of this case. Fifteen years previous to this attack he had an accident producing fracture and depression of the right frontal bone, for which surgical interference was required. The recovery was complete, and the health continued good, with occasional attacks of gout, up to five or six weeks before death.

The approach of the brain-mischief was gradual, obscure, and deceptive. On March the 3d, 1868, he had an attack of gout in the left foot, which differed in nothing from his previous attacks, but in a little more general disorder of the stomach and bowels, which did not yield as easily as before to ordinary treatment. There was some little headache, but no delirium, nor twitching, nor loss of power in any muscles.

On the 11th there was a marked diminution in the local affection; but along with this there was increased pain in the head, with frowning, restlessness, and some slight tendency to leave sentences and the answers to questions unfinished. The pulse was under 60; the head was warmer than natural; and the tongue was foul and loaded.

On the 12th all these unfavourable symptoms appeared to have been removed. The bowels had been freely moved by a brisk mercurial purgative. There had been some quiet natural sleep, the condition of the patient was in every way improved, and a favourable prognosis was entertained.

The next day the oppression of the faculties had returned in a more marked form, with more excited circulation, some amount of incoherence, and indisposition to be talked to. There was more heat of head, and some jactitation, with the suspirious and blowing respiration before mentioned

as characterising these diseases. This was again followed, on the subsequent day, by a marked remission and improvement in the symptoms.

These alternations continued to occur for several days, until on the 18th there was so complete an absence of all symptoms, pointing especially to the brain, that hopes were entertained that all the previous indications of disease had been functional, due to the so-called metastasis of the gout, which had never reappeared.

The next day, however, the general conditions were worse than on any previous occasion. The patient could only be roused to a momentary intelligence. He appeared then to understand what was said, and began to answer coherently; but after a word or two he went off into the "blowing whisper" which is so characteristic of this affection. There was almost continual stupor, with occasional muttering delirium, but no absolute coma, and no detectable paralysis. The pulse was 100, and rather irregular; the breathing suspirious and somewhat laboured.

From this time the intermissions were less frequent, and not so complete; there was no absolute freedom at any time from indications of progressive mischief in the brain. (It may be well to remark here, that whenever these remissions did occur, throughout the whole history of the disease, they always followed the free action of a purgative.) Coma was often profound, but not constant. Delirium was mild and intermittent. There was occasional twitching of the legs, but no definite convulsions, and no paralysis. During the last two days of life there was a little hæmorrhage from the bowels and the bladder. Death occurred on the 30th.

*Post-mortem*—36 *hours after death.*—The head only was examined. The seat of the disease was found to be at the spot where the skull had been injured so many years before. There was great adhesion of the soft parts to the frontal bone; so much so, that it was very difficult to detach them so as to ascertain the precise condition of the parts. But, when dissected carefully away, the surface of the brain, for about the size of half-a-crown, appeared *ulcerated*, and the rough surface was smeared over with a thin purulent fluid. There was also, apparently, an actual loss of brain substance. Although the inspection cannot be considered in all respects satisfactory, it is not without its special interest, as indicating how great and persistent is the influence of any pre-existing morbid process in determining the development of disease after great lapse of time. Another point worthy of notice was this, that although the disease was of so defined a character, and evidently the focus of the morbid processes which terminated in death, there was scarcely a trace even of injection in any other part of the brain, nor in the membranes anywhere, except in the immediate neighbourhood of the ulceration. The alteration of texture at the point itself was very superficial, as at a distance of less than half-an-inch from the surface of what I have called the ulcer, the tissue appeared normal.

Although I have described these cases as *acute* partial cerebritis, it is subject to question whether they should not rather be considered as *sub-acute*. This doubt will not apply to the following, which was certainly acute in its final stage; and how much of the early history was actually due to undeveloped organic change in the brain, must remain uncertain.

## CASE III.

*Summary.*—Two years of disordered health, with some peculiarities of manner. Actual outbreak of the disease with a fit (probably epileptic). Symptoms closely resembling delirium tremens. Great tremor, almost amounting finally to general convulsions. Death in seven days from onset. Inflammation of tissue of brain and membranes, with purulent effusion, in the right cerebrum.

F. A., aged 46, suffered for two years from constant gastric discomfort, with nausea and a sensation as of a "bad smell." The tongue was habitually furred, and the breath tainted to an unusual extent. The bowels were somewhat obstinate, and the urine occasionally loaded with phosphates. No treatment ever had much influence in permanently relieving these symptoms; the only benefit derived was from frequent change of air.

About the early part of the year 1867 there was noticed occasionally a slight but distinct change in manner, not easily to be described, which once or twice assumed the appearance of semi-intoxication. He was in reality a very abstemious person; but after some time he was often supposed, by those unacquainted with the facts, to be in the habit of drinking.

On the 10th of April, in the evening, he was found by the road-side almost insensible, with a cut over the right eye, produced by the breakage of his spectacles in falling. It would appear that in walking home, as was his frequent custom, from his office, he had been seized by some attack, of which he could give no account, and had fallen insensible. I can only conjecture that this had been an epileptic attack, on the ground that two or three of his relatives had been subject to epilepsy; and there was also a little wound of the tongue, apparently from a bite. Positive information was of course entirely wanting.

For two days there was nothing to direct attention to any impending danger, but on the 12th some symptoms appeared which alarmed the medical attendant, and he requested me to see the patient. I found him perfectly sensible, but excited. There was considerable muscular tremor everywhere, but especially about the arms, notably the left. The manner was rather agitated, and the speech quicker than usual, but a little "stumbling." The most noteworthy phenomenon, however, was one upon the occurrence of which the patient himself, a highly intelligent man, remarked with many expressions of wonder. He said that he "saw

things" that he knew were not there, creeping and undulating things, "*exactly as if I had got delirium tremens*" he said. This continued so long as the intelligence held out. The remaining part of the history differs but little from what we see constantly in delirium tremens, ending fatally. Constant visions of fear, violence, tremor, stupor, and muttered delirium,—these were the features until the end. So long as he was sensible he continued to speak of and describe his visions, with an occasional calmness and lucidity that suggested to me the idea of the sound hemisphere watching and reporting upon the vagaries of the unsound one. Death occurred on the 17th.

Had there been any doubt on the nature of the case—that is, had there been any question whether this was really delirium tremens or not —it would have been set at rest by the post-mortem examination, which revealed extensive inflammatory action over about one-third of the convexity of the right hemisphere, with great effusion of lymph and pus into the arachnoid and pia mater. There was no affection of the other side.

The cases thus far described have been examples of inflammation of the substance of the brain, near the surface. They are, as before observed, almost always, and of necessity, complicated with meningitis. I say *almost* always, because in Case II. there was no very distinct evidence of this complication beyond the adhesion.

Those instances of partial inflammation which occur near the central parts of the brain are different in their history and pathological relations. The symptoms are less urgent and complicated, although the fatal result is not less frequent. These cases have been fully and exhaustively described by many writers, under the head of "Red Softening" of the brain. I have nothing new to say on this point; as I know no method by which we can *clinically* distinguish between the cases, except as to the mode of invasion in some instances, which will be noticed briefly in the remarks I shall make on "Softening." The cases I have seen have not differed from those related in our pathological records in any essential or instructive particular.

The diagnosis of partial acute cerebritis is not difficult, except in so far as it is often rendered doubtful by the remissions. From "Softening," as described by the latest and best authorities, it differs in many important particulars, anatomical

and clinical; the latter, of course, only being of use in diagnosis. For the sake of order, however, I note here two important points, in which the morbid appearances of this affection differ from those of softening. It differs from White Softening by manifesting *constantly* a change of colour, and from the "Red" and "Yellow" forms, in one decisive particular,—that there is invariably, in the form of disease* now under consideration, a shrinking of volume of the tissue, whilst in softening (red) a section is said, by the highest authorities, to appear as though swollen. "When a recent red softening is cut into, the surface often rises up above the level of the surrounding parts, and presents a slightly swollen appearance" (*System of Medicine*, vol. ii. p. 462). I have little doubt that this swollen *appearance*† would be found in the *earlier stages* of inflammation; but, as death rarely occurs in an early stage, we are not familiar with its morbid anatomy. I do not dwell upon other differences, merely alluding to this, in order to indicate clearly that I am treating of a special and distinct affection.

Clinically, inflammation differs from the various forms of softening, as thus :—

1. From the "apoplectic" form, in the absence of aphasia and paralysis. The *power* of speech is not lost, but volition is much impaired. Sentences are begun intelligently, but trail off into a meaningless mutter. Paralysis is rarely observed in any perfect form; partial and comparative weakness is frequent.

* It will be understood that this point of distinction is only intended to apply to this particular form of *acute* or *sub-acute* inflammation, more especially occurring near the surface of the brain. There are many reasons for believing that the morbid appearances will differ greatly, even in inflammations of the same character, according as the inflamed patch is superficial or more central. Much of this difference may be, and probably is, due to the greater supply of blood, and the more free vascular communications near the surface. It is necessary to note this, inasmuch as I believe that many of the cases of red softening, now generally supposed to be due to embolism, infarctus, or thrombosis, are of purely inflammatory origin, the vascular obstruction being an effect, and not a cause, as will be mentioned hereafter.

† This *appearance*, and its probable true nature, will be discussed in the chapter on Softening of the Brain.

2. From the convulsive form it differs in the history, the absence of any early epileptiform attack, and the more gradual, and, when fully established, the much more persistent convulsion. This convulsion also lasts often until death ; whilst that by softening is said to be most "gradual and tranquil."—(*Op. cit.*, p. 447.)

3. From the delirious form it differs in the entire character and history of the delirium ; this never appearing at the commencement, only supervening gradually, and being of a much less defined and persistent character.

Perhaps the disease with which "Partial Cerebritis" is most likely to be confounded practically, is "Typhus." From this it is distinguished by the character of the invasion, the general prominence of active brain symptoms, and the absence of the characteristic eruption ; but, most of all, by the *remissions*, which are so marked a feature in partial cerebritis, and distinguish it, not only from typhus, but from all other diseases.

As to Causation.—I believe this disease to be altogether of constitutional origin,—allied frequently to a tubercular diathesis, or to some morbid heritage. In two families under my notice, the father died of *partial*, and a son and a daughter of *general*, cerebritis.

The Prognosis is very unfavourable ;—not, I believe, so utterly and hopelessly so as in the general form. Appearances found in brains occasionally seem to indicate the previous presence of inflammatory action, the effects of which have been repaired. Of this more will be said in the sequel.

On Treatment I have little to say, and that little unsatisfactory in a *curative* point of view. I know of nothing that has any direct influence in *removing* the affection. Still there is a point, which occasionally may be of importance, worthy of consideration. In the early stages of this disease the action of a brisk purgative *always* produces, for the time, a favourable alleviative result. It is sometimes, for family or business reasons, important to have a few hours of intellectual clearness ; and I speak with some amount of confidence when I say that this may,

in very many cases of this nature, be insured by a smart purge, as a drop of croton oil with or without a few grains of calomel. I think this also is another point of distinction between inflammation and softening.

Any further remarks on treatment I defer to a short chapter devoted to that subject afterwards.

I now in conclusion append a tabular review of the contrasts between Cerebria (or General Inflammation of the brain substance) and Partial Cerebritis; indicating the far greater severity and complexity of the phenomena attending the latter affection.

SYNOPSIS OF DIFFERENCES BETWEEN CEREBRIA AND PARTIAL ACUTE CEREBRITIS.

| | CEREBRIA. | PARTIAL CEREBRITIS. |
|---|---|---|
| Age of Occurrence | Between 8 and 35 . | Always after 40. |
| Mode of Invasion | With vomiting . . | Fainting, vertigo, or slight apoplectic attack. |
| Prodromata . . | None . . . . . | Marked—either of a somatic or psychical order. |
| General Character of Symptoms | Mild and indefinite . | Very urgent and complicated. |
| Progress . . . | Unbroken and uniform | Always varied by marked remissions. |
| Duration . . . | Two to twelve days | Three to six weeks. |
| Termination . | Always (?) in death | Very fatal; but not invariably so. |
| Convulsions . . | None . . . . . | Always present at some period. |
| Coma . . . . | Late . . . . . | Early. |
| Delirium . . . | Mild—not constant | A marked feature. |
| Pulse . . . . | Little affected until late | Variable from beginning. |
| Complications . | None of specific character | With meningitis, and also with extreme organic congestions throughout. |

# CHAPTER VIII.

## ON CHRONIC INFLAMMATION OF THE BRAIN.

In the preceding chapters it has been seen how striking is the contrast between general and partial inflammation of the brain, in almost every detail of their clinical history. But, widely as these differ in their phenomena, those of chronic inflammation are at least equally diverse from either; a position which I shall now proceed to illustrate, as far as the special difficulties that beset the subject will admit.

I must premise, in the outset, that I cannot give a complete history of the affection now to be discussed. It is a disease so obscure in its invasion, so exceedingly slow in its progress, so halting and indefinite in the sequence of its symptoms, as to render its description, in a special and recognisable form, almost impossible, in the present state of our knowledge. Cerebria is an acute disease, usually beginning and terminating within a few days, under the notice of one physician. Partial cerebritis runs a longer course, but is still continuous, and is generally the subject of observation during the whole period. In both these diseases it is a comparatively easy matter to observe and note down the phenomena during life, and to record the morbid appearances found after death; and hence to construct some intelligible theory of cause and effect.

But it is otherwise with the disease now under consideration. Its commencement is rarely marked by any symptoms which direct attention to the brain; its progress is slow, extending sometimes over many years; the patient rarely comes consecutively and to the end under the notice of any one practitioner; there are long intervals* during which moderate health appears

* "The disease in some cases assumed so completely an intermittent form as to mislead with regard to its real character. This tendency to periodicity is of

to be restored, and no one sees him. Finally, when death occurs, the probability of the inspection, if made at all, being made by any one well acquainted with the early history of the case, is very small indeed. Hence it results that, although the records of pathology abound with cases where evidences of chronic inflammation have been found in brains after death; and that we constantly meet with cases which, during life, present symptoms suggesting this condition of the tissue; yet there are few cases on record where the living symptoms and the morbid appearances have been united into one complete history.* Hence also it probably arises that the disease has obtained so little notice from systematic writers on the brain. By many authors it is not even mentioned; by others it appears to be alluded to rather for the purpose of formally completing a nosological arrangement, than with any intention of investigating its nature.

An important exception must be made in this general allegation, with regard to the chronic meningitis, with superficial inflammation of the brain substance, which is so frequently found in insanity, and especially in the general paralysis (progressive) of the insane. This has been often and fully described, both as to its symptoms and its morbid anatomy. But, for reasons which appeared cogent to me, I have endeavoured in these pages to treat chiefly on disorders of the brain as manifesting themselves by phenomena of a physical order. For full information on this particular topic, and on all matters connected with mental pathology, I would refer the reader to Dr.

frequent occurrence in all the chronic forms of cerebral inflammation."—(Dr. Crawford on cases related by Morgagni, Abercrombie, and others.)

* Dr. Abercrombie records one such case (No. XXIV.), which appears to have been under his care from the beginning to the end, a period of about 18 months. But although it can scarcely be questioned that this was, as described, a case of chronic inflammation of the brain substance; yet the history indicates clearly that in its commencement it was *acute* or *sub-acute*, and was treated accordingly. This distinguishes it from the class of cases with which I am now concerned, which are such as were *originally* chronic. The next case, No. XXV., does not appear to me to belong to this class strictly, but rather to be of the sub-acute character throughout. Its duration was but three months.

I find no cases of the nature in question reported or depicted in Dr. Bright's most admirable and comprehensive collection.

Maudesley's learned work on the *Physiology and Pathology of Mind;* and also to the article on "Insanity," by the same writer, in the *System of Medicine.*

Another form of chronic inflammation has also been described by authors, occurring first in a "small portion of the brain, and gradually extending to a larger one. The inflammation generally continues for a long time in the first stage. It may prove fatal in that stage, with symptoms of coma and convulsion; or pass on to softening and abscess, with their usual consequences" (Crawford). It is obvious, however, that the affections described thus are identical with softening, chiefly of the *white* localised variety;—a form of affection with which I am not at present concerned.

The disease which I am now proposing to illustrate clinically is a *diffused* inflammation of the brain, usually affecting both the substance itself and the membranes,—essentially chronic in its progress, having no tendency to pass into suppuration or *general* softening; but, on the contrary, rather to produce induration of a portion of the tissues attacked. This latter statement must, however, be understood with some limitation, as *local* softening does occur not unfrequently in portions of the affected substance, and is then the seat of the morbid process, which seems to be the immediate cause of the fatal termination, whether from hæmorrhage or any other cause. This occurs more frequently in middle than in very advanced life, and seems often due to the presence of some distinct disturbing agency, as pregnancy.

It is also to be remembered that the induration here spoken of is not a proper hardening of the nervous elements themselves, but only of the connective tissue, such as may occur in any other structure where chronic inflammation is in progress. The nerve cells and tubes themselves are found to be changed organically, and partially disintegrated, as in true softening. The axis of the nerve-fibre is often broken, and the cells of the grey matter are in many parts shrivelled, whilst those of the connective tissue are fully formed and abundant.

Although this inflammation is *diffused,* it rarely, if ever, occupies the whole of the brain, but may invade the greater part of one hemisphere, or may be found in patches on both sides, separated by healthy tissue. It will be seen hereafter that the immediate precursor of the fatal termination is not always found in the diseased part itself. The mode of death is various. Sometimes it occurs gradually, as by natural decay; sometimes with violent and repeated convulsions; most frequently, probably, by apoplectiform coma.

The symptoms are too varied and too intermittent to admit of any distinct formulation. In some cases they have attracted but little attention until very near death; in others the patient has been *complaining* for years, and has perhaps been taken for a hypochondriac. In the best defined forms there has been evidence of often-recurring pain and *heat* of head, with gradually increasing feebleness both of mind and muscular power; these symptoms being, however, so complicated and obscured by others, referred probably to the abdominal organs, as to render the true nature of the disease unsuspected, until some manifestation distinctly neurotic occurs, signalising their point of departure.

As I have before said, I believe it is impossible at present to give a complete account of this affection. What I propose to attempt is to give a brief sketch of a few cases that may serve as contributions towards its natural history. Some of these cases I have watched for years; some are dead, and I have no records of the morbid appearances; whilst others are still living and fulfilling their cycle of morbid manifestations. Another class of cases I have seen only a few hours or days before the end, but have been able to investigate the condition of the brain after death. I have, unfortunately, the records of no case which I have seen from the first, and in which I have been able to verify my conclusions at the last.

Case I.—J. S. was admitted into the General Infirmary (Sheffield), under my care, on February 6th, 186—. He was a labouring man, and was stated by his friends to be 67 years of age, but looked much older.

From causes which I am unable to explain, there was *no history* attached to the case; I could not even ascertain what had been the immediate symptoms that had required his admission. He was in a dull lethargic condition; appeared to comprehend, to a limited extent, what was said, and answered some questions; but the peculiarity of his mental condition was this,—he answered the first question with some apparent rationality; but on asking a second, the answer given was in *the same words* as that to the first; and it was only after repeated efforts that his attention could be directed to any other point; and on this being accomplished, the same difficulty occurred in changing again. There was, however, *no aphasia.*

He could give no account of his symptoms whatever; denied that he had pain in the head, but often put his hand to the left temple. On being pressed to name some pain or trouble, he could but say he was "too weak to work." Objectively, there was but little to take hold of. There was no apparent paralysis; the pulse was 70, rather feeble; the tongue was clean; and there was no local evidence of disease. The sounds of the heart and lungs were normal. He was very spare, and even emaciated. Even this limited amount of consciousness only lasted about 48 hours. He gradually became less and less alive to any outward impressions; and sunk into complete yet quiet unconsciousness, in which condition he died on the sixth day after admission. A few slight shudderings occurred in the last eight hours before death.

The post-mortem investigation, 30 hours after death, revealed extensive inflammation of the brain and its membranes, chiefly on the left side, where it almost occupied the whole of the convex surface; but there were also some patches on the right hemisphere. The inflammation was evidently of old standing. The dura mater adhered very firmly to the bone, and the membranes themselves were almost inseparably adherent in many places, and were exceedingly dry, there being scarcely a trace of moisture either on the surface or in the ventricles. The contiguous layers of the arachnoid were adherent along the whole length of the *falx major.* The so-called *glandulæ Pacchionii* were very numerous; and there were many patches of milky opacity of the membranes, and close adhesion to the brain. The brain itself presented a very mottled appearance, being in some parts redder than is natural, and in others of a grey tint, with here and there a patch of livid redness. The sensation in cutting into it was as of increased firmness; in some places feeling almost as if gritty. The inner portions of the hemispheres were much less affected than the cortical substance. There was nothing especially worthy of note in the lateral ventricles. There was no evidence of any recent or sudden accession of pathological change. It is not impossible that death may have been accelerated by privation.

Case II.—B. N., aged 48, a carpenter, consulted me in March 1867 for long-continued and sometimes severe pain in the head. He had been

suffering for six or seven years he stated; but the pain was now so much worse that he could not work,—he "often thought he should lose his senses;" and he described himself, after an attack of unusual severity, as feeling "dazed," and as if "*he had seen it all before.*" (To this phenomenon I have referred in an earlier chapter.) A few times, in the course of three years, he had become momentarily unconscious; but lately he had, as it appeared, had several distinctly epileptiform seizures. There was no paralysis, and no sensory disturbances, except "flashes of light" occasionally when the pain was at the worst. I do not think that at the time I suspected the true nature of the case. About three weeks after his first visit to me he had a series of epileptic fits, in the intervals of which he was entirely unconscious; and in one of these he died.

The post-mortem examination revealed a low form of inflammatory action on the right side of the brain, involving nearly the whole convexity of the hemisphere. The evidences were nearly the same in kind (though of less intensity) as those mentioned in the last case. There was adhesion and opacity of the membranes, in patches, and the same mottled appearance of the brain. The redder patches penetrated into the white matter in several places. There was this difference, however, that in this case there was effusion into the right lateral ventricle, and some amount of fluid in the *sub-arachnoid* space. The sinuses were much gorged. The left side of the brain was not in any way perceptibly abnormal.

Cases III. and IV.—I place these two cases together, as presenting great features of resemblance. Their history must necessarily be brief, as I only saw them when moribund. They both relate to deaths occurring in puerperal convulsions.

H. O., aged 42, confined of her fifth child, was seized immediately after with convulsions, from which she never rallied. There was no consciousness whatever from the first attack, and she died in about six hours. She had suffered at intervals, for some years, from her head, and in the course of the last three pregnancies had occasionally some very slight epileptic seizures, but none when she was not pregnant. I could not learn that there had been any more marked symptoms. The post-mortem examination showed some slightly opaque patches in the arachnoid of both sides, and a much firmer union than natural between the pia mater and the brain. The morbid appearances were much slighter, superficially, than in either of the former cases, but the brain was irregular in colour, and some parts of the surface were certainly inflamed. A considerable hæmorrhage was found in the cavity of the left ventricle, the walls of which were otherwise free from disease.

M. G., aged 37, was confined of her second child, and in four hours afterwards was attacked with convulsions, which, alternating with profound coma, terminated in death in twelve hours. The symptoms were

severe to the last extent; and after the convulsions had lasted about two hours, the left pupil became suddenly widely dilated, and presented the appearance as if *torn open*, whilst that of the right eye was contracted till it was all but invisible.

The history of this case is imperfect. I have no record of anything beyond a year or two of much depression and frequent headache, with sighing, and occasional nausea and sickness. One isolated fact alone I mention, for as much as it may appear to be worth. It was found after her death that she had left the fullest and most minute directions for the conduct of *her funeral*, which "she knew" was to take place after this confinement. Otherwise there had been no delusions; and she was said to be of an exceptionally calm and rational mental organisation.

After death there were marks of superficial inflammatory action in the brain, not differing in any important particular from those last related. There was also hæmorrhage, but in this case it was in the *pons varolii*, in the substance of which the clot made an extensive rupture.

The cases that follow I believe to be examples of chronic inflammation of the brain in its *most* chronic form. They lack the demonstration of a post-mortem examination; but they are certainly types of disease which we frequently meet with in practice, and illustrate certain phenomena of brain disease in some particulars worthy of consideration. The first case is interesting as showing how long disease of the brain may exist in a progressive form before causing death. The patient was under my observation for upwards of fourteen years. I date the actual commencement of the morbid change in the brain, whatever that might be, from the spring of 1856. The general aspect of the patient impressed me with the conviction that the disease was constantly going on and slowly spreading, and yet death did not occur until the autumn of 1868. Many cases of simple paralysis last much longer than this; but in these cases it is certain that the morbid changes are arrested, and the paralysis remains as a monument of the mischief done.

Case V.—Mr. N. was 56 years of age when he first consulted me in 1854. His family history was highly neurotic; paralysis, epilepsy, and mental deficiency having manifested themselves in the relatives on both sides. His personal complaints at this period were of slight epigastric uneasiness, constipation, and occasional trouble with bleeding piles; there

were no special symptoms pointing to the head. Some mild ordinary treatment gave him considerable relief from time to time, and his general health improved.

On May 8th, 1856, I received an urgent message to visit him at his house, some seven miles distant. When I got there, a few hours afterwards, I learned that he had, during the afternoon, had two slight attacks of vertigo, with sickness. Whether there had been any complete unconsciousness I could not satisfactorily ascertain; but he had for a few moments been unable to speak. He seemed now, with the exception of a slight dulness of manner, to be very much in his usual condition, and stated that he felt quite well again. In a few days he was out and about as before the attack; but from this time there was more constant and direct evidence of head symptoms, chiefly dull pain and heat.

Omitting all details but such as bear upon the central affection, I pass over some months, during which time he called upon me frequently, and always mentioned his head as either hot, or painful, or confused. The intellect remained clear; there was no paralysis, and the senses were unaffected. About 18 months after the attack alluded to, the head symptoms became so much worse that he had a seton applied to the back of the neck, which after a time gave very great relief. Shortly after its removal the symptoms began again to increase, and in the summer of 1859 I first noticed a little unsteadiness in his walk, of which he himself was totally unconscious, and a very slight hesitation in speech. Still the progress of the disease was so very slow, that it was only by looking back over a series of months that any marked difference could be observed. He continued to call upon me, notwithstanding some hints of the imprudence of trusting himself so far from home. At last, in 1861, I felt so convinced of an impending break-down, that I wrote to Mrs. N., communicating my fears, and requesting that her husband should not be allowed to come so far from home again, at least not without some one to take care of him.

This was too late, however, for the following day I was requested to visit him; and on my arrival was told that he had had another attack of vertigo, and had appeared ever since "very awkward." In truth, I found, on examination, that the whole left side was nearly powerless; a fact of which both the patient and his friends seemed entirely unconscious. In a few hours it was entirely so, without vestige of motion *or sensation;* and there was great general oppression, but not amounting to perfect coma. This was in due time relieved, but it was some weeks before he was able to speak. This was just five years after the first vertigo, from which the mischief in the brain was supposed to date.

After one brief period, in which some slight and transient improvement was promised, there succeeded seven long years of suffering. It

was the ordinary history of perfect hemiplegia ; only varied by occasional febrile accessions, headaches, and increasing tonic contractions of the muscles ; with progressive difficulty in swallowing and speaking, that showed the persistence and steady progress of the original disease. At length death occurred, seven years after the paralysis,—twelve after the first distinct symptoms of brain disorder. There was no post-mortem examination ; but I do not think any was necessary to prove that this was a case of simple, non-suppurative, and progressive chronic inflammation of the brain ; at least I do not know any other hypothesis that would so well account for the symptoms and progress. One other point is worthy of notice,—that, with the exception of some erroneous impressions as to the bodily functions, the intellect was moderately clear up to the last.

Case VI.—Mr. W., aged 63, a retired merchant, was the subject of this case. In general outline, the sequence of events was not very dissimilar to those in the last case, but it was not so long before the actual occurrence of paralysis ; and early in the history the mind became enfeebled. When I first saw him he complained of epigastric and abdominal uneasiness, and a variety of vague symptoms, with some confusion and loss of memory. Although it was a fine day in summer, I noticed that his coat was very wet ; and on inquiring the reason, he said that his head was always so hot that he *put water in his hat* to keep it cool. I mention this circumstance especially, because in all cases of chronic inflammation of the brain, this " heat " has always appeared to me the most constant and significant symptom. Heat of head, with dull pain, and failure of bodily and mental powers, may almost be considered distinctive of this affection, if occurring in advanced life.

About two years after the first symptoms there supervened complete right hemiplegia ; after which, for some time, there was a considerable improvement in his general health ; a circumstance not very unusual, when the morbid processes appear to have spent their strength on the production of one specific pathological change. The history is incomplete ; the patient is still living, paralysed, and suffering from the old symptoms in the head, but I have lost sight of him for some time.

Probably no one has been in active practice for any length of time without meeting with such cases as the last two here described. They are not brought forward, as were those in the chapter on Cerebria, as examples of any new or unrecognised form of disease, but merely as illustrating a very common clinical condition, which perhaps has not been localised in our nosologies with sufficient accuracy. In view of the modern doctrines

respecting the locality of *speech* and *language* in the brain, there is one fact perhaps not unworthy of a passing notice in these two cases. In No. V., where the hemiplegia was on the left side, and consequently the lesion immediately causing it on the right, there was for many weeks complete aphasia; whilst in No. VI., where the paralysis was on the right side, there was little or no affection of the speech.

Case VII.—The subject of this case is still living. Twelve years ago, when I first saw him professionally, he had been for some time under treatment, for the consequences of a carriage accident, in which he had received a severe blow on the head. There did not appear to be any injury to the bone, and there was no insensibility at the time; but ever since there had been constant pain and heat of the head. Considerable general derangement of the functions ensued, with nocturnal febrile accessions, and a tendency to "talk." He was under treatment for a long time, but finally recovered to all appearance. The pain and heat did not disappear until after he had had a seton in the neck for some weeks. Since that time any over-exertion, any mental emotion, or a very moderate amount of stimulant, has always threatened to bring back the pain and heat; but the bodily and mental powers have not suffered in the least. The significance of the case is marked chiefly by the history of the past year (1871), during which some suspicious symptoms have manifested themselves, in the form of severe neuralgic pains in the head and face, and very distressing diplopia. All these are more or less amenable to treatment by iodide of potassium and arsenic, which indeed have appeared from time to time to remove entirely all unpleasant symptoms; but they return on the slightest provocation.

I infer that there exists here inflammation in a chronic form within the cranium. Whether it is, and has always been, present ever since the original accident; or whether the pathological condition is to be measured by the presence or cessation of the symptoms, I cannot venture to decide.

Case VIII.—This, the last case which I propose alluding to in this chapter, is one concerning which considerable diversity of opinion may exist, as to whether it is simply atrophic degeneration, or chronic inflammation of the brain. I incline to the latter opinion, and therefore place it here; but as the patient is still alive, the history is necessarily imperfect. Mr. B., now aged 64, had, five years ago, a large abscess of, or in connection with, the kidney. He passed immense quantities of pus with the urine for many days; but finally recovered completely, and continued in good health for two years. Three years since he had some gastric derangement, with sickness and constipation, attributed at the time to the

state of the liver. The urgent symptoms were soon relieved; but from that time there was an entire change in his whole nature. From being bright, cheerful, and ready in conversation, he became dull, moody, and oppressed; and it was scarcely possible to extract from him more than one or two syllables at a time. When thoroughly roused, however, the intellect showed no sign of actual aberration, nor any want of comprehension. He would not complain much, but often put his hand to his head, which was warmer than natural to the touch. This state of things continues, almost unchanged, to the present time. The appetite is moderate, and the bodily functions are well regulated, but the brain seems constantly oppressed, as if with an intolerable load of care, for which there is certainly no reason. If asked a question he clearly comprehends it, and begins an answer; but almost immediately looks appealingly to his wife to finish it, and relapses at once into silent despondency. There is no paralysis and no sensory disturbance.

I feel that some apology is due for the introduction of cases so incomplete and so subject to doubt as these; at the same time I think the delineation of disease in its slow progress, and the attempt to refer its symptoms during life to some probable pathological change that may be taking place, will not be deemed altogether unserviceable.

There is a kind of chronic cerebritis which is dependent upon disease of the inner table of the skull, and which presents phenomena full of interest and instruction. This, however, has been so well described, not only in surgical treatises, but in special medical essays on Inflammation of the Dura Mater, that I shall not attempt its history here.

I will now endeavour to sum up in a few sentences such points in the natural history of this disease as may be legitimately deduced from the foregoing and other cases.

The Invasion of Chronic Cerebritis is most insidious and obscure, but its actual commencement appears sometimes, although rarely, to be marked by a slight and transient vertigo and faintness, which are remembered afterwards, when events stamp their significance.

Its Progress is exceedingly irregular and intermittent; so much so as to render it very doubtful, in many cases, whether the disease is really removed or not.

Its Duration is amongst the longest of all fatal diseases, often spreading over ten, twelve, or fifteen years.

The Symptoms of Chronic Cerebritis are of a most miscellaneous character, motor, sensory, and intellectual. Those most distinctive of the disease are pain and heat in the head, frequently confined to one side, with gradual diminution of the bodily and mental powers. These are constantly accompanied, and in many cases obscured or marked, by the greater emphasis laid upon symptoms referred to the abdominal organs. The pulse, the tongue, and the pupils, furnish but little assistance of a distinctive character. There is great torpidity of the functions generally.

The *Termination* is by coma, convulsions, or paralysis; all which have been sufficiently illustrated in the previous cases.

*Causation.*—This affection may have its origin in disease of the bones of the cranium, or in some mechanical injury. It may originate in a more active form in the course of other diseases, as fevers, or affections of the urinary organs, and be continued in a chronic form. Exposure to the sun, and long-continued intense cold, are exciting causes; and habitual intoxication very frequently terminates in chronic cerebritis. But by far the most frequent source of this, as well as the other forms of cerebral inflammation and degeneration, must be sought in constitutional and hereditary conditions. It is very rarely that we meet with any well-defined case of *idiopathic* cerebral inflammation, where some neurotic affections cannot be traced in an earlier generation, or in collateral relations. In persons thus predisposed, very slight exciting causes may operate in producing serious disease; and amongst these the checking of any habitual discharge, as from piles, etc., is a very powerful agent.

*Diagnosis.*—This disease, when established, is not likely to be mistaken for anything but a chronic affection of the brain. It is not important to distinguish it from Chronic Meningitis, as they are almost invariably co-existent. Tumour and Abscess have usually more defined symptoms of an unilateral character,

with affections of the special senses. From some forms of atrophy the diagnosis is very difficult, but not practically of serious moment. In inflammation pain and heat will usually be more urgent symptoms, and variations of temper will be more frequent and marked. The occurrence of *hallucinations* in a doubtful case will, I believe, always be distinctive of inflammation rather than a degenerative affection.

The *Prognosis* is unfavourable as to the ultimate result; although, from what has been said before, great relief of symptoms and marked remissions resembling recovery may be expected. And indeed it is not possible absolutely to say that the disease may not be entirely and permanently removed.

The *Treatment* will be discussed in a subsequent chapter. I may say here that I have found nothing give so much relief to the pain and heat as frequent sponging with water at about 75° or 80° F. Purgatives are very important agents for relief also. But it is important to observe that although we possess many resources, and very powerful ones, for the relief of symptoms, it is too often the case that the disease itself goes on unchecked in a latent form; and after a long interval of apparent convalescence, paralysis or convulsions supervene suddenly

# CHAPTER IX.

## ON SOFTENING OF THE BRAIN.

SCARCELY any subject has received more attention during the last fifty years than that of alterations of texture and consistence in the brain; and upon none has there been more difference of opinion as to their essential nature—a difference which is by no means set at rest even now. Some authorities pronounce all softening to be the result of inflammation. Others ascribe but a very secondary influence to inflammation, and consider that the greater part of the cases of softening met with are the result of nutritive defects due to vascular obstruction, degeneration, or disease. And even amongst those who recognise freely the agency of both classes of causes, there is great variety in the views as to which special forms should be attributed to one or the other.

And, again, although the fact is not contested by any authors that *Softening* does exist, many are of opinion that it is highly unphilosophical to recognise it *as such;* that it has no claim to an independent existence or nomenclature, but should be considered altogether with reference to its essential nature and causation. From Bouilland in 1825 to M. Hayem in 1868, and even later amongst our own writers, this view has been urged, that "softening," considered as a pathological state, is as unsatisfactory a description as "paralysis" or "apoplexy" would be; and that it ought to be treated under the heads of inflammation or vascular obstruction, etc.

As a matter of pure reason, this is doubtless correct; and when the time arrives that every pathological change can, without controversy, be referred to its original source, and the first link in the chain of morbid causation can be clearly

traced, then, but not until then, can our nomenclature and classification be placed on a correct and logical foundation. In the meantime, it is convenient to recognise a prominent phenomenon by a familiar and expressive name, from which, as a conventional, although perhaps unscientific, starting point, we can look round upon the various relations of the disease—etiological, symptomatic, and pathological.

To the anatomical descriptions of the various forms of "softening" already given in innumerable special treatises, I can add nothing; and as I wish, as far as possible, to avoid vain repetitions, I shall not venture upon this ground at all. For details on this subject, in accordance with the latest views, I would refer my readers to the excellent treatise on Softening in the *System of Medicine*, by Dr. H. C. Bastian, whose laborious investigations in pathology cannot be too highly estimated.

Nor can I enter into the controversy as to the special nature of each form of softening, which might well require a separate treatise. My intention in this chapter is simply to give, as briefly as possible, *the results* only of my observations and investigations, in relation to those conditions of brain which terminate in a softened state of the tissue. In so far as they may differ from the conclusions of other writers, they can but be taken as the expression of individual opinion, and not as representing the views received and established by the profession.

1. The brain, like all the organs of the body, is subject to variations of nutrition; waste and supply are not always exactly balanced. Where the latter is in excess, a condition of hypertrophy, attended necessarily by some induration, is the result; a pathological state described by Dr. West and others as occurring in children, and characterised almost exclusively by enlargement of the cranium. When waste is in excess of supply, true atrophy of the brain results, the *general* White Softening of advanced life. The tissue of the brain shrinks, and is diminished in volume, its place being supplied by passive

effusion into the cavity of the cranium; its consistence also is obviously diminished.

This condition is distinguished from the general inflammatory softening described under Cerebria, in three important particulars. (*a.*) In cerebria there is no shrinking of the brain, and no effusion. (*b.*) In this form of softening, the quantity of the blood in the vessels is clearly lessened; whilst in cerebria it is increased. (*c.*) Microscopic examination in cases of cerebria shows a large increase of nucleated cells, both in the nervous elements themselves and in the connecting tissue, whilst they are much diminished in softening.

This is almost exclusively a disease of advanced life. If it occurs before 65, it may be considered that some strong hereditary tendency is concerned in its development. Generally it occurs five or ten years later. It is characterised usually rather by a decay of the faculties, than by any very active symptoms. The special senses do not suffer so much as the motor and mental functions. The muscles become weak and sometimes atrophied; and the memory especially fails. It is necessary to add that a condition somewhat similar to this, but *without shrinking* of the volume of the brain, may occur as a sequel to long-continued disease in other organs, resulting in great debility and exhaustion.

2. The arteries and blood-vessels generally of the brain are liable to disease, whereby the circulation is disturbed or obstructed. As this vascular disease is partial, so are the modification of circulation, and the resultant nutrition. Hence occurs a condition similar to that last described, but limited in extent. This is the ordinary localised White Softening. It occurs in patches of varying extent, from a minute point to the greater part of one hemisphere. It is not very common to find it on both sides in the same case. It does not differ essentially in anatomical characters from the affection last noticed; but by contrast with the sound tissue it is more easily defined, and the test of washing away by a stream of water is more applicable to this than the last.

The clinical history, however, of partial white softening differs almost as much from that of the general form, as does that of partial cerebritis from cerebria ; in each case the disease that is limited in extent being distinguished by symptoms of far the greater intensity. For the present this must be accepted as a clinical fact, the result of observation ; to enter into the causes of this apparently paradoxical difference would complicate this sketch too much.

The progress of General White Softening (Atrophy) is not marked usually by striking events ; and death ensues gradually, as from exhaustion. Partial White Softening presents much more serious symptoms, in the form of disturbances of innervation of all kinds ; paralysis (hemiplegia or more partial forms), apoplexy, rigidity, and epileptiform seizures. For the occurrence of hæmorrhage and apoplexy there is the twofold reason, of original disease of the vessels, and a diminished resistance in the surrounding tissue ; and accordingly this is a very frequent episode in the history of softening, as well as a common mode of its termination.

Although this is not a disease of early life, it may occur normally at an earlier period than the general softening ; inasmuch as its special cause, vascular degeneration, generally of an atheromatous character, may occur much earlier than the ages before mentioned. I may here state my conviction that the one cause of this disease is *chronic* alteration in the vessels, and never embolism or thrombosis.

3. The brain is liable to inflammation, general or partial, producing softening of the kinds already fully described. But in addition it is subject to suppurative inflammation, which produces a special (grey or yellowish grey) softening. The pus is frequently collected in the form of an abscess, which may be of immense size. In one case, which I saw some years ago, of congenital idiocy, the abscess occupied nearly the whole of the left hemisphere, the substance of which it seemed to replace. Usually it is of smaller extent, and may either be encysted or surrounded by a boundary of softened and infiltrated tissue.

But in some rare cases the pus is generally infiltrated into the brain substance, and produces the special grey softening now under notice, without being collected into any cavity. I know little of this form of affection from personal experience, but it is described by authors. The anatomical characters are exactly identical with those which are observed in suppurative inflammation of the brain of traumatic origin, the nature of which is sufficiently well known.

4. The brain tissue is subject to a variety of alterations of consistence and colour, classed together under the name of Red Softening; and it is on this subject that the great battle has been, and continues to be, fought between rival theorists, as to whether these forms of softening are of inflammatory origin, or are due primarily to disease or obstruction of the vessels. The former view is supported by the high authority of Rokitansky, Gluge, Oppolzer, and many others. The latter is upheld by Prevost, Cotard, Vulpian, and others,* who bring forward many interesting experimental demonstrations of the production of softening by obstruction of the arteries artificially. It is also strongly supported by the opinion of Dr. Bastian, which deservedly carries great weight.

As I feel compelled, although with the greatest hesitation, to state my dissent from the views of the last-named most careful and distinguished observer, I will quote a passage in which these views are most clearly and compendiously set forth, and afterwards give my reasons for believing that the facts admit of and require a different interpretation. In the treatise on "Softening of the Brain," in the *System of Medicine*, already quoted, Dr. Bastian says:—" . . . The red colour being due to the increased quantity of blood in the part, and the extreme congestion of the vessels (combined with staining from transudation of colouring matter), we have in this fact an explanation of the circumstance, that when a recent red softening

* An excellent summary of the course of opinion, both in the English and Continental schools, on this question, is given by Dr. Bastian in the treatise afterwards quoted from the *System of Medicine*, vol. ii. pp. 450 *et seq.*

is cut into, the surface often rises up above the level of surrounding parts, and presents a slightly swollen appearance. Also, when red softening of the white matter exists, combined with the same condition of several of the contiguous convolutions, owing to the swelling and consequent pressure thus produced, these become flattened on the surface, while the sulci are rendered indistinct. The process of degeneration is the same in this form as in the simple white softening; and it may advance to the same condition of diffluence, the colour and composition of the softened part being altered by the great admixture of blood and the products of its retrograde metamorphosis."

"Red softening, if not of traumatic origin, as before stated, is almost invariably connected with obliteration of the vessels, or other impediment to the circulation; and the redness and swelling, which were formerly considered so indicative of its inflammatory origin, are capable of receiving an explanation, showing them to be dependent upon mechanical rather than vital influences."—(Vol. ii. pp. 462-3.)

The mechanical influences here alluded to are illustrated by the experiments of MM. Prevost and Cotard, who, by the injection of "water holding tobacco-seeds in suspension" into the arteries of animals, produced in the tissues supplied by those arteries appearances analogous to those of softening, with discoloration, consequent upon the obstruction of the arteries by the seeds.

"A few moments after the injection, there appeared, at the inferior extremity of the spleen, a red prominent spot of definite outline, which rapidly increased till it equalled that of a two-franc piece. The corresponding branch of the splenic artery was found to be obliterated by the seeds."

Upon this Dr. Bastian thus comments :—

"Here, then, are the two appearances, redness and swelling, produced so rapidly as to make it quite out of the question for us to regard them as of inflammatory origin, in spite of the opinion of Oppolzer, so that we must seek for a mechanical cause of the phenomena."—(*Loc. cit.*)

I venture to affirm that we must seek long and vainly for a satisfactory "mechanical" reason for the supposition that cutting off the direct supply of blood *from* a part has the direct tendency to increase the quantity of blood *in* that part. Vital* reasons can be found in abundance; but, mechanically considered, it would certainly involve a new principle in hydrodynamics. "Collateral fluxion through the contiguous capillaries," † or "venous reflux in consequence of the suppression of the *vis a tergo* on the side of the arteries," ‡ can on no merely mechanical principles account for the recognised fact of an "*increased* quantity of blood in the part." For if the pressure on the arterial side be diminished, and the flow of blood in a direct course lessened, doubtless we can understand that either the collateral or the reflux supply may keep up the natural or normal supply in the capillaries; but on what *merely mechanical* principles it can be increased I confess myself entirely unable to understand.

But I think it is comprehensible how the obstruction of an artery may institute certain *vital* alterations in the condition of the capillaries (perhaps through a kind of paralysis of the vasomotor nerves), so as to increase their calibre, and admit more blood, whilst the *sum* of the pressures on the arterial and venous sides remains the same. And that these vital changes do not require any more time than the mechanical operations in question, will be readily admitted by those who have experimented microscopically and chemically upon the web of the frog's foot, or any similar living transparent tissue.

Again, it may fairly be questioned whether the phenomena produced in the experiments just alluded to are at all identical with those of softening of the brain. There are redness and swelling; but there is no account of the presence of those corpuscles which are so characteristic an element in true red softening. I refer to what have been called the "compound

* I here accept Dr. Bastian's own antithesis between vital and mechanical influences. (See p. 463, line 12 from top, *op. cit.*)

† Rokitansky. ‡ Virchow.

inflammation globules" of Gluge. It is acknowledged pretty generally at the present time that there are not *proofs* of inflammatory action. It would perhaps be difficult to *demonstrate* that they are even evidences of increased vital action in the part, in the face of some facts showing that these globules have been observed in cases of simple atrophy; although I do certainly hold that opinion. But I think it admits of no doubt whatever that globules of this kind, and an increase of nucleated cells generally, must depend upon a *modification* of vital action, to say the least; and that in no sense, without some perversion of terms, can they be conceived to be the product of *mechanical* changes. For this reason, amongst many others, I am indisposed to admit the received doctrines as to the mechanical production of softening.

Referring again to the descriptions given by writers of the appearances of red softening, I think that in some respects they involve physical impossibilities. Amongst these I class that appearance so often mentioned, of the "rising up" of the cut surface above the level of the surrounding parts, which is attributed to "*swelling*" of the softened tissue. That the *appearance* is as described cannot be questioned,—that the *cause* is *not* that here mentioned is scarcely less doubtful.

Those who consider well the physical conditions of the brain during life and after death, will readily understand that no part of the brain can be found in that elastic and expansible condition which would produce this phenomenon. I have shown, in a previous chapter, that the *brain substance* is not susceptible of actual compression in the sense of diminution of volume, any more than an equal volume of water would be. When the brain is apparently compressed, and its volume diminished, either generally or locally, it is because pressure upon it has forced out the blood from its vessels; or that by prolonged pressure the substance of the brain has been absorbed and atrophied. Apart from diminishing the amount of blood in the brain, or altering its relative distribution, there can be no true compression of the organ.

If, then, a certain section of the brain be inflamed and swollen, we can understand that it may press and encroach upon the neighbouring substance, by pressing out the blood, and so produce the phenomena of flattening of the convolutions and rendering indistinct the sulci. But this being once accomplished, there is and can be no remaining elasticity in the inflamed part which would permit it to rise by its inherent force above a section made through it. The balance of pressure is equalised by extrusion of blood during life; there is no further balance to restore after death.

Whence arises then this *appearance* as of elastic "rising up?" I have no doubt that it arises from the mode of observation, as thus:—Supposing a patch of softening to exist in the centre of one hemisphere, and that we make a *vertical* section through the whole of the sound and diseased parts; it follows, almost as a matter of necessity, that the softened part will yield to the weight of the healthy tissue pressing upon it from above, and present the appearance of "bulging out," or convexity. If the section be horizontal, the result is not so obvious in this point of view; but as the brain generally requires placing in position, and supporting at the sides, to indicate the true relations of parts, the same effect will thus be produced by exactly the same physical cause. I do not know that I have ever seen any instance of this apparent convexity, that might not be explained in this manner. To those who are of opinion that the explanation does not apply, I merely offer it for what it is worth.

Having thus passed in review some of those points in which the received views as to softening are liable to objection, and on account of which I incline to the theory of its inflammatory origin, I now proceed to indicate what I believe to be the true modes of its production.

I recognise three kinds of Red Softening, in accordance with its different genesis:—

*A*. A kind of red softening may occur by the admixture of blood in the tissue of the white softening before described. It differs from this only in colour and the presence of more red

particles ; or there may be clots of blood, recent or modified by time. The clinical history is that of occasional hæmorrhage, slight apoplectic attacks or faintings, superadded to that of ordinary white softening, whether general or limited. This secondary red softening is more common in the latter form.

*B.* Red softening does undoubtedly occur occasionally as an active non-inflammatory modification of nutrition, arising from vascular degeneration or obstruction. The physical characters of this form differ from those of the next and most frequent kind of softening. Here the condition of the vessels is one of *passive* congestion, whether the defect be arterial or venous ; in accordance with the principles before mentioned. The colour is more dusky, and the nucleated cells (arising from changes in the connective tissue) less numerous than in the inflammatory form. Nevertheless, whether this affection has its origin in embolism, thrombosis, or atheromatous (or allied) changes in the coats of the vessels, it has always a tendency to pass into, and extend by, sub-acute inflammatory action, and so become identical with true inflammatory red softening ; the diseased tissue acting as a local irritant upon the healthy brain substance.

*C.* True red softening I believe to be almost always of inflammatory origin. For reasons before given, I do not recognise the possibility of its anatomical characters being developed solely by mechanical processes. It is true that the vessels, both arteries and veins, are often found in an unhealthy or obstructed condition ; but it appears to have been in great measure overlooked by those writers who uphold the non-inflammatory origin of softening, that this condition may be, and very probably is, in many instances, *consecutive* to the softening ; and so stands in relation to it as effect and not cause. Whilst pathologists differ so widely in their opinions as to what constitutes inflammation, it would answer no good purpose to pursue the subject further. For the minute histology of this disease I refer again to the excellent treatise of Dr. Bastian, so often quoted.

Clinically, softening presents itself under various conditions as to its history. It may be Acute, from beginning to end,

when it presents phenomena similar to those described under Partial Cerebritis, with special modifications, according to locality, to be noticed shortly. It may commence in an acute form, and after manifesting symptoms of great urgency for a variable period, may pass into a chronic state, the duration of which is indefinite. And again, conversely, the softening may be chronic, in the first instance, as in the form (*B*) just described, and pass at any period or periods of its history into the acute form,—either terminating thus, or relapsing into a chronic state. This is a very common history in softening,—the patient suffering from the chronic form having at irregular intervals exacerbations, marked by febrile accessions, heat of head, with general derangement and sometimes vomiting ; after which he subsides nearly into his former condition, but with an extension of the paralysis and rigidity.

It will be readily understood what an infinite variety and complication of symptoms will result from these differences of form and history. To describe fully the phenomena of softening would simply be to go through every disturbance of function to which the intellect and the will, the motor and sensory faculties, are amenable, and would consequently be well-nigh interminable. I can only notice briefly a few of its prominent and more especially characteristic features.

And first, a few words on the subject of prodromata and modes of commencement. It does not appear hitherto to have been clearly set forth that only certain kinds of softening *can have* any premonitory symptoms ; and that by the presence or absence of these our judgment as to the essential nature of the case is greatly aided. For instance, softening which is the result of embolism can have no prodromata of a neurotic order ; and thus all those cases that have been ascribed to embolism, where these premonitions existed, have clearly been of another order, the evidences of arterial obstruction being evidently secondary phenomena.* The same remark will apply to the

* A most characteristic illustration of the phenomena of embolism occurred to me a few years ago, resulting in softening of a considerable part of the right

majority of the cases of thrombosis, although not with the same absolute and necessary constancy. Those cases which originate in a chronic degeneration of the vascular walls, or in a congestive or inflammatory condition in the capillaries, will, as a general rule, have a period of premonition before the actual outbreak.

The modes of invasion of softening are very various. The acute variety occurs with an apoplectic, a convulsive, or a delirious outbreak; all of which forms are well known, and have been fully and exhaustively described by Dr. Bastian (*op. cit.*) Red softening that is primarily chronic begins with almost every variety of neurotic disturbance of a sensory and motor order. A diminution of sensibility in one finger, a little stiffness, a slight loss of power, may be the first sign. Or one hand, an arm or a leg may suddenly become powerless, with or without a momentary "faint feeling" or vertigo; *very* frequently without. Or it may appear at once as perfect hemiplegia, without any other symptom either at the time or in many subsequent days. All these varieties of invasion are so well known, and so constantly presenting themselves to our notice, that further examination would be superfluous.

The symptoms most characteristic of softening may be noted under the heads of changes in the Intellectual Faculties and Special Senses; of Paralysis, Rigidity of the limbs, and affections of Speech.

All the mental faculties are subject to disorder, from the slightest aberrations or eccentricities, to mania or dementia. The most common occurrence is a failure of memory, or an alteration of temper; but the details cannot now be entered upon.

hemisphere, with obliteration of a branch of the middle cerebral artery. The patient, Mr. W., aged 53, a civil engineer, had suffered five years before from rheumatic fever and endocarditis, from which time there was always a regurgitant aortic bruit. He was suddenly seized, whilst in his usual health, with symptoms of apoplexy and left hemiplegia, with rigidity of the left arm after three or four days. From the moment of the attack the bruit was never heard again. Death resulted in seven days.

Affections of the special senses are not very prominent symptoms of softening. In the chronic and general form they are dull in accordance with the general decay of the faculties; but it is not usual for them to be lost. A curious phenomenon is however witnessed in some few cases, indicating a want of correspondence or connection between the senses and the intelligence. An illustration will make my meaning more evident. A few days ago I saw Mr. M., aged 50, who was suffering from left hemiplegia, with partial rigidity, and other signs of softening. There were many interesting features in the case, but I only mention one, as bearing on the present question. The sight was perfect, and the understanding ready enough; yet in certain relations the vision failed to convey any definite ideas to the mind. Thus whilst he seemed to see all objects and actions of persons around him with perfect accuracy, he could not read a letter at all, so as to extract any meaning from it. Yet, if the letter was read to him, he could understand it, and dictate at once an appropriate reply. This is a curious instance of the closure of one channel of communication between sense and mind.

The most common symptoms of softening are Paralysis and Rigidity. The paralysis is almost always of the hemiplegic order, but is much more irregular than that resulting from ordinary hæmorrhage. Sometimes it affects but one limb, or part of a limb; and in some rare cases it attacks the arm of one side and the leg of the other. It can scarcely be doubtful that in this case the seat of the softening is near the decussation of the motor tracts. The paralysis may be complete from the first, in which case the rigidity of the muscles only appears subsequently, as a general rule; or it may be incomplete and progressive, both as to extent and intensity, in which case generally the rigidity appears and increases *pari passu* with the paralysis. The rigidity is often confined to one set of muscles, as the flexors or the extensors of a limb. Thus the hand may be firmly closed, and can only be opened by considerable force; or it may be extended so that the fingers cannot be bent without violence. Tremor of the affected limbs is also a very constant symptom.

Aphasia, or loss of the power of speech, is a very frequent attendant on softening, more especially acute softening of the apoplectic type. It may be combined with, or, in some few cases, even dependent upon, amnesia, or loss of memory; but in general it is independent of this, and it is not difficult to distinguish between the varieties. All the interesting phenomena of this affection have been so often and so fully described of late years, that any further remarks here are unnecessary. It is very generally supposed to be connected with a disease localised in the anterior part of the left cerebrum; and it certainly does appear as though *right* hemiplegia was more frequently attended by aphasia than that on the left side. Yet, as before remarked, the instances of aphasia accompanying left hemiplegia, and the cases of right hemiplegia where speech remains perfect, are so frequent, as to authorise us in considering the question as still *sub judice*. My own impression is, that the faculty of speech cannot be so localised in the present state of our knowledge.*

It must be understood that this cursory notice of the symptoms of Red Softening is only intended as supplementary to the more full and exhaustive accounts given in our special treatises on this subject. The few following observations, being attempts to localise some forms of softening from the symptoms during life, must only be accepted with the greatest reservation. They are but the results which *I think* may be legitimately drawn from cases passing under my observation; but they cannot be recognised as established facts.

* The following case furnishes a striking illustration of the uncertainties attendant upon this question :—

T. M., aged 54, a painter by trade, was admitted to the Hospital for Paralysis, on April the 15th, suffering from left hemiplegia. In November last he was attacked with right hemiplegia, suddenly, but without pain or insensibility. The power of the right side gradually returned, and was almost restored in a fortnight; at which period he had another attack of hemiplegia, this time on the left side; the effects of which still remain. The point to be especially noted is this :—During the continuance of the right hemiplegia, the speech was *perfect* from the first; but when the second attack occurred, on the *left side*, he was quite speechless for three weeks; knowing all the time what he wished to say, but unable to articulate a syllable. The speech is still imperfect.

Softening in the cerebral lobes affects the intellectual powers. When superficial, excitement is a prominent symptom, with outbursts of causeless anger, and, as I am fully convinced, *sensory illusions*, both of eye and ear. When deep, and in the neighbourhood of the lateral ventricles, or the base of the brain, there is a predominance of motor disturbance.

Softening of the cerebellum is frequently associated with excitement of the sexual tendencies, and disturbance of the power of co-ordinate motion. When on one side only, there is a frequent tendency to turn round on the axis.

Right hemiplegia with aphasia generally indicates softening of the anterior lobe of the left cerebrum, although, as before stated, the converse of the proposition is not invariable.

Softening of the corpora quadrigemina is often attended with double vision and various other imperfections of sight.

Softenings of the corpora striata and optic thalami are attended by paralysis of the limbs. According to my belief, disease of the former exists when the paralysis of the leg is greater than that of the arm, and conversely.*

Softening of the cornu ammonis I have most frequently seen accompanied by imperfect paralysis of the tongue and throat, greatly interfering with articulation and swallowing.

Softening of the medulla oblongata is attended by disturbance of respiration; but most characteristically by symptoms of an emotional order; often by marked hysterical phenomena, laughing, screaming, etc. They are of a very rapidly fatal kind.

I cannot, from my own experience, make out satisfactorily

* It will be observed that this statement is not found to bear any relation to our present physiological knowledge or theories. The weight of opinion is towards the view that the corpora striata are centres (perhaps *the* centres) of motor power; and that the optic thalami are similarly related to sensation. I have no reason to suppose this incorrect; but, following out the rule that I have before laid down, not to allow facts to bend to foregone conclusions, I place on record those observations which I *believe* to be founded on fact; feeling sure that, if correct, they will find their place when our knowledge is greater; and if incorrect, their want of value will be equally demonstrated by further experience.

any other constant or frequent correspondences of symptoms with morbid changes; and these must only be taken for what an individual opinion is worth.

5. Yellow softening may be primary, or consecutive to red softening, by absorption of colouring matter. I know no *clinical* distinction between these forms; nor can I add anything to what is already known on the subject. That it is of inflammatory origin I cannot doubt; although many writers consider the primary link in the morbid chain to be chemical. That it is not always so is evident from the following brief sketch of a case which died under my care a few years ago :—

J. W., aged 17, received a blow on the right side of the head, over the temporal bone, about a year before he came under my notice. Twenty-four hours after the blow (which was followed by a few moments' insensibility) he had an epileptic fit. This occurred again in a week; and during the year the attacks came on at irregular intervals, increasing gradually in severity; and the mind became cloudy. Treatment had no effect, and the boy died in an epileptic attack soon after I first saw him.

On examination after death we found, projecting into the brain from the inner surface of the right temporal bone, a sharp spiculum of bone, about five-eighths of an inch in length. It was not a splinter, but evidently a morbid growth. The brain tissue surrounding this spiculum was a good specimen of yellow softening, looking like jelly, to the depth of one-third of an inch. Then succeeded a shallow patch of red softening, presenting the ordinary appearances; and this by degrees shaded off into the healthy brain substance. The other parts of the brain were unaffected. There can be no doubt that these alterations were of inflammatory origin, being excited by the presence of the spiculum as a foreign body.

Such are the various forms of primary softening of the brain tissue. They may all occur also as secondary affections, consecutive to wounds, to disease of the internal ear, to carious affections of the bones of the skull; round clots of blood, collections of tubercle, or other adventitious products, and round foreign bodies. One general remark may apply to all these cases. When any of these conditions are known to exist, the occurrence of paralysis or rigidity, or both, with or without tremor or convulsion, marks the supervention of

softening, and must be accounted a most serious complication as to prognosis.

The prognosis of all forms of softening is very grave, but cannot be pronounced hopeless in every case. In general white softening, or atrophy, which is an essentially degenerative disease, no *cure* can be expected; but alleviations occur by natural *vis vitæ*, or as the result of fortunate restorative treatment, and the fatal termination is delayed. The same remark applies to the limited form when of considerable extent. With regard to small patches of softening, whether primary or occurring round hæmorrhagic clots, our pathological records clearly demonstrate that there is a possibility of recovery. A patient may be attacked by paralysis, with rigidity of muscles and all other evidences of softening. He may recover, entirely to all appearance, or partially; and after some months, or even years, a second attack may occur, perhaps with a similar result. When death has occurred in such cases as these, it has not been uncommon to find cicatrices or other evidences of old softening in localities corresponding to the former paralysis.

In individual cases, however, it is very difficult to arrive at any satisfactory prognosis. It will doubtless be more favourable in inverse proportion to the age of the patient, and in accordance with the previous health and constitutional tendencies, most particularly in regard to heritage. Something also we may gather from the facts connected with recurrence. A number of slight attacks of paralysis with rigidity is a much more unfavourable element in our calculation than *one* of much greater intensity. Each successive attack, or exacerbation of rigidity, diminishes our hopes of recovery. If there be any specific history, as one of a syphilitic nature, to the results of which upon the bones the softening, as a secondary affection, can be traced, there is an indication for treatment; and our hopes of success will greatly depend upon the position of the primary affection, and the chances of its removal, mechanically or otherwise. Thus, in a case recently under my care at the National Hospital, part of the left parietal bone came away in a

necrosed state, and the recovery, for the time at least, was complete.

Individual symptoms do not afford much aid in prognosis. If tremor occur in some of the muscles of a limb, whilst great rigidity pervades others, I think the prognosis is more unfavourable than when rigidity is general. Convulsions may occur from time to time, and are doubtless of great significance, did we know how to interpret them accurately; but, as far as our knowledge extends at present, they have no intelligible bearing upon the duration or fatality of the disease. It is needless to add that the chances of recovery are less in proportion as the general bodily functions are involved. Incontinence of urine and hæmaturia are eminently unfavourable symptoms.

There is a question in connection with softening that has been more agitated on the Continent than in England—viz., whether, under any circumstances, it can disappear by resolution, leaving no trace of its presence in the tissue. M. Rostan thus alludes to it:—

"Le ramollissement est-il susceptible de resolution? Il m'est impossible aujourd'hui de resoudre cette question d'une manière définitive; je laisse aux observateurs qui me suivront, ou à des faits ultérieurs qui se pourront offrir à moi, a éclairer ce point interessant. Si cette terminaison est possible, il faut dire qu'elle est au moins excessivement rare. Je l'ai soupçonnée dans deux circonstances seulement, ce qui est infiniment peu eu êgard au grand nombre de ramollissements, cérébraux que j'ai pu observer. Les signes de cette maladie avaient existé et disparu; l'ouverture, la seule preuve sans laquelle il est téméraire de rien affirmer, n'a point porté la certitude dans ce diagnostic." . . . "J'ai vu les symptomes de la première période de ramollissement disparaitre; mais comme ces phénomênes peuvent dependre d'une simple congestion, et qu'ils sont toujours douteux lorsque la seconde période ne survient pas, il est impossible d'en rien conclure pour la question qui nous occupe."

Cases illustrative of both sides of the question are given in

great detail; for which, and for the manifold arguments for and against, I refer the reader to the *Bibliothéque du Médicin-Praticien* (p. 205). M. Rostan finally concludes against this mode of restoration, in which he is followed by many very eminent pathologists. On the other hand, M. Durand-Fardel is so firmly convinced of the curability (in this method) of chronic softening, and still more of the acute forms, that he admits no doubt whatever on the subject (*il n'admet pas de doute possible sur ce point*).

In the present state of our knowledge the solution of this question is more interesting in a scientific and pathological than in a practical or therapeutic point of view. For we well know that all organic affections of the central nervous masses may be simulated by merely functional disturbances; and that, therefore, there would always remain some element of doubt, in an apparently cured case, as to its true nature. Yet it is well to incline to the hopeful view, so far as it is possible, and to believe in the powers of our art; that our endeavours may not flag, and that we do not increase indefinitely the *opprobria medicinæ*.

The treatment of this and allied affections will be considered hereafter.

# CHAPTER X.

## ON TUBERCULAR MENINGITIS.

[This and the following chapter are here introduced, not with any intention of formally describing the diseases alluded to; but as affording further illustrations of the doubts and difficulties that may arise in the course of our investigations in brain diseases. I think also that the cases themselves are not without their individual interest.]

This disease has been so often and so well described, that I do not propose to go over the well-trodden ground again. My object being chiefly clinical, I have under this head merely to relate, in brief outline, two cases which present features of interest, one as to treatment, the other as to diagnosis. The first was really tubercular meningitis, or at least, meningitis in a child of tubercular heritage from both parents; the second was not meningitis at all, but simulated its invasion closely.

Case I.—G. T., aged 12 months, male child, was delicate from the age of 4 months. Occasional sickness, constipation, and unhealthy secretions, were the principal features of the disorder. No teeth appeared until after the illness to be narrated. On October 7, 1861, the child was sick, and shortly afterwards gave a most piercing shriek, and became insensible, with occasional convulsive twitchings, but not at first general and actual convulsion. The eyes were closed, and turned inwards; the pupils contracted extremely; and the hands were clenched, and the thumbs turned inwards. The fontanelle was elevated slightly. This condition lasted about an hour, after which the child revived, took some food, and appeared in his usual state. In twelve hours, however, there was another violent scream, followed by convulsions, and a very prolonged insensibility.

From this time, for the next three weeks, the history of the case was exactly that of meningitis; screaming, convulsions, and coma, alternated with some regularity — with *slight* remissions of the urgency of the symptoms. There were generally two marked exacerbations daily. At

the end of the three weeks there occurred a long period, almost twenty hours, of quiet insensibility, with a cool (almost cold) skin, a feeble and rather intermittent pulse, a dilated pupil, a depressed fontanelle, and other general signs of exhaustion.

After this, a gradual improvement took place, and a long and tedious convalescence ensued, with many drawbacks and difficulties. Ultimately, the child completely recovered, the only legacy of the disease being a temper of the extremest irritability, which, for some years, was a source of great anxiety. This finally passed away, and the child is now a remarkably intelligent and healthy boy.

The history of this case possesses no feature of exceptional interest, beyond what is common to those few cases that do recover from this very fatal affection. It is only to the plan of treatment that was adopted, with its result, that I wish to direct attention. During the three weeks mentioned, almost the only internal medicine given was calomel, in one and two grain doses every four hours for a great part of the time. It was not my own treatment; it was not a measure that I should recommend in similar cases; the mercurial treatment of tubercular diseases is generally, and I think justly, condemned; yet, in this case, *post* or *propter*, the result was favourable; and I put the case on record simply for what it is worth.

Case II.—A. W., male child, aged 3 years, was in perfect health up to May 10, 1868. On that day, about 7 A.M., he vomited, screamed loudly, and became insensible, with a slight general convulsion, followed by some rigidity of the limbs. About two hours after this I saw him. He was quite insensible, but still; the arms and legs were rather rigid, with occasional tremor; the eyes were closed, and, on raising the lids, the pupils were found to be contracted to the very uttermost—in fact, they were scarcely visible. There was no squinting.

Whilst casting about for some diagnostic or prognostic sign, I scarcely know what suggested the following experiment. I laid my hand across the abdomen of the child, and grasping as much of the soft parts as I could, I compressed, rather firmly, the abdominal viscera. The result was very curious, and one that I had never witnessed at that time. Immediately upon the pressure, the pupils dilated to their natural size, and the muscles generally relaxed. There was also an appearance as of an imperfect restoration of consciousness. On removing the pressure, the pupils instantly contracted again, and the limbs returned to rigidity. This was repeated often, at variable intervals, with exactly the same results; so

that there could be no question that it was a sequence of cause and effect.

Hence I became convinced that we had not to do with a true meningitis, but a spurious or reflex affection, originating in the stomach or bowels. A smart purgative, bringing away a mass of crude undigested matter, confirmed this view, by entirely removing the symptoms; and the health of the child was completely restored in a short time.

I have no explanation to offer of these phenomena. I do not understand them, nor have I found even a plausible hypothesis in my own mind to account for them. I relate the facts exactly as they occurred, with their bearing upon diagnosis and treatment; and never having met with a precisely similar case since that time, I have had no opportunity of repeating and verifying my observations. But I may add, that not unfrequently I have had occasion to notice smaller variations in the condition of the pupil, following pressure on the abdomen, in other diseases, since my attention was thus directed to it.

# CHAPTER XI.

## ON SOME ORGANIC AND PSEUDO-ORGANIC DISEASES OF THE BRAIN.

In this chapter I wish to contrast the clinical history of three cases, in each of which the prominent symptom, and the one which by its intensity overshadowed all the others, was severe lancinating pain in the right eyeball, followed in two of the cases by disorganisation of the eye. They are especially intended to illustrate the difficulties that surround the study of brain disease, both as to diagnosis and prognosis.

Two of these cases were hospital patients; the third occurred in private practice. In all the three, absolutely the only symptom that manifested itself for a considerable period was severe neuralgic pain in the right side of the face, temple, and forehead, but fixing with the greatest acuteness in the eyeball; yet the ultimate history was curiously different. The first died after weeks of agony; the post-mortem examination showing malignant disease of the brain. The second recovered after partial paralysis of the face, and virtual destruction of the right eye. The third recovered completely, in a manner not unworthy of careful consideration.

Case I.—G. M., ætat. 47, a fork-grinder by trade, was admitted to the hospital on June 10th, 1866. He stated that he had been suffering for some weeks from neuralgia in the right cheek and eye, which had now increased to such an extent and constancy that it incapacitated him from work. The pain was of an intense and lancinating character, and the tears ran from the right eye copiously during the more severe paroxysms. The tenderness of the skin to the touch was extreme; and there was now seldom any even partial intermission of suffering, never any complete cessation, except under the stupifying influence of large doses of opium, or other sedatives and narcoties. The system was beginning to suffer from exhaustion.

At this time there was no observable difference in the two eyes.

Examination was extremely painful ; but, so far as could be detected, the two pupils were alike, and responded equally to light. After three weeks more of intense suffering, glaucoma of the right eye supervened, and the vision was entirely lost ; in a few more days complete ptosis occurred. Further than this there was *no paralysis*, and no *other affection* of the *hearing* or senses generally. The strength gradually gave way, a febrile condition was established, the pain continued unabated ; and on the 18th of July, for the first time, there was some delirium, followed by coma, and death on the 21st.

It is not necessary to dwell upon the treatment. It will be readily understood, from what follows, that no effectual relief could be hoped for. The greatest measure of ease was obtained from the internal use of the *Ext. cannabis indicæ* in grain doses every hour or two. I have often found this drug, when genuine, to give relief in malignant disease, when no other remedy had the slightest effect.

The post-mortem examination, 30 hours after death, revealed a terrible amount of disease. About one-third of the under surface of the right cerebrum was converted apparently into a mass of scirrhus. This and the petrous bone were so involved in the morbid change that it could not be said where brain ended and bone begun. It was not a scirrhous growth from the bone intruding upon and compressing the brain substance, but appeared like a real metamorphosis of both tissues into scirrhus. The other hemisphere was absolutely healthy ; and apart from the disease the tissue of the right hemisphere near the convexity was not in any way specially affected.

The case is incomplete, in so far as the roots of the nerves were not carefully traced. For my present purpose of comparison, however, it is sufficient. The point chiefly worthy of notice is the almost entire absence of special neurotic symptoms (apart from the pain), considering the formidable disease that was in progress.

Case II.—W. M., ætat. 43, a light porter, was admitted to the hospital nearly about the same time as the last case. For all practical purposes, his history, up to a certain point, may be taken as a repetition of the last. There was the same agonising pain, the same tenderness of the integument, and the same failure of systemic power. In due course also occurred the total loss of vision, with glaucoma and ptosis. So far there was but one point of difference, which referred to the condition of the eyelid. In the former case the ptosis was simple, and without any swelling or discoloration, the eyelid being naturally, and continuing to be, rather unusually thin and transparent. In the present case there was very great

swelling of the eyelid, which was of a livid red colour. I do not know whether any significance can be attached to this; but I mention it as one and almost the only feature of distinction between two cases, almost absolutely alike up to a certain point. It is a fact, and *may* find its place, at some time, as a significant one.

There was some syphilitic history attached to this case, which gave a hint as to specific treatment. He took for some time full doses of iodide of potassium; and for the pain, aqueous extract of opium, with colchicum; which latter drug has often a marvellous power over neuralgia. Belladonna was applied externally, with some occasional relief. He was under various other forms of treatment for a long period after complete disorganisation of the eye. Partial loss of power in the facial muscles also occurred gradually.

It was natural to suppose that he was passing from bad to worse, like the previous case. I confess it was greatly to my astonishment when, after three months of treatment, the pain abated, and the general health began to improve. Without pursuing the history in detail, I may say that he completely recovered as to any active symptoms in about nine months, and is following his occupation of light porter at this present time (1872). The eye, of course, remains utterly disorganised, and the ptosis, with some redness and swelling of the eyelid, still exists; but there is no progressive disease, and no pain. The general health is unexceptionable.

It can scarcely be doubted that there was here disease within the cranium, if not of the brain itself. The point of interest about it is, that it indicates how far disease, apparently of the most serious organic nature, may progress, and ultimately stop short with a return to complete health, although with an injured organisation.

Case III.—One morning I received an urgent telegram from a medical friend to go as early as possible to see Mr. P., a solicitor in large practice near the sea-coast in Norfolk. On arriving there the same afternoon, I met my friend, and another surgeon who had been in attendance on the case; and they gave me the following brief history:—

Mr. P. was 55 years of age, and had enjoyed good health up to four or five months back. About that time he had begun to suffer from neuralgia of the right side of the face; at first appearing to arise from the jaws, but afterwards attacking the eyeball. This was attributed to debility arising from intense mental labour, with inattention to his bodily requirements. Appropriate treatment was adopted, but no improvement resulted; on the contrary, the pain became so intense and continuous, that the general health gave way. Febrile symptoms

manifested themselves, and the strength failed very greatly. Nutrition was very imperfect, as eating (it was said) always aggravated the pain exceedingly. There was little rest night or day ; and lately there had been some twitching of the limbs occasionally, with a tendency to delirium during the semi-waking hours of the night. There was no paralysis ; but the strength was nearly gone, and there was great emaciation. The medical attendants considered it a case of hopeless disease of the brain ; and the patient himself had made his final arrangements, having lost all hope of recovery.

When I first saw him he was in one of the worst paroxysms of pain, and it was some considerable time before he could look up, or speak, or do anything but writhe in agonies. When a little calmer, he described the pain as though a knife was plunged into the eyeball every few seconds, and almost prayed for death as a relief to his constant and intolerable sufferings. Any prolonged or specific examination was impossible, and apparently unnecessarily cruel.

Two circumstances in the history just mentioned had impressed me much ;—the first was the apparent origin of the pain in the first instance,—and the second, the fact that any attempt at eating aggravated the pain tenfold. Hence arose the idea in my mind that the teeth might be the first link in the morbid chain ; an idea the more readily entertained, inasmuch as this view would leave an opening for treatment and relief, which could not be expected if the disease was of centric origin. On suggesting this suspicion to the medical attendants, they stated that they considered it impossible, because he had not a tooth left, every one having been extracted in the early weeks of his illness, one after another, as the pain seemed to arise from each successively.

Unwilling to give up this chance without complete demonstration, I examined the mouth, and found truly that all the teeth were gone, *except one loose stump*, which was excessively tender, every touch bringing on fresh agonies of pain. It is scarcely credible, but nevertheless a fact to which more than one witness can bear testimony, that all the teeth had been extracted, except this utterly useless stump, which was the whole and sole cause of the malady. Before I left the house, it was removed, and from that moment the disease was virtually

cured. Occasional attacks of ordinary tic occurred afterwards, due, doubtless, to the great debility resulting from the long previous illness and exhaustion; but these subsided shortly, and, by appropriate treatment, the patient was restored to his ordinary health, and returned again to the business of life.

A certain resemblance in the phenomena of these three cases, and the diversity of their terminations, may suggest three plain deductions :—

1. The most serious and malignant disease of the brain *may* exist for a long period, and nearly to the fatal termination, without any of the symptoms that are usually expected in affections of this organ, such as coma, convulsions, paralysis, or delirium.

2. Unquestionable disease within the cranium, may, even after producing characteristic organic changes, be arrested, and the health may be restored; such changes remaining permanent.

3. Brain disease may be simulated, and life may be almost lost, by the influence of some peripheral irritation, easily overlooked, and easily removable; in itself of the most trifling character.

Although out of place, I mention here a circumstance further illustrating the difficulties that beset the diagnosis of brain disease, which I may have no appropriate opportunity of introducing in any strictly logical connection. There are some rare and exceptional instances where intoxication closely simulates an irregular form of encephalitis. The following case, of which I give the briefest possible sketch, is an example of this position. For the correctness of the details I can answer personally, although I was not in formal attendance on the case.

Mr. F., aged 32, was, on the 20th September 18—, about 9 P.M., found insensible by the road-side. He was conveyed home, and it being found impossible to rouse him to any consciousness, medical attendance was summoned. No one knew anything of his proceedings during the day. He was now quite comatose, breathing heavily, but not stertorously

*There was absolutely no smell of alcoholic liquid in the breath.* The pupils were contracted, and the pulse full and laboured.

Not to dwell at any length on the symptoms, I merely give the conclusion arrived at by three physicians of experience who were in attendance. The case was pronounced to be cerebritis; one of them inclining to the opinion that it was due to an old injury to the head, of which there seemed to be some obscure trace. On some suggestion of a narcotic poison, the stomach-pump was used, but without special result. There was also *no smell* of any intoxicant liquid in the contents of the stomach.

Active external irritation was applied, with the view of relieving the brain and restoring consciousness; and two drops of croton oil were put into the mouth. The insensibility, however, continued almost complete for 30 hours; with an interval of a few minutes, during which semi-consciousness was restored, about noon of the 21st.

During the night, without any intermediate restoration of consciousness, his condition appeared to change into one of natural sleep. In the morning he awoke, apparently well; pale and exhausted, and somewhat miserable from the effects of treatment; but otherwise in his ordinary health. The history which he was then able to give of the 20th comprised simply a continuous orgie of drinking; until he remembered nothing more but an attempt to get home. The entire absence of any characteristic odour was, in this case, a very deceptive and peculiar phenomenon, and one of which I can give no satisfactory account.

# CHAPTER XII.

## SYMPTOMATOLOGY.

In the remarks made in the previous chapters, and the illustrative cases there related, I have been anxious to give only what seemed to be essential particulars; and so have avoided overloading the histories with detailed symptoms, of an unimportant character. It becomes necessary now to supplement these descriptions of disease by some special notice of certain of their more constant phenomena.

Now, it will be observed, that as the brain is the centre of consciousness and volition, of the centripetal and centrifugal energies, the symptoms attendant upon its disorders comprise every possible modification of all the functions, whether of a sensory, a motor, or a mental order. Therefore, a full account of the phenomena of brain disease would only be attained by an enumeration of all these, under the various conditions of increased, modified, or diminished function. All this might be done with great accuracy, yet fail to give any available assistance in our diagnosis, or general comprehension, of brain disease. All this, I may say, has been done, with the result of giving a catalogue of possibilities, rather than a representation of facts. All that I propose to do in this chapter is to make some observations on symptoms in general; and then to notice a few of those which are most usually considered as the *special features* of this class of disorder.

Four principles will here find illustration:—

1. That most serious diseases may exist, without corresponding symptoms.

2. That urgent and characteristic symptoms may arise and persist, without corresponding disease.

3. That when symptoms and disease co-exist, as is usually the case, the urgency of the former is not in proportion to the extent of the latter.

4. That individual symptoms,—as, for instance, paralysis,—may occur, entirely isolated from any other symptom of derangement, general or local.

1. One of the most noteworthy and important considerations with regard to this subject, is this;—that diseases of the brain, of the most serious character, may exist for a long period, without manifesting their presence by any definite symptoms; any, that is, which are sufficiently marked to affix suspicion on the brain.

In the previous chapter I have given some details of an extensive malignant disease of the brain, the symptoms of which were, for a long time, only identical with those which were met with in cases of a totally opposite, and less important nature. It is known that abscess of the brain not unfrequently occurs without any pathognomonic symptoms. On this subject M. Hayem observes :—

" On sait, que l'encéphale peut être le siége d'abscés développé spontanément, sans cause apparente, quelquefois même sans produire des symptomes appréciables . . ." (p. 30).

The following passage on the same subject is from the *Cyclopædia of Medicine,* vol. i. p. 302 :—

" There are a few cases on record of extensive suppuration having taken place in the brain, without the manifestation of any symptoms indicating such a disease, until immediately before death. Objections have been raised, from this occurrence, against the value of any rules of diagnosis ; it should be observed, however, that such cases are rare, and that some of them are so superficially described, as greatly to invalidate the weight of their evidence. The best authenticated is one by Dr. Broussais, of a man in whose brain an extensive abscess was found in the centre of each hemisphere; and in whom no other symptoms had been observed during life than a peculiar dulness of manner

and taciturnity, which terminated in coma after thirty-seven days' illness."

That such cases do occur cannot be doubted; and I venture to give the following as a typical illustration :—

T. M., aged 32, a worker in brass, whilst following his occupation, fell down insensible, vomited, and was seized with general epileptiform convulsions, which never ceased until death took place, in about an hour after the first attack. The post-mortem examination of the head revealed the presence of an abscess, about the size of a large pigeon's egg, in the substance of the left cerebrum, just over the lateral ventricle; into which it appeared to have made its way at the moment of the attack. The previous history was very obscure; he had occasionally complained of headache, and on two occasions had been sick; but, as he was of rather intemperate habits, these occurrences were supposed to be due to that cause. He had never been incapable of work, nor had any symptoms of a more marked character.*

It is evident, then, from cases like this, and from the concurrent testimony of independent writers, that serious disease of the brain may exist, and progress nearly to the fatal termination, without indicating its presence by symptoms such as are usually met with in these diseases.

2. But the converse of this proposition is also true—viz., that all the symptoms of serious disease of the brain may exist for

* It is worthy of observation that large collections of pus may occur in other parts of the body, without indicating their presence by any sign until the moment of evacuation of the abscess. The following case, which occurred in my practice a few years ago, is one of the best illustrations of this fact that I have met with. Mr. F., aged 58, a solicitor, was seated at his desk, in his usual health, one afternoon, when he felt all at once an overpowering desire to pass water. On doing so, he noticed an unusual thickness in the urine, and called upon me in consequence very shortly afterwards. Having sent him home, I examined the next water passed, and found an immense quantity of pus in it, at least one half the measure. This continued for several days, until many pints of pus must have been evacuated. There was no local pain nor tenderness; and no special disorder of the general health, except some debility. The recovery was complete in about three weeks. The remarkable feature in the case is, that no evidence whatever could be obtained, either from the patient or his family, by the most careful investigation, of any previous symptoms of pain, discomfort, or any general derangement whatever.

a long period, and may actually terminate in death; yet, on examination after death, we may possibly find, not only no disease, such as is evident to the senses, in the nervous centres themselves; but even no such organic change in any part of the body as would account for death on any recognised rational principles.

H. T., aged 36, a married woman, originally of a feeble lymphatic temperament, is the subject of a case illustrative of this position. The history of her family is of a marked neurotic order. Her father had injured his constitution by drinking, her mother was of an exceedingly nervous temperament. One collateral relation was paraplegic, and one insane. H. T. herself had had a large family, of whom several had died in infancy, and two of the survivors had epileptic fits.

Always delicate and "ailing," the patient had been still more so since the birth of her last, the twelfth child, which was now fourteen months old. Having an abundant supply of milk, she had persisted in nursing this child up to the time of the attack to be mentioned, although she herself felt, and it was evident to her friends, that it was injuring her health, and day by day exhausting her strength.

One morning, whilst dressing, she had a slight and transitory sensation of vertigo, which soon passed away. After breakfast she vomited, and complained of headache, and a general feeling of illness which she could not explain. Her manner became agitated and her mind confused; she broke off in the middle of sentences, and muttered unconnected syllables. Finally, an imperfect stupor invaded her, she became helpless, and, being put to bed, it was then discovered that there was no power of motion in the left side. There was some heat of head; the pupils were sluggish; the pulse was weak, about 100, and slightly irregular.

It is unnecessary to pursue the detailed history of the case in its progress and treatment. The stupor never deepened into coma until near the termination, nor did the mind ever clear entirely. There was no absolute convulsion, but several times in the day a shudder through the body, and occasionally a slight twitching in the paralysed limbs. The power of swallowing was very much impaired. Death occurred on the eleventh day, apparently from exhaustion.

The results of examination of the body thirty hours after death may be summed up in a few words. There was absolutely no change observable in the brain from its normal condition, either in its substance or its membranes. There was no effusion nor extravasation.

The heart was thin and flabby, otherwise the contents of the chest were healthy. The organs in the abdomen and pelvis indicated no disease. The kidneys were carefully examined, but nothing abnormal was detected.

This case, in some of its features, resembles an attack of cerebria. It differs from it, however, by the presence of hemiplegia, which is not a symptom of this disease, and in the absence of post-mortem evidence of inflammation.

My friend, Dr. Radcliffe, recently communicated to me the particulars of a case, in which the patient had been suffering for some months from symptoms, which left no doubt in the minds of the medical attendants that there existed serious disease of the cerebellum. He had constant pain at the back of the head; he could only stand with difficulty, and when supported by some fixed object; he could not walk without assistance; he became suddenly and entirely blind; he vomited frequently; and, a few days ago, he sank from exhaustion. A most careful examination was made of the contents of the cranium, but without the detection of any departure from their normal condition.* The stomach and other organs were successively investigated, but no disease was discovered to account for death.

In the chapter on "Some Organic and Pseudo-Organic Diseases of the Brain," I have referred to the case of Mr. P., who for months had been suffering from symptoms which were supposed to indicate organic disease of the brain. A few more weeks of the same distress, and he must inevitably have sunk from wearing out of the strength; and yet examination after death would have failed to detect any disease of the brain; and his case would have served to illustrate this same principle.

3. Further, it is necessary to bear in mind, that in diseases of the brain, especially those of an inflammatory character, the intensity of the symptoms bears no sort of correspondence to

* Further investigation threw some little additional light upon this case. It appears that he had been, for some years, in the habit of taking stimulants largely. He had also been obliged to consult an oculist about his sight, and it was found that there was considerable degeneration of the retina. These circumstances in some measure explain the gravest of the symptoms, and cause the death to appear not altogether so inexplicable as it might be deemed at first. But all this does not in any way affect the position, to illustrate which I have (by Dr. Radcliffe's permission) quoted the case—viz. that all the *symptoms* of brain disease may be present, yet the disease itself may not exist.

the extent of the disease.* I have had occasion, more than once, in previous chapters, to notice this point, and to show that in cerebria, and in general white softening, the symptoms are of a much milder and less special character than in partial cerebritis and softening of limited extent, notwithstanding that the former diseases are even more fatal than the latter. It is difficult to form any hypothesis that will satisfactorily explain this fact; although of its truth, as clinically observed, I am fully convinced.

4. The position as to the isolation of certain characteristic symptoms in exceptional cases will receive illustration in the next chapter.

The occurrence of remissions, more or less complete, in the progress of the disease, is a very remarkable and characteristic feature, and one also that is much more easily comprehended than that last noticed. In a former chapter I have alluded to Dr. Abercrombie's remarks on "the deceitful appearance of amendment which often take place in all the forms of the disease" (inflammation of the brain). He says :—

"Even in those cases which have assumed the most formidable aspect, every alarming symptom may subside. The pulse perhaps continues frequent, but it also is coming down; at our successive visits we find it falling regularly, and we are disposed to hope that a few days will bring the case to a favourable termination. During this deceitful interval, which may continue for several days, I have known a parent intimate to the medical attendant that his further visits were unnecessary; and I have known a physician take his leave, considering his patient as

* In this opinion I am not supported by previous authorities. Dr. Russell Reynolds, one of the latest writers on diseases of the brain, when discussing the elements for prognosis, in "Softening," states that, "*cæteris paribus*, the lesion is in proportion to the extent of the symptoms." That this should be the case logically is unquestionable; but, practically, the exceptions are so numerous as to render this consideration but a doubtful aid in forming a judgment in any given case. As an illustration I may refer once more to the formidable train of symptoms attendant upon localised cerebritis, as compared with the apparently mild progress of the general disease, cerebria; or with the almost entire absence of distinctive symptoms in some cases of abscess, or even of malignant disease.

convalescent. As the pulse falls the patient is disposed to sleep ; this perhaps is considered as favourable ; it falls to the natural standard,—he then sleeps almost constantly, and in another day this sleep terminates in coma. The pulse then begins to rise again ; it rises to extreme frequency, and in a few days more the patient dies. . . . The period when the pulse falls to the natural standard is the time when the coma becomes evident, and the situation of the patient probably hopeless." —(*Observations on Diseases of the Brain*, p. 14).

That this, like all Dr. Abercrombie's portraits of disease, is an accurate representation of events as occurring in certain forms of cerebritis, cannot be doubted. That it corresponds, or is intended to correspond, to the kind of intermission that I have before described, is scarcely to be supposed. The amendment here described comes on gradually, with a pulse falling during several days ; the one described in a former chapter occurs suddenly when matters are at the worst (see the case of T. F.) The one is described as lasting several days, the other never lasts beyond twelve hours. In the one, the fact of the pulse reaching its natural standard is the signal for the appearance of coma ; in the other the pulse resumes its natural condition along with all the other functions. In the one there is a constant tendency to sleep, at the moment of apparent recovery ; in the other all the senses are in fully restored activity. In the one, the coma then developed terminates in a few days in death ; in the other there is a very gradual return to the previous morbid condition, which terminates with equal certainty in death ; but intermissions may occur again, and the fatal termination may be deferred for weeks. They belong to the same order of phenomena, but are certainly not identical. I have nowhere met with any account of intermissions at all resembling that occurring in the case just alluded to, and in the surgical one which follows as an illustration.

I have said so much on this subject in the chapter on Partial Cerebritis, that very few further remarks are required here. There are no remissions where the disease is general, as

in cerebria; they are very marked, and sometimes perfect, in partial cerebritis, where only a portion of one hemisphere is involved. They also do not occur in general softening, but are frequent in that of a limited character. Further, it is a matter of clinical observation, that these remissions occur more frequently, and in a more marked form, where convulsions are a prominent symptom, than where the mental functions are chiefly involved. It *may be* that the wearied and diseased brain sleeps, whilst the sound hemisphere is awake and exercising normal functions. But I am more concerned with facts than hypotheses. The bearing of this phenomenon upon diagnosis is most important. I believe it to be the most pathognomonic of all the symptoms of cerebritis.

Coma, Convulsion, Delirium, and Paralysis—phenomena of a strictly neurotic order—have been so exhaustively discussed in all systematic treatises, that it only remains here to say a few words on their special relation to the forms of cerebral disease before mentioned.

Coma does not occur in cerebria until near death; but is often an early symptom in partial cerebritis. It is not generally marked in abscess, or in the early stages of malignant disease, but occurs in the apoplectic form of acute softening. Stupor, more or less profound, is much more common than coma in all these affections, and is of so irregular a character, as to development and recurrence, as to baffle formulas of description.

Convulsions are rare in cerebria,—constant, at one period or other, in partial cerebritis. The same difference exists between general and partial softening. Almost the same distinction applies to delirium, which is rather of the nature of *confusion* in the general, and active wandering of mind in the partial affections.

There is a kind of delirium which is not easy to define, but is of frequent occurrence in light febrile disorders of early life, and in certain more serious affections of advanced age, but not common in middle life. For a few hours, or even for a day or two, when the febrile oppression seems at the worst, the patient

is dull and heavy, but answers questions quite rationally, and even originates observations about passing events which are applicable enough ; there appears to be no actual wandering of mind, or delusion ; but, after a little lapse of time, without any evident crisis or intervening sleep, the patient returns to complete consciousness, and has no remembrance whatever of anything that has passed during the period alluded to. I have occasionally recognised this condition when the friends of the patient have considered the mind to be in a perfectly rational and normal state ; and they have been surprised to find that all memory of the events of that time had gone, on recovery, as completely as if it had passed in perfect coma. I believe this state to be rather common ; and I have not observed that it has any unfavourable bearing on prognosis.

*Paralysis* is not a symptom of cerebria (see the case of W. L., in the chapter on that disease). In other forms of cerebral affection it occurs in every variety of extent and completeness, from any cause determining obstruction in the motor tracts. When accompanied by persistent muscular rigidity, it denotes softening of the brain tissue. I propose to devote a short chapter hereafter to this symptom.

Amongst general symptoms, one of the most important is Vomiting. This act has certain apparently definite relations to cerebral inflammation ; yet it is one the precise significance of which it is very difficult to ascertain. So far as I have observed, cerebria always commences with one vomiting, and no more. Simple and tubercular meningitis and encephalitis often commence with vomiting, which is repeated at intervals for perhaps two or three days. It also occurs sometimes at the moment of cerebral hæmorrhage. When vomiting recurs at intervals in the course of an established brain disease, it generally indicates increase or spread of inflammatory action.

All these are facts that are well known and recognised. The difficulty with regard to vomiting is to know when it is cerebral and sympathetic, or when it is of gastric origin ; and, notwithstanding the excellent rules given in special treatises for the

distinction, the difficulty remains. Certainly I have, even within the last few months, frequently seen cases, amongst children, where vomiting has occurred without previous illness or warning; where the tongue was perfectly clean; where there was not the least epigastric tenderness; and where there was no preceding nausea, as was evident from the little patient's being in high spirits up to the moment of the attack; and where, notwithstanding, there was no subsequent development of brain symptoms. I have even seen this recur, morning and evening, for some days, without any other detectible disorder of the health, which appeared perfect in the intervals. I can only suggest, in these cases, the extremest carefulness in watching for the development of any more serious complication.

The pulse furnishes no specially pathognomonic indications in affections of the brain. *Irregularity* is the character generally predicated of it; but this is a most uncertain indication. In cerebria the pulse rarely rises above 100, except at the end of life, when it becomes rapid and flickering. In one case previously mentioned (No. III.) it never rose above 90, until the last few hours. In cerebritis (partial) the pulse is slow at first, then rises to 120 or more when the period of excitement comes on; falls again after a day or two; and if the disease progresses in an acute form, it varies from 100 to 150 to the end of life, frequently being irregular, but not intermittent. In meningitis there is a more uniform high rate. In malignant disease there is little assistance to be derived from the state of the pulse; it is often unaffected. In softening of the chronic kind there is no appreciable change; but feebleness of the circulation corresponds to that of all the functions. In the forms of softening which are of acute or sub-acute inflammatory origin, the remarks made with reference to inflammation apply equally to these.

The tongue is often unaffected in acute diseases, or smeared with a thin white layer as of milk. In the early and premonitory stages of tubercular and simple meningitis in children, it is usually very much disordered; but there is nothing distinctive

in this that will serve to mark the special nature of the approaching affection.

Constipation is a very general symptom of all forms of inflammation of the brain; but much less marked in cerebria than in the partial forms; and much more amenable to mild treatment by aperients.

The *Temperature* is an important element in diagnosis. Both cerebria and encephalitis, as well as the more distinctly marked forms of meningitis, sometimes very closely resemble continued or remittent fever; but, as a general rule, it may be held that the temperature rises higher, by two or three degrees, in fever than in brain affections. In cerebria the temperature rarely rises to 101·5°, I believe never above 102°; and even in acute meningitis I have no record of any temperature higher than 103°. In chronic inflammation and softening there is often local heat of head; but rarely any notable rise in temperature generally, as measured by the thermometer.

Pain may be considered as centric and peripheral. Centric pain, or headache, is a most variable sign,—sometimes severe, sometimes slight, and again at times absent altogether. In cerebria there is usually a little headache at the onset; afterwards it is almost uniformly *denied*, although, as previously stated, it is probably present; but, owing to the general sensibility being, as it were, benumbed, it is hardly translated into consciousness. In partial cerebritis, and acute and sub-acute softening, pain is a very constant symptom, and, for the most part, rather severe and localised; but, in some rare cases, I have known its existence denied altogether. In chronic affections, headache, in a mild form, is very frequent; but the most general complaint on the part of the patient is rather of a "strange sensation," that he cannot further describe. A "scraping and gnawing" local pain is described by some writers as attendant upon ulceration of the brain. Of this I have no personal knowledge.

The peripheral pains that attend softening and partial inflammatory affections are so various as to defy any attempt at logical classification. When they occur in paralysed limbs, they

are sufficiently comprehensible; and here they often act as serviceable barometers, giving premonitory indications of any approaching change for the worse in the weather; and, as I have often had occasion to notice, become sensibly worse when the wind changes from the south to the east, even when the temperature of the room has kept to the same point. But the pain may be elsewhere, in regions apparently outside any morbid tracts. It may be superficial on the head, at a distance from the seat of disease, and on the opposite side, as in the case of T. F., mentioned in the chapter on Partial Cerebritis. In another case the paralysis with rigidity was confined to the right arm and shoulder, but the pain most constantly and uniformly present was in the calf of the left leg. In a third, a constant pain was experienced when moving the paralysed limb, just below the upper dorsal vertebra, a little to the opposite side to the one affected. But it is needless to accumulate instances; all practitioners are familiar with these irregular manifestations, which cannot be reduced to any rational formula of causation.

One practical point may here be mentioned in connection with this subject,—that a considerable proportion of the pains occurring in paralysed limbs dependent upon softening, which are considered to be of a neuralgic character, and are treated as such, are really altogether dependent upon position, and may be relieved very frequently, without any medical treatment, by mechanical contrivances for support. I saw recently a case of this kind, where the patient had been suffering intolerably for some time from pain in the left (paralysed) shoulder. All treatment, both local and general, had entirely failed to give relief; but a splint, so arranged as entirely to take off the weight of the arm, was attended by immediate and permanent benefit, the pain being quite removed. Doubtless the effect of position is well known to most practitioners; but that it is frequently forgotten or overlooked, is also not to be questioned.

Affections of speech furnish most important and interesting elements for the recognition of disease. They occur under various forms, which it is of importance to distinguish. Speech may be

lost from a local affection of the vocal apparatus; but with this we have no concern at present, as there is no danger of its being mistaken for a symptom of cerebral disease. When obviously connected with disease of the brain and paralysis, absence of the power of speech occurs also in very different forms, chiefly these three :—(*a*) it may be due to absolute paralysis of one half of the throat and face ; (*b*) or to entire loss of memory of the meaning of words ; or (*c*) to loss of the faculty of speech absolutely, in the form of incapacity to articulate, and so express the ideas that do exist.

In the first case, the difficulty is merely mechanical; the intellect may be perfectly clear, but the hemiplegia having invaded the muscles of the throat and larynx, they no longer answer to the will. Speech here is only imperfect, slovenly, and what may be described as "slobbering."

In the second case the mind has become a blank, to a more or less complete extent ; and the faculty of speech is subsequently acquired along with the restoration of other knowledge, in the same way as it is learned by a child. This is properly called Amnesia.

The third form, or true Aphasia, presents itself under many varieties, which depend upon the different conditions of the intellect. With entire absence of the power of articulation, the patient may have almost every gradation of formative or recognitional intelligence. Thus, beginning with loose letters, he may not have any power whatever of combining, or even attempting to combine them ; he may spell a name or word, but incorrectly, as by transposing certain letters, and such transposition may be always on one system, or otherwise ; he may spell any familiar word correctly; he may be able to write, coherently or incoherently ; or, finally, he may, after a lapse of time, evince an intelligence not far removed from its original status. As amendment progresses, the speech may improve *pari passu* with the intelligence, or it may remain as at first.

In the most complete aphasia, the amount of articulation is confined to such ejaculations as Hé, Hú, and Hoo, always uttered

with an excess of aspirate or blowing sound. As intelligence improves, the patient uses these with repetition, in combination, and with various inflections, evidently thinking that he is conveying his meaning to his auditor. The first advance made upon this state is usually an attempt at the word "No"—which is generally "Ho;" afterwards "Yes" is tried, but with less success; for a long time being only "Hé."

A curious phenomenon occurs in some cases during their progress, which will be best understood by an illustrative case.

B. H., aged 45, a carpenter, O. P. at the National Hospital, had nine months ago an attack of right hemiplegia, with total loss of the power of speech, which had not returned, beyond the above-mentioned monosyllables, when he first came under notice. He has never regained any power whatever in any of the muscles of the right half of the body; but there is now a noteworthy change in his attempts at speech. He addresses to me long sentences, which are evidently explanatory of his sensations and emotions, and in which the combinations of consonants and vowels are at least as complex as in ordinary language; but there is no distinguishable word, or semblance of word, in them. He thinks he is comprehensible, and seems disappointed that it is not so. There is no other marked sign of mental derangement.

In another case, the patient, a married woman, aged 38, has recovered the *power* of speech entirely, as to articulation, but the answers to questions are all quite wide of the mark; for instance, "Have you any pain?" will perhaps be answered, "Yes; I went this morning, but she was not at home,"—and to "Will you put out your tongue?" she will reply, "I heard so yesterday." And all this is said in the most composed and apparently rational manner. This is only connected with aphasia by its previous history; the defect is now in the intellect.

Aphasia is a very grave symptom; but as I am now *only* treating of it as a symptom I shall not dwell upon it longer. The valuable article on "Softening" in the *System of Medicine*, by Dr. Reynolds and Dr. Bastian, contains very full details on this subject; and to it I refer the reader for every information; and also to the most interesting paper read by Dr. Broadbent before the Medico-Chirurgical Society, on February the 3d of this year (1872); in which will be found the reasons for locating the faculty of language in the "left third frontal

gyrus ;" a subject on which I have already made some observations.

In conclusion, I would suggest, that as loss of memory of words is known by the name of Amnesia, it might be *convenient* to classify those cases where mechanical difficulty of articulation is the prominent feature under the name of Aphemia ; retaining the well-known title of Aphasia for the cases characterised by both physical and psychical disturbances.

I have scarcely alluded to the state of the mental functions as manifestations of disease in the brain. Irrational as it may be to separate the physical from the psychical order of phenomena, I have avoided the latter from a wish not to open up a subject of such magnitude, which I could not hope to treat properly in a short work like the present.

# CHAPTER XIII.

## ON PARALYSIS AS A SYMPTOM.

It has appeared to me expedient to devote a short chapter to the special notice of Paralysis as a Symptom of brain disease, partly because of its intrinsic interest and importance, and partly because, notwithstanding all that has been written, and well written, on the subject, there are still certain points in its bearing upon other phenomena that have scarcely received the attention they deserve,—especially those connected with its relations to volition.

1. The *form* of loss of power to be here noticed is *Cerebral* Paralysis, of which Hemiplegia is the type, in contradistinction to *Spinal* Paralysis, of which Paraplegia is the type.

Cerebral paralysis is generally unilateral, occurring in one or both limbs of the side opposed to the lesion in the brain,—a fact so well known that it is only mentioned here as a point of departure for the variations observed. It may exist in the arm alone, or the leg alone; but when this appears to be the case, it is rare that careful investigation will not discover some less marked failure of power in the other limb. In some few instances the paralysis is in the arm of one side, and the leg of the other,—which phenomenon I believe to be associated with some disease of the pons varolii or the corpora pyramidalia. Another form, and a very hopeless one, I have witnessed several times within the last year, where the loss of power has commenced in one leg, and after attacking the arm of the same side, has, in the course of a few weeks, or even months, passed over to the arm of the opposite side, and descended to the leg, leaving all the limbs very feeble, but not totally helpless. In order

of hopefulness, I should place, first, complete simple hemiplegia, without rigidity; next, paralysis of one limb, with some rigidity; thirdly, the *cross* paralysis; and lastly, as the least hopeful, the creeping affection just described, in which our efforts ought rather to be directed towards alleviation than cure.

There is a general cerebral paralysis (*not* the "general progressive paralysis" of late writers) in which all the limbs are from the first powerless, almost always appearing as an acute affection—the result of apoplexy. This is generally symptomatic of hæmorrhage into, or in the neighbourhood of, the medulla oblongata.

Besides these, there are innumerable forms of local or partial paralysis, losses of power in certain sets of muscles, or one or two isolated ones; also of the parts supplied by certain nerves. Of these latter the most familiar are the paralysis of the muscular nerves of the eye, and that of the *portio dura* supplying the muscles of the face. These have all been often and fully investigated before, and therefore require no notice here. I would merely say that, with regard to facial paralysis, it appears to me to be due to a local affection in the stylo-mastoid canal—much more frequently than is generally supposed. In certainly not less than four out of five such cases, I find it easily removed by treatment adapted to that view, as successive small blisters over the point of exit of the nerve.

2. The mode of invasion of paralysis is extremely various. Viewed in relation to symptoms of general disturbance, it may occur before these, with them, or after them; or finally, the paralysis may exist alone, beginning and ending as such.

E. L., aged 32, merchant, was seated at a table, in perfect health, playing some small game of cards with his sister. In the midst of the game, without any warning, or *any other sensation*, he found himself unable to raise his left arm to reach the cards. On trying to rise from the table he found that the left leg also was entirely powerless. Symptoms of oppression and semi-stupor came on afterwards, but not for some hours. The recovery was ultimately complete, with one exception, to be noted afterwards.

M. A., aged 28, a seamstress, went to bed in her usual health, which

was never robust. She awoke in the morning at her usual time, and found that the right side was entirely powerless. She experienced at the time, and for a day or two afterwards, no feeling of illness. Afterwards some headache occurred, but it was not violent; there was no stupor nor any special phenomena, further than general disorder of the health. Recovery was complete.

A. L., aged 23, a clerk, under my care at the National Hospital, was in his usual health at his desk one morning, when the left side became suddenly powerless. He has experienced no disorder of any of the functions either before or since the attack. There is no great amendment during the last four months.

In another case, of which the previous history is imperfect, except that the hemiplegia (left) came on without insensibility or any subsequent illness, and remained unaffected for the remainder of life, about two years,—death apparently resulting from general decay of the strength,—the brain was carefully examined throughout, without any trace of softening or other disease being found. It should be added, however, that no microscopic examination was made of the tissues. The notes of this case are so incomplete, that it is only instructive in one particular—viz., as indicating how serious are the phenomena that may result from a lesion unappreciable by the unaided senses.

The two following cases, singularly illustrative of the isolated character which paralysis occasionally assumes, occurred during the present month (March 1872) at the National Hospital for Paralysis and Epilepsy.

W. B., aged 43, a labourer, is the subject of complete left hemiplegia. Fifteen months ago he was out of doors in very cold weather, when he suddenly felt all power leave the arm and leg; and he has remained nearly helpless ever since. He absolutely denies having experienced any pain or other inconvenience, either before the attack or since. His appetite and general feeling of health have never been in the least affected; and he states that he never had a day's illness in his life. All the functions seem to be normally performed; and there is no evidence of disease in any of the thoracic or abdominal organs. In short, I could detect no departure from a perfectly normal condition, except the one fact of loss of power in the side.

J. A., aged 35, a coachman, was walking in Grosvenor Square, when he completely lost the power of speech for about twenty minutes. He is a thoroughly respectable and intelligent man; and he assured me, that although he was perfectly conscious all the time, and knew quite well what he wanted to say, he could not form one syllable. This passed away completely, and he has had no difficulty of the sort since. He continued quite well for a week, when he lost the use of the right arm and leg, without any vertigo or unconsciousness, or any other symptom whatever. The paralysis affected the whole of the muscles of the side, those of the face included. This is above a year ago. There is now some return of power, but the distortion of the face is still very manifest; and during the whole time there has been no disorder of the general health or sensations.

In neither of these cases could I trace any family liability to such affections; in neither was there any syphilitic history. There was not the least suspicion of, or reason for, deception in either of them; and although I sought diligently, I could find nothing to which I could reasonably attach the paralysis.

The cases in which the paralysis occurs *with* or *after* the sensible symptoms of general disorder, whether apoplectic or otherwise, are too familiar to require notice. It is to be remarked, that the prognosis of the former class is much more favourable than that of the latter, where the paralysis creeps on insidiously after some days of illness.

There is one remarkable and interesting mode of invasion, which the following case will serve to illustrate:—

F. N., aged 33, the wife of a working man, very near to her confinement, was dressing her hair one morning, when, without loss of consciousness the *left side* became suddenly and completely paralysed. This passed away in a few hours; but, in twelve hours after the first attack, a second occurred, with symptoms of apoplexy. There was great stupor, but not *perfect* coma; and the *right side* was found to be totally paralysed, both as to sensation and motion. The pulse was high, and the general symptoms very alarming. It is not necessary to pursue the case in all its details. Delivery was successfully accomplished, but the child did not live. After about three weeks the most urgent symptoms had disappeared, and she was brought to the hospital; remaining completely helpless as to the right side, unable to move, and quite incapable of speech in any degree whatever, but improving in general health.

The recovery never went beyond a partial restoration of power in the

leg. The arm became rigid, with the occurrence of spasmodic twitchings. The aphasia was complete for many months; but by degrees she began to learn to speak in monosyllables, exactly as a child might learn. Four years after the attack she was still alive, able to speak very imperfectly, and with no material change in the motor functions. I have seen several such cases as this, where the permanent paralytic affection was consecutive to one of a transitory nature on the other side; but I have *never* seen one of this kind recover completely. The prognosis is much more grave than where the attack is primary. I am not prepared with any rational explanation of the phenomena, or of the reason why the secondary attack should be so much more obstinate than a primary one.

The paralysis that occurs in an arm or a leg, or both, in children and youths, consecutive to chorea, is generally very obstinate, but not usually permanent, unless, as not unfrequently happens, the cause of both be centric, when it is almost always a severe, if not permanent, affection.

Of an entirely different nature is the tremor or jactitation that occurs at a later period of paralysis that has been accompanied by rigidity. It is most frequent in the arm, but may occur in the leg also. It undoubtedly indicates a very grave organic lesion in the brain; and the paralysis that is thus complicated is rarely removed. The jactitation is often violent, and requires much force to control it. As a *symptom*, it is more amenable to opium than to any other form of internal treatment. The constant galvanic current has also a favourable alleviating influence.

3. The relations of motor paralysis to that of sensation are very variable; but they are so familiar as to need no special notice. I shall only mention, in passing, one rather singular phenomenon, which has presented itself to me more than once recently. I refer to hyperæsthesia of the paralysed limb, accompanied by *diminished* sensation in the sound one. The former state is common enough; the presence of the latter appears to me anomalous, but doubtless admits of some physiological interpretation. As we know, with a certainty at least equal to that attaching to any physiological facts, that there are distinct tracts in the brain ministering to the motor and sensory functions, and

that these, though physiologically distinct, are in close anatomical relationship, we can have no difficulty in understanding how the utmost complexity in the combination of the symptoms belonging to each order of functions should occur. Nevertheless, it is not easy to foretell, in any individual case, with curious distributions of motor and sensory disturbances, what will be the precise morbid changes observed after death.

4. The extent and intensity of the paralysis will not be in proportion to the *amount* of lesion in the brain, but to its *position*. The most cursory consideration of the developmental anatomy of this organ will suggest that a very small amount of injury to such parts as the corpora pyramidalia or olivaria, or to the crura cerebri, will produce disturbances of function of a much graver order than a much more extensive lesion in the substance of the hemispheres; just as an injury to the root of a tree would be more fatal than a much larger injury to the branches. Practically this is found to be the case. It will be remembered that in some of the cases previously related, where the disease was superficial in the hemispheres, there was little or no paralysis; whereas, reasoning by analogy, a tenth part of the injury to any of the parts just mentioned would have been speedily fatal.

5. The last point which I have especially to notice concerning paralysis (considered merely as a symptom), is its relation to volition. In certain cases a limb may appear to be partially paralysed, and the patient may seem unable to make free use of it, not because power is actually lost, but because the *will* to use it is not habitually and strongly exercised. The channel of volition seems imperfect, clogged, or obstructed—to use a material figure. And this volitional defect may be *primary* as well as consecutive to partial recovery. I do not know how better to explain my meaning; but a sketch of two or three cases, out of many that I could relate, will make the condition referred to comprehensible.

J. N., aged 35, a mechanic, applied to me at the hospital a few weeks ago, for an affection of the left arm and hand. He stated that he had

lately found a difficulty in using it; that it was not so strong as it used to be; and that there was a "curious sensation" in it. I was quite convinced that these complaints were not feigned; for, besides that there was no motive for, and nothing to be gained by, simulating a disease, there was different reaction to the galvanic current on the two sides. Yet, on testing the strength of grasp of the two hands by the dynamometer, they were found after several trials perfectly equal. He is still under treatment, which includes faradisation, and is deriving benefit from it; still pursuing his usual avocations, although with difficulty. If I might hazard a hypothesis, I should say that a lesion exists in this case beyond the motor tracts, and in those elements of the organism (whichever they may be) which preside especially over the origination of volition.

Another case at the same institution had incomplete right hemiplegia, chiefly affecting the arm. He also is still under treatment, and is greatly improved. He is at work as a tinner, as usual, but complains that his hand is still weak. The dynamometer shows no difference now in the power of the two sides.

But the most marked illustration of this state of things is found in the continuation of the history of E. L., the subject of the first case related in this chapter. It is now above twelve years since his attack. The urgent symptoms only lasted two or three weeks; the limbs soon began to recover their power, which recovery was aided by mechanical and galvanic agencies; and in a few months his restoration was practically complete. Yet he walks into a room, lame, with an imperfect lifting of the left leg; the arm hangs apparently loosely by his side, and seems to droop from the shoulder. When seated at table he uses the left arm as little as possible, and will rather reach over for anything at his left side with the right arm, than take it in the natural and obvious way. With all this there is no wasting of the muscles, nor any lack of firmness; and when *called upon* to use the left hand, the grasp is strong, even crushing,—certainly much stronger than the hands of most men who have never been paralysed; and the dynamometer indicates no difference whatever in the power of the two hands. I have not tested the legs accurately, but I believe there is no actual difference in their strength. Many persons attribute these and allied phenomena to "habit;" but I cannot help thinking that the explanation is not so near the surface. What it really is

will probably long remain unknown; for in such cases as these, where recovery is an essential element, it is scarcely likely that any possible post-mortem investigation would at any future time be attached to the previous history.

And yet, under any system of psychology or physiology, it may fairly be assumed that the will, or in other words, the faculty of suggesting motion, has its seat, or exerts its functions in a set of cells and fibres apart from those which actually originate the motion itself. And if this be so, there will also doubtless be fibres or nerve-tubes conveying the mandates of the will to the motor centres; and it is not difficult to understand, under this view, how either the *suggesting organ* itself may have been injured, or the conducting tubes in those cases where the muscles of a limb, although quite strong in reality, do not act readily and under the ordinary exercise of volition; whilst they are perfectly capable of performing their normal functions when a special call is made upon the energies of the will. Considered with reference to the motor centres, the lesion in these cases is extra-centric; whereas in ordinary cases of impaired mobility the lesion is intra-centric.

## CHAPTER XIV.

### ON THE TREATMENT OF INFLAMMATION OF THE BRAIN.

THE treatment of the various inflammatory affections of the brain has to be conducted on general principles; as we know of no agencies which act *specifically* on these diseases. How much we can do to control and modify them is not easy to determine. Three positions may be considered as established:—1. That inflammations of the brain are very fatal, and of the gravest prognosis. 2. That we can influence their progress to some extent, as will be further shown when speaking of the effect of purgatives. 3. That diseases which present all the phenomena of cerebritis in their commencement, do frequently appear to be cut short and to be removed by the use of certain remedial measures. This has been illustrated in the chapter on Partial Cerebritis; and who, indeed, has not witnessed symptoms closely resembling the approach of serious hyperæmic disease of the brain dissipated by a venesection, a smart purgative, or even a full dose of opium?

The principal therapeutic agencies upon which we are accustomed to rely in the treatment of these affections, are depletion, cold, counter-irritation, mercury, purgatives, and sedatives. Upon each of these I propose making a few remarks; and afterwards briefly noticing some other means of less general application.

1. Bearing in mind what has been formerly said concerning the condition of the circulation in the brain, we shall be able to define the limits of our powers in respect of depletion, general or local, as well as the nature and extent of the vascular disturbances that we can hope to relieve. We have seen that, owing to the peculiar physical condition of the brain, we cannot at any given time lessen the *entire mass* of the blood contained in it, so

long as the cranium continues to be a closed cavity. In fracture or penetration of the skull from any cause, the conditions are entirely changed.

What then can we do by depletion? Much every way. We can equalise and restore the disturbed equilibrium between the arterial and venous systems; and we can reduce or remove that potential or dynamic pressure about which so much was said in a former chapter,—pressure which, although it does not lessen the volume of the brain substance, alters its molecular arrangement, so as to prepare it for, or predispose it to, any subsequent morbid alteration.

What then are the indications for the use of depletion? If there be inordinate arterial action, every pulse is acting more or less like a blow on unyielding tissue; and it is only rational to suppose that, unless there be some forbidding circumstances, we shall be acting beneficially in reducing the entire mass of blood and the force of the arterial pulse by a general bleeding. Clinical illustrations of the use of this practice, and its favourable results, will readily suggest themselves. But we must be very sure that the arterial excitement is *real*. I have seen death result in an hour after bleeding in inflammation of the brain of traumatic origin, when the pulse was full and bounding, but too compressible.

Where there is no arterial excitement, but congestion, or a slow passage of blood through the brain, resulting from venous obstruction, depletion is again of service, but requires great care in its use. General bleeding will rarely be admissible here, but leeches and cupping are often very beneficial, and, as the experience of all will suggest, often remove very threatening symptoms. It is scarcely necessary to add, that these measures are not to be used in *all cases* where arterial excitement or venous engorgement occurs. These may occur as transitory or almost physiological conditions requiring no treatment. They may also occur as a very marked pathological condition (as in epilepsy), yet neither require nor admit of depletion. It is only when they occur as persistent signs of a new and advancing disorder of circulation, that these remarks apply.

And again, when there is neither arterial excitement nor venous congestion primarily, but the morbid change has commenced in the capillaries, and spread from them as a focus of disease, depletion is not indicated. There is no disturbed equilibrium to restore, nor any especial pressure to relieve, and therefore bloodletting would not only be useless, but, by reducing the strength of the patient, would lessen the possible chances of natural restoration. This condition I believe to have existed in the three cases related in the chapter on Cerebria. I certainly have never tried depletion in cases of this kind, and therefore cannot say from actual experience what might be the result.

It will follow from the same line of reason that depletion will not be indicated in the chronic forms of inflammation, nor in softening. In the course of these diseases some local depletion may occasionally be of service in the relief of symptoms dependent upon accessions of excitement or congestion; but its propriety must be decided by the urgency of these symptoms in each case, as no general rules can be given. Small abstractions of blood from the nose, the arm, or the instep, are occasionally very useful in relieving symptoms.

Bleeding is generally more admissible in encephalitis and in idiopathic meningitis, than in inflammation confined to the substance of the brain, or in secondary meningitis, occurring in the course of other diseases, as fever or acute rheumatism.

2. Next in order to depletion, our most important agent is the application of cold. Familiar as is the use of this remedy to all practical men, it may be questioned whether its *modus operandi* is well understood. It is popularly supposed to contract the vessels of the brain, the effect of which would be to diminish the entire mass of blood in the organ. But, as we have before seen reason to believe that this cannot be done, this theory of its action cannot be the correct one. And yet it may not be denied that it has a very powerful influence over the state of the cerebral circulation. This must be effected, if there be any force in the views previously enunciated, not by lessening the calibre of the vessels generally, as by the mechanical power of cold to con-

tract bodies ; but by equalising the disturbed balance between the arteries and veins by its influence over the vaso-motor nerves. And this is quite in accordance with the practical consideration, that the application of cold is much more useful in cases where there is evidence of arterial excitement, than in those where venous congestion predominates. If the mechanical theory were correct, it should be equally serviceable in any case where vascular fulness was the prominent symptom, whether arterial or venous.

As a matter of fact, however, the use of cold is a most potent agent in brain diseases. Its value and its modes of application have been so often and so fully set forth, that I need not dwell upon it here. I have only to say, that in almost all cases, whether acute or chronic, where cold is admissible, I very much prefer frequent sponging with aired or even warm water, leaving it to produce cold by evaporation, to the use of ice or any *primarily* cold application. For some years I have been in the habit of using this method in preference to the usual practice of the application of ice or cold water, and the results have been much more favourable, so far as I can judge, than those attending the latter mode of treatment. In chronic inflammation of the brain, I know no other agency that affords so much relief to heat and pain.

Of all the modes of applying cold, certainly by far the most *immediately* powerful is the continuous aspersion of the head by cold streams of water. There are, however, some objections to this treatment ; first, the difficulty of its effective application ; and secondly, the fact that if it be not very carefully used, its depressing influence is very dangerous. In certain cases it is of extreme value, as in some forms of violent mania, and in acute delirium—the "*delire aigu*" of French writers. It is a favourite practice of many of the Continental physicians to combine this aspersion with the warm bath, prolonged for many hours at a time. It is said to have the most favourable effects ; and the cases given in illustration would certainly appear to commend its adoption. I have no personal experience of its use, and the

great difficulties attendant on its application in private practice are not readily to be overcome.

3. Counter-irritation in its various forms is a most valuable agent in the treatment of affections of the brain. These applications are generally understood as not being proper in the acute stages; and this is quite correct as regards direct treatment to, or in the immediate neighbourhood of, the head. But applied at a distance, as to the legs, for purposes of revulsion, their use is both admissible and expedient. It is not customary nor desirable to apply blisters for this purpose, but rather vesicants, which take effect more speedily. Mustard poultices are in most frequent use; but the most powerful agent with which I am acquainted is a folded towel, dipped in boiling water and applied to the inner side of the calf of the leg. I have often seen an almost immediate restoration of consciousness follow this treatment in very formidable hyperæmic conditions of the brain; and it is rarely attended by any subsequent serious mischief.

In sub-acute or chronic cases, and in the after-stages of acute affections where coma has supervened, blisters to the scalp itself, or to the neck, are most valuable adjuncts to the treatment. According to circumstances they may be healed and repeated; or they may be kept open as a pus-discharging surface; or they may be dressed with mercurial ointment. In some cases of apparently impending inflammatory softening now under treatment, I find consecutive blistering the only reliable agency. When the blisters are omitted, the symptoms become more grave; when they are re-applied, the conditions improve.

In still more chronic cases issues and setons are especially applicable, and attended with very favourable results. Some cases of (supposed) softening appear to be cured by their influence, and very many are greatly benefited.

There is a very insidious form of brain disorder, the nature of which is not well understood, occurring in children from seven to ten or twelve years of age. It is characterised by dull

headache, a sluggish and rather dilated pupil, heaviness of manner, with occasional outbursts of causeless passion, and a tendency to stumble and even fall, without any loss of consciousness, and where there is nothing to stumble over. In many of these cases I have observed the happiest results to accrue from a seton in the neck, kept open for several months, almost without any other treatment except the ordinary regulation of the general functions.

4. Without entering upon the vexed question of the influence of mercury over inflammation, I have here only to treat of its practical use in affections of the brain, apart from theoretical considerations. In meningitis and encephalitis mercury is all but universally acknowledged to be of the greatest value. It should be given freely in acute cases, so as to produce a rapid impression upon the system; and this may be aided by inunction. In tubercular meningitis it is generally considered unnecessary and unsafe, except as an occasional purgative. In a previous chapter, however, I have given some particulars of a case which would seem not to bear out this view; and I believe that many such might be found in the records of hydrocephalus.

In chronic and obscure affections of the brain mercury is a very valuable agent, when given in very small doses over a prolonged period. The best form is, according to my experience, the Liq. Hydrarg. Bichlorid. in doses of ℥ss. or ℥j. once or twice a day. I have seen much benefit derived, in cases of localised chronic softening, from the compound of mercury, arsenic, and iodine, called "Donovan's Solution," in ten-drop doses. Before prescribing in these cases, great care should be taken to distinguish, as far as possible, cases of simple degenerative disease of the brain from those which have an inflammatory origin. In the latter the slow action of mercury is likely to be of great advantage; in the former it can but do harm and accelerate the end.

Of the effect of mercury upon Cerebria I can say but little; indeed, in all matters concerning the treatment of this disease I speak with the greatest hesitation, having never found any

definite result, or any favourable modification even of symptoms, produced by any measures that have been adopted.

The benefit derived from mercury has often been attributed solely to its effect on the secretions, an opinion which I need not spend any words in controverting.

5. There is no kind of internal remedy which has so powerful an influence over the *symptoms* (at least) of inflammatory affections of the brain as purgatives. Indeed, I think it is not too much to say that they produce a stronger and more evidently beneficial effect than any class of agents whatever. Constipation is a very constant symptom of all forms of encephalitis, and its relief is evidently a primary indication; but it is not by merely relieving this condition that we obtain the strongly characteristic advantages of such medicines, but by actual purging, so as to produce numerous and watery evacuations. This seems to act as a derivant, and to relieve the oppressed brain even more than actual depletion, and with less risk of subsequent injury, in the acute forms and stages of inflammatory action to which these remarks chiefly apply.

In the chapter on Partial Cerebritis I have dwelt at some length on the occurrence of intermissions in the course of the disease, sometimes imperfect, but at other times so complete as to simulate a return to health. In almost every instance where there occurred so marked an intermission, it was consecutive to a copious evacuation of the bowels, either spontaneous or due to some brisk purgative; and in some of the cases, notably that of J. D., it was recognised that at moderate intervals these remissions in the symptoms could almost always be commanded by such action.

But, apart from the production of phenomena so marked as these, great alleviation of symptoms, in the earlier stages of brain affection, almost constantly follows the free action of a purgative. And it is a matter of such general observation as to require no special illustration by cases, that symptoms of great gravity, closely resembling the invasion of cerebritis, not unfrequently disappear under the influence of the same

treatment, without going on to the development of any defined affection.

Even in more chronic cases, where there is a periodical tendency to congestion and a comatose condition, purgatives are eminently serviceable; even drastics are not always forbidden. I have in more than one such case seen the best results accrue from a drop of croton oil, or even a small dose of Ext. Elaterii.

The special kind of purgative to be used must be determined by the circumstances of the case. As a general rule, it is well in active cases to combine some mercurial with the aperient, and to aid its operation by a saline draught, in order to encourage the flow of watery stools.

Much has been said in the foregoing pages on the differences that exist between Cerebria and other forms of inflammation of the brain. Another and a very marked distinctive feature is the relation of this disease to purgatives. In chronic affections, and partial acute and sub-acute inflammations, it is often necessary to use very strong medicines of a drastic character before we can secure an efficient action on the bowels; but when this is accomplished, very marked relief follows, with a constancy that admits of no doubt as to its cause and significance. But the case is otherwise in Cerebria. A few grains of rhubarb, with one or two of grey powder, are generally amply sufficient to act freely; but the action is followed, so far as my experience extends, by no corresponding amelioration of symptoms.

6. For the administration of sedatives no general rules can be given. Symptoms, having all the appearance of premonitions of some approaching cerebral disease, occasionally present themselves in highly nervous and excitable constitutions, and are quieted and dispersed by a moderate dose of opium or hyoscyamus. When a distinctly hyperæmic condition has been established, then opiates in all forms are contra-indicated, unless there be accessions of great irritability. Aconite has been occasionally much in favour, and has unquestionably considerable control over arterial excitement. It must be used with great caution, being very uncertain in its effects. Digitalis, antimony,

and hydrocyanic acid, have also been recommended in active hyperæmia of the brain, but I do not personally favour their use, as I believe that whatever these drugs can do may be done better by other measures which are not attended by the objections that apply to these.

In the chronic affections that frequently follow acute attacks, not fatal in that stage, opium is eminently serviceable in a great variety of ways. In many forms of paralysis with great irritability it is indispensable; and it alone, so far as I have seen, is able to control that peculiar jactitation of limbs, of which I have before made mention, that occurs in certain forms of hemiplegia.

The use of emetics has been advised by some writers. I mention it merely to condemn the practice altogether.

I have no reliable data, derived from my own experience, concerning the value of the treatment of inflammatory affections of the brain by the bromides. Seeing the manifest influence which they possess over the circulation in the brain, as shown by their sedative properties and their unquestioned power in controlling attacks of epilepsy, I should be inclined to hope that they may be found of great service in these acute affections when their use is more extended and their *modus operandi* better known. Alone, and occasionally combined with small doses of chloral hydrat, I have frequently prescribed them in anomalous affections of the brain, characterised by increased vascular excitement, with marked benefit; but I am not yet in a position to reduce their use to any practical formula.

I have not been able to obtain any demonstrable advantage from the use of the iodides in acute affections of the brain. They are eminently useful, however, in the more chronic forms, and especially in such as are consecutive to diseases in the bones. I have also used the iodide of potassium, in combination with nux vomica, in paralysis agitans, with much advantage.

On the general subject of treatment directed against inflammatory affections of the brain, it must be remembered that, although the results hitherto have been sufficiently unsatis-

factory, there are considerations which ought to serve as encouragements to perseverance and renewed efforts. We have seen that the records of pathological investigations clearly prove the possibility of local disorganisations being arrested in their progress and healed, by revealing cicatrices where active disease has evidently existed previously. There is therefore nothing in their essential nature to forbid the idea of curability. We have also seen how uncertain we may be, occasionally, of the existence of actual disease, even when the evidence would seem to be the strongest, and therefore there exists the *possibility* that we may have to deal only with functional and removable disorder.

But I think the strongest indication for persistent treatment is found in the occurrence of the intermissions, so often referred to in these pages, as occurring in partial cerebritis, even when the symptoms appear to be most hopeless. For although these intermissions but too frequently only usher in a worse condition than before in the course of a few hours, yet we cannot be sure that they do not present an opening for energetic and appropriate treatment, which might cause them to result in recovery. I can affirm that I have the records of more than one or two cases that have terminated favourably, *after* treatment conducted on this principle :—"If the disease is hopeless, treatment will not make it more so ;—if there *is* hope, let us do everything that our art suggests to realise it." All medical science which does not terminate in action is but a "Meditation upon Death."—(Æsclepiades.)

*Printed by* R. & R. Clark, *Edinburgh.*

*London, New Burlington Street,*
*July*, 1872.

# MESSRS. J. & A. CHURCHILL'S

# Publications

IN

# MEDICINE

AND THE VARIOUS BRANCHES OF

# NATURAL SCIENCE.

"It would be unjust to conclude this notice without saying a few words in favour of Mr. Churchill, from whom the profession is receiving, it may be truly said, the most beautiful series of Illustrated Medical Works which has ever been published."—*Lancet.*

"All the publications of Mr. Churchill are prepared with so much taste and neatness, that it is superfluous to speak of them in terms of commendation."—*Edinburgh Medical and Surgical Journal.*

"No one is more distinguished for the elegance and *recherché* style of his publications than Mr. Churchill."—*Provincial Medical Journal.*

"The name of Churchill has long been a guarantee for the excellence of illustrated works, and it would be superfluous to repeat the admiration that we have several times expressed in this respect, of the spirit with which this firm engages in these costly but valuable series."—*Medical Press and Circular.*

"The typography, illustrations, and getting up are, in all Mr. Churchill's publications, most beautiful."—*Monthly Journal of Medical Science.*

"Mr. Churchill's illustrated works are among the best that emanate from the Medical Press."—*Medical Times.*

"We have before called the attention of both students and practitioners to the great advantage which Mr. Churchill has conferred on the profession, in the issue, at such a moderate cost, of works so highly creditable in point of artistic execution and scientific merit."—*Dublin Quarterly Journal.*

MESSRS. J. & A. CHURCHILL are the Publishers of the following Periodicals, offering to Authors a wide extent of Literary Announcement, and a Medium of Advertisement, addressed to all Classes of the Profession.

**THE BRITISH AND FOREIGN MEDICO-CHIRURGICAL REVIEW, AND QUARTERLY JOURNAL OF PRACTICAL MEDICINE AND SURGERY.**
Price Six Shillings. No. XCIX.

**THE QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE,**
Edited by J. F. PAYNE, B.Sc., M.B., and E. RAY LANKESTER, B.A., F.R.M.S. Price 4*s*.
No. XLVII. *New Series.*

**THE JOURNAL OF MENTAL SCIENCE.**
By authority of the Medico-Psychological Association.
Edited by HENRY MAUDSLEY, M.D., and JOHN SIBBALD, M.D.
Published Quarterly, price 3*s*. 6*d*. *New Series.*
No. XLVI.

**ARCHIVES OF MEDICINE:**
A Record of Practical Observations and Anatomical and Chemical Researches, connected with the Investigation and Treatment of Disease. Edited by Dr. LIONEL S. BEALE, F.R.S. No. XVII., 3*s*.

**THE MEDICAL DIRECTORY.**
Published Annually. 8vo. 10*s*. 6*d*.

**THE YEAR-BOOK OF PHARMACY,**
Published Annually. 8vo., 7*s*. 6*d*.

**THE ROYAL LONDON OPHTHALMIC HOSPITAL REPORTS, AND JOURNAL OF OPHTHALMIC MEDICINE AND SURGERY.**
Vol. VII., Part 2, 2*s*. 6*d*.

**THE MEDICAL TIMES & GAZETTE.**
Published Weekly, price Sixpence.
Annual Subscription, £1. 6*s*., and regularly forwarded to all parts of the Kingdom, post free, for £1. 8*s*.

**THE PHARMACEUTICAL JOURNAL,**
AND TRANSACTIONS OF THE PHARMACEUTICAL SOCIETY.
Published Weekly, price Fourpence.
*** May also be had in Monthly Parts.

**THE BRITISH JOURNAL OF DENTAL SCIENCE.**
Published Monthly, price One Shilling.
No. CXCIII.

**THE HALF-YEARLY ABSTRACT OF THE MEDICAL SCIENCES.**
Being a Digest of British and Continental Medicine, and of the Progress of Medicine and the Collateral Sciences. Edited by W. DOMETT STONE, M.D., F.R.C.S. (Exam.). Post 8vo., 6*s*. 6*d*. Vols. I. to LV.

---

MESSRS. CHURCHILL have concluded a special arrangement with MESSRS. LINDSAY & BLAKISTON, OF PHILADELPHIA, in accordance with which that Firm will act as their Agents for the United States of America, either keeping in Stock most of Messrs. CHURCHILL'S Books, or reprinting them on Terms advantageous to Authors. Many of the Works in this Catalogue may therefore be easily obtained in America.

# A CLASSIFIED INDEX

TO

# MESSRS. J. & A. CHURCHILL'S CATALOGUE.

## ANATOMY.



## CHEMISTRY.



## CLIMATE and BATHS.



## DEFORMITIES, &c.



## GENERATIVE ORGANS, Diseases of, and SYPHILIS.



## HYGIENE.



## MATERIA MEDICA and PHARMACY.



## MATERIA MEDICA and PHARMACY—*continued.*



## MEDICINE.

## MEDICINE—*continued.*



## MICROSCOPE.



## MISCELLANEOUS.



## MISCELLANEOUS—*continued.*



## OBSTETRICS.



## OPHTHALMOLOGY.



## PHYSIOLOGY.



## PSYCHOLOGY, including Diseases of Brain and Nervous System.



## PSYCHOLOGY—*continued.*



## PULMONARY and CHEST DISEASES, &c.



## RENAL and URINARY DISEASES.



## SCIENCE.

## SCIENCE—*continued.*



## SURGERY.



## SURGERY—*continued.*



## SURGERY—*continued.*



## VETERINARY MEDICINE.



## WOMEN AND CHILDREN, Diseases of.

WILLIAM ACTON, M.R.C.S.

I.

THE FUNCTIONS AND DISORDERS OF THE REPRODUCTIVE ORGANS IN CHILDHOOD, YOUTH, ADULT AGE, AND ADVANCED LIFE, considered in their Physiological, Social, and Moral Relations. Fifth Edition. 8vo., 12*s*.

II.

PROSTITUTION: Considered in its Moral, Social, and Sanitary Aspects, Second Edition, enlarged. 8vo., 12*s*.

ROBERT ADAMS, A.M., C.M., M.D.

A TREATISE ON RHEUMATIC GOUT; OR, CHRONIC RHEUMATIC ARTHRITIS. 8vo., with a Quarto Atlas of Plates, 21*s*.

WILLIAM ADAMS, F.R.C.S.

I.

ON THE PATHOLOGY AND TREATMENT OF LATERAL AND OTHER FORMS OF CURVATURE OF THE SPINE. With Plates. 8vo., 10*s*. 6*d*.

II.

CLUBFOOT: its Causes, Pathology, and Treatment. Jacksonian Prize Essay for 1864. With 100 Engravings. 8vo., 12*s*.

III.

ON THE REPARATIVE PROCESS IN HUMAN TENDONS AFTER SUBCUTANEOUS DIVISION FOR THE CURE OF DEFORMITIES. With Plates. 8vo., 6*s*.

WILLIAM ADDISON, F.R.C.P., F.R.S.

I.

CELL THERAPEUTICS. 8vo., 4*s*.

II.

ON HEALTHY AND DISEASED STRUCTURE, AND THE TRUE PRINCIPLES OF TREATMENT FOR THE CURE OF DISEASE, ESPECIALLY CONSUMPTION AND SCROFULA, founded on MICROSCOPICAL ANALYSIS. 8vo., 12*s*.

C. J. B. ALDIS, M.D., F.R.C.P.

AN INTRODUCTION TO HOSPITAL PRACTICE IN VARIOUS COMPLAINTS; with Remarks on their Pathology and Treatment. 8vo., 5*s*. 6*d*.

SOMERVILLE SCOTT ALISON, M.D.EDIN., F.R.C.P.

THE PHYSICAL EXAMINATION OF THE CHEST IN PULMONARY CONSUMPTION, AND ITS INTERCURRENT DISEASES. With Engravings. 8vo., 12*s*.

PETER ALLEN, M.D. F.R.C.S. EDIN.

AURAL CATARRH; or, the Commonest Forms of Deafness, and their Cure. With Engravings. Post 8vo., 6*s*. 6*d*.

WILLIAM ALLINGHAM, F.R.C.S.

FISTULA, HÆMORRHOIDS, PAINFUL ULCER, STRICTURE, PROLAPSUS AND OTHER DISEASES OF THE RECTUM: THEIR DIAGNOSIS AND TREATMENT. 8vo., 6*s*.

JULIUS ALTHAUS, M.D., M.R.C.P.

ON EPILEPSY, HYSTERIA, AND ATAXY. Cr. 8vo., 4*s*.

THE ANATOMICAL REMEMBRANCER; OR, COMPLETE POCKET ANATOMIST. Seventh Edition, carefully Revised. 32mo., 3*s*. 6*d*.

A. F. ANDERSON, M.D.,

FOURTEEN COLOURED PHOTOGRAPHS OF LEPROSY as met with in the Straits Settlements. With Explanatory Notes. 4to., £1. 11*s*. 6*d*.

McCALL ANDERSON, M.D., F.F.P.S.

I.

THE PARASITIC AFFECTIONS OF THE SKIN. Second Edition. With Engravings. 8vo., 7*s*. 6*d*.

II.

ECZEMA. Second Edition. 8vo., 6*s*.

III.

PSORIASIS AND LEPRA. With Chromo-lithograph. 8vo., 5*s*.

GEORGE ARMATAGE, M.R.C.V.S.

THE VETERINARIAN'S POCKET REMEMBRANCER: containing concise directions for the Treatment of Urgent or Rare Cases, embracing Semeiology, Diagnosis, Prognosis, Surgery, Therapeutics, Detection of Poisons, Hygiene, &c. Post 18mo., 3*s*.

SIR ALEXANDER ARMSTRONG, C.B., M.D., F.R.C.P., R.N.

OBSERVATIONS ON NAVAL HYGIENE AND SCURVY. More particularly as the latter appeared during a Polar Voyage. 8vo., 5*s*.

HENRY ARNOTT, F.R.C.S.

CANCER: its varieties, their Histology and Diagnosis. With 5 Lithographic Plates and 22 Wood Engravings. 8vo. 5*s*. 6*d*.

T. J. ASHTON, M.R.C.S.

I.

ON THE DISEASES, INJURIES, AND MALFORMATIONS OF THE RECTUM AND ANUS. Fourth Edition. 8vo., 8*s*.

II.

PROLAPSUS, FISTULA IN ANO, AND OTHER DISEASES OF THE RECTUM; their Pathology and Treatment. Third Edition. Post 8vo., 3*s*. 6*d*.

A. W. BARCLAY, M.D., F.R.C.P.

I.

A MANUAL OF MEDICAL DIAGNOSIS. Third Edition. Foolscap 8vo., 10*s*. 6*d*.

II.

MEDICAL ERRORS.—Fallacies connected with the Application of the Inductive Method of Reasoning to the Science of Medicine. Post 8vo., 5*s*.

III.

GOUT AND RHEUMATISM IN RELATION TO DISEASE OF THE HEART. Post 8vo., 5*s*.

G. H. BARLOW, M.D., F.R.C.P.

A MANUAL OF THE PRACTICE OF MEDICINE. Second Edition. Fcap. 8vo., 12*s.* 6*d.*

ROBERT BARNES, M.D., F.R.C.P.

LECTURES ON OBSTETRIC OPERATIONS, INCLUDING THE TREATMENT OF HÆMORRHAGE, and forming a Guide to the Management of Difficult Labour. Second Edition, with 113 Engravings 8vo., 15*s.*

E. BASCOME, M.D.

A HISTORY OF EPIDEMIC PESTILENCES, FROM THE EARLIEST AGES. 8vo., 8*s.*

W. R. BASHAM, M.D., F.R.C.P.

I.

RENAL DISEASES; a CLINICAL GUIDE to their DIAGNOSIS and TREATMENT. 8vo., 7*s.*

II.

ON DROPSY, AND ITS CONNECTION WITH DISEASES OF THE KIDNEYS, HEART, LUNGS AND LIVER. With 16 Plates. Third Edition. 8vo., 12*s.* 6*d.*

FREDERIC BATEMAN, M.D., M.R.C.P.

APHASIA OR LOSS OF SPEECH, and the LOCALISATION of the FACULTY of ARTICULATE LANGUAGE. 8vo., 7*s.*

LIONEL S. BEALE, M.B., F.R.S., F.R.C.P.

I.

ON KIDNEY DISEASES, URINARY DEPOSITS, AND CALCULOUS DISORDERS. Third Edition, much Enlarged. With 70 Plates. 8vo., 25*s.*

II.

ONE HUNDRED URINARY DEPOSITS ON TWO SHEETS FOR THE HOSPITAL LABORATORY OR SURGERY. Each Sheet, 2*s.* 6*d.*; on Roller, 3*s.* 6*d.*

III.

THE MICROSCOPE, IN ITS APPLICATION TO PRACTICAL MEDICINE. Third Edition. With 58 Plates. 8vo., 16*s.*

IV.

PROTOPLASM; OR, LIFE, MATTER AND MIND. Second Edition. With 8 Plates. Crown 8vo., 6*s.* 6*d.*

V.

DISEASE GERMS; and on the Treatment of the Feverish State. Second Edition. With 28 Plates. Crown 8vo., 12*s.* 6*d.*

VI.

LIFE THEORIES: THEIR INFLUENCE UPON RELIGIOUS THOUGHT. With 6 Coloured Plates. Crown 8vo., 5*s.* 6*d.*

HENRY BEASLEY.

I.

THE BOOK OF PRESCRIPTIONS; containing 3000 Prescriptions. Collected from the Practice of the most eminent Physicians and Surgeons, English and Foreign. Fourth Edition. 18mo., 6*s*.

II.

THE DRUGGIST'S GENERAL RECEIPT-BOOK: comprising a copious Veterinary Formulary and Table of Veterinary Materia Medica; Patent and Proprietary Medicines, Druggists' Nostrums, &c.; Perfumery, Skin Cosmetics, Hair Cosmetics, and Teeth Cosmetics; Beverages, Dietetic Articles, and Condiments; Trade Chemicals, Miscellaneous Preparations and Compounds used in the Arts, &c.; with useful Memoranda and Tables. Sixth Edition. 18mo., 6*s*.

III.

THE POCKET FORMULARY AND SYNOPSIS OF THE BRITISH AND FOREIGN PHARMACOPŒIAS; comprising standard and approved Formulæ for the Preparations and Compounds employed in Medical Practice. Ninth Edition, containing the Formulæ of the most recent Edition of the B. P. 18mo., 6*s*.

HENRY BENNET, M.D.

I.

A PRACTICAL TREATISE ON UTERINE DISEASES. Fourth Edition, revised, with Additions. 8vo., 16*s*.

II.

WINTER AND SPRING ON THE SHORES OF THE MEDITERRANEAN: OR, THE RIVIERA, MENTONE, ITALY, CORSICA, SICILY, ALGERIA, SPAIN, AND BIARRITZ, AS WINTER CLIMATES. Fourth Edition, with numerous Plates, Maps, and Wood Engravings. Post 8vo., 12*s*.

III.

ON THE TREATMENT OF PULMONARY CONSUMPTION BY HYGIENE, CLIMATE, AND MEDICINE. Second Edition, enlarged. 8vo., 5*s*.

J. RISDON BENNETT, M.D., F.R.C.P.

CANCEROUS AND OTHER INTRA-THORACIC GROWTHS, THEIR NATURAL HISTORY AND DIAGNOSIS. With Plates. Post 8vo., 8*s*.

ROBERT BENTLEY, F.L.S.

A MANUAL OF BOTANY. With 1,127 Engravings on Wood. Second Edition. Fcap. 8vo., 12*s*. 6*d*.

ALBERT J. BERNAYS, PH.D., F.C.S.

NOTES FOR STUDENTS IN CHEMISTRY; being a Syllabus compiled from the Manuals of Miller, Fownes, Berzelius, Gerhardt, Gorup-Besanez, &c., Fifth Edition. Fcap. 8vo., 3*s*. 6*d*.

HENRY HEATHER BIGG.

ORTHOPRAXY: a complete Guide to the Modern Treatment of Deformities by Mechanical Appliances. With 300 Engravings. Second Edition. Post 8vo., 10*s*.

S. B. BIRCH, M.D., M.R.C.P.

I.

OXYGEN: ITS ACTION, USE, AND VALUE IN THE TREATMENT OF VARIOUS DISEASES OTHERWISE INCURABLE OR VERY INTRACTABLE. Second Edition. Post 8vo., 3*s*. 6*d*.

II.

CONSTIPATED BOWELS: the Various Causes and the Different Means of Cure. Third Edition. Post 8vo., 3*s*. 6*d*.

GOLDING BIRD, M.D., F.R.S.

URINARY DEPOSITS; THEIR DIAGNOSIS, PATHOLOGY, AND THERAPEUTICAL INDICATIONS. With Engravings. Fifth Edition. Edited by E. Lloyd Birkett, M.D. Post 8vo., 10*s.* 6*d.*

JOHN BISHOP, F.R.C.S., F.R.S.

I.

ON DEFORMITIES OF THE HUMAN BODY, their Pathology and Treatment. With Engravings on Wood. 8vo., 10*s.*

II.

ON ARTICULATE SOUNDS, AND ON THE CAUSES AND CURE OF IMPEDIMENTS OF SPEECH. 8vo., 4*s.*

BLAINE.

OUTLINES OF THE VETERINARY ART; OR, A TREATISE ON THE ANATOMY, PHYSIOLOGY, AND DISEASES OF THE HORSE, NEAT CATTLE, AND SHEEP. Seventh Edition. By Charles Steel, M.R.C.V.S.L. With Plates. 8vo., 18*s.*

C. L. BLOXAM.

I.

CHEMISTRY, INORGANIC AND ORGANIC; with Experiments and a Comparison of Equivalent and Molecular Formulæ. With 276 Engravings on Wood. 8vo., 16*s.*

II.

LABORATORY TEACHING; OR PROGRESSIVE EXERCISES IN PRACTICAL CHEMISTRY. Second Edition. With 89 Engravings. Crown 8vo., 5*s.* 6*d.*

HONORÉ BOURGUIGNON, M.D.

ON THE CATTLE PLAGUE; OR, CONTAGIOUS TYPHUS IN HORNED CATTLE: its History, Origin, Description, and Treatment. Post 8vo., 5*s.*

JOHN E. BOWMAN, & C. L. BLOXAM.

I.

PRACTICAL CHEMISTRY, including Analysis. With numerous Illustrations on Wood. Sixth Edition. Foolscap 8vo., 6*s.* 6*d.*

II.

MEDICAL CHEMISTRY; with Illustrations on Wood. Fourth Edition, carefully revised. Fcap. 8vo., 6*s.* 6*d.*

P. MURRAY BRAIDWOOD, M.D. EDIN.

ON PYÆMIA, OR SUPPURATIVE FEVER: the Astley Cooper Prize Essay for 1868. With 12 Plates. 8vo., 10*s.* 6*d.*

JAMES BRIGHT, M.D.

ON DISEASES OF THE HEART, LUNGS, & AIR PASSAGES; with a Review of the several Climates recommended in these Affections. Third Edition. Post 8vo., 9*s.*

WILLIAM BRINTON, M.D., F.R.S.

I.

THE DISEASES OF THE STOMACH, with an Introduction on its Anatomy and Physiology; being Lectures delivered at St. Thomas's Hospital. Second Edition. 8vo., 10*s.* 6*d.*

II.

INTESTINAL OBSTRUCTION. Edited by DR. BUZZARD. Post 8vo., 5*s.*

BERNARD E. BRODHURST, F.R.C.S.

I.

ON DEFORMITIES OF THE HUMAN BODY: a System of Orthopædic Surgery. With Engravings. 8vo., 10*s.* 6*d.*

II.

CURVATURES OF THE SPINE: their Causes, Symptoms, Pathology, and Treatment. Second Edition. Roy. 8vo., with Engravings, 7*s.* 6*d.*

III.

ON THE NATURE AND TREATMENT OF CLUBFOOT AND ANALOGOUS DISTORTIONS involving the TIBIO-TARSAL ARTICULATION. With Engravings on Wood. 8vo., 4*s.* 6*d.*

IV.

PRACTICAL OBSERVATIONS ON THE DISEASES OF THE JOINTS INVOLVING ANCHYLOSIS, and on the TREATMENT for the RESTORATION of MOTION. Third Edition, much enlarged, 8vo., 4*s.* 6*d.*

CHARLES BROOKE, M.A., M.B., F.R.S.

ELEMENTS OF NATURAL PHILOSOPHY. Based on the Work of the late Dr. Golding Bird. Sixth Edition. With 700 Engravings. Fcap. 8vo., 12*s.* 6*d.*

J. CAMPBELL BROWN, D.SC., F.C.S.,

ANALYTICAL TABLES FOR STUDENTS OF PRACTICAL CHEMISTRY. 8vo., 2*s.* 6*d.*

J. H. BALFOUR BROWNE, BARRISTER-AT-LAW.

THE MEDICAL JURISPRUDENCE OF INSANITY. 8vo. 10*s.* 6*d.*

T. L. BRUNTON, B.SC., M.B.

ON DIGITALIS. With some Observations on the Urine. Fcap. 8vo., 4*s.* 6*d.*

THOMAS BRYANT, F.R.C.S.

I.

ON THE DISEASES AND INJURIES OF THE JOINTS. CLINICAL AND PATHOLOGICAL OBSERVATIONS. Post 8vo., 7*s.* 6*d.*

II.

CLINICAL SURGERY. Parts I. to VII. 8vo., 3*s.* 6*d.* each.

FLEETWOOD BUCKLE, M.D., L.R.C.P.LOND.

VITAL AND ECONOMICAL STATISTICS OF THE HOSPITALS, INFIRMARIES, &c., OF ENGLAND AND WALES. Royal 8vo., 5*s.*

JOHN CHARLES BUCKNILL, M.D., F.R.C.P., F.R.S., & DANIEL H. TUKE, M.D

A MANUAL OF PSYCHOLOGICAL MEDICINE: containing the History, Nosology, Description, Statistics, Diagnosis, Pathology, and Treatment of Insanity. Second Edition. 8vo., 15*s*.

GEORGE BUDD, M.D., F.R.C.P., F.R.S.

I.

ON DISEASES OF THE LIVER.

Illustrated with Coloured Plates and Engravings on Wood. Third Edition. 8vo., 16*s*.

II.

ON THE ORGANIC DISEASES AND FUNCTIONAL DISORDERS OF THE STOMACH. 8vo., 9*s*.

G. W. CALLENDER, F.R.C.S.

FEMORAL RUPTURE: Anatomy of the Parts concerned. With Plates. 8vo., 4*s*.

JOHN M. CAMPLIN, M.D., F.L.S.

ON DIABETES, AND ITS SUCCESSFUL TREATMENT. Third Edition, by Dr. Glover. Fcap. 8vo., 3*s*. 6*d*.

W. B. CARPENTER, M.D., F.R.S.

I.

PRINCIPLES OF HUMAN PHYSIOLOGY. With nearly 300 Illustrations on Steel and Wood. Seventh Edition. Edited by Mr. HENRY POWER. 8vo., 28*s*.

II.

A MANUAL OF PHYSIOLOGY. With 252 Illustrations on Steel and Wood. Fourth Edition. Fcap. 8vo., 12*s*. 6*d*.

III.

THE MICROSCOPE AND ITS REVELATIONS. With more than 400 Engravings on Steel and Wood. Fourth Edition. Fcap. 8vo., 12*s*. 6*d*.

T. K. CHAMBERS, M.D., F.R.C.P.

I.

LECTURES, CHIEFLY CLINICAL. Fourth Edition. 8vo., 14*s*.

II.

THE INDIGESTIONS OR DISEASES OF THE DIGESTIVE ORGANS FUNCTIONALLY TREATED. Second Edition. 8vo., 10*s*. 6*d*.

III.

SOME OF THE EFFECTS OF THE CLIMATE OF ITALY. Crown 8vo., 4*s*. 6*d*.

H. T. CHAPMAN, F.R.C.S.

I.

THE TREATMENT OF OBSTINATE ULCERS AND CUTANEOUS ERUPTIONS OF THE LEG WITHOUT CONFINEMENT. Third Edition. Post 8vo., 3*s*. 6*d*.

II.

VARICOSE VEINS: their Nature, Consequences, and Treatment, Palliative and Curative. Second Edition. Post 8vo., 3*s*. 6*d*.

JOHN CHAPMAN, M.D., M.R.C.P.

THE MEDICAL INSTITUTIONS OF THE UNITED KINGDOM; a History exemplifying the Evils of Over-Legislation. 8vo., 3*s*. 6*d*.

PYE HENRY CHAVASSE, F.R.C.S.

I.

ADVICE TO A MOTHER ON THE MANAGEMENT OF HER CHILDREN. Tenth Edition. Foolscap 8vo., 2*s.* 6*d.*

II.

COUNSEL TO A MOTHER: being a Continuation and the Completion of "Advice to a Mother." Second Edition. Fcap. 8vo., 2*s.* 6*d.*

III.

ADVICE TO A WIFE ON THE MANAGEMENT OF HER OWN HEALTH. With an Introductory Chapter, especially addressed to a Young Wife. Ninth Edition. Fcap. 8vo., 2*s.* 6*d.*

F. LE GROS CLARK, F.R.C.S.

I.

LECTURES ON THE PRINCIPLES OF SURGICAL DIAGNOSIS: ESPECIALLY IN RELATION TO SHOCK AND VISCERAL LESIONS Delivered at the Royal College of Surgeons. 8vo., 10*s.* 6*d.*

II.

OUTLINES OF SURGERY; being an Epitome of the Lectures on the Principles and the Practice of Surgery delivered at St. Thomas's Hospital. Fcap. 8vo., 5*s.*

JOHN CLAY, M.R.C.S.

KIWISCH ON DISEASES OF THE OVARIES: Translated, by permission, from the last German Edition of his Clinical Lectures on the Special Pathology and Treatment of the Diseases of Women. With Notes, and an Appendix on the Operation of Ovariotomy. Royal 12mo., 16*s.*

T. SPENCER COBBOLD, M.D., F.R.S.

WORMS: a Series of Lectures delivered at the Middlesex Hospital on Practical Helminthology. Post 8vo., 5*s.*

OAKLEY COLES.

DEFORMITIES OF THE MOUTH; CONGENITAL and ACQUIRED; their Mechanical Treatment. With Coloured Plates. Second Edition, 8vo., 5*s.* 6*d.*

MAURICE H. COLLIS, M.D.DUB., F.R.C.S.I.

THE DIAGNOSIS AND TREATMENT OF CANCER AND THE TUMOURS ANALOGOUS TO IT. With coloured Plates. 8vo., 14*s.*

A. J. COOLEY.

THE CYCLOPÆDIA OF PRACTICAL RECEIPTS, PROCESSES, AND COLLATERAL INFORMATION IN THE ARTS, MANUFACTURES, PROFESSIONS, AND TRADES, INCLUDING MEDICINE, PHARMACY, AND DOMESTIC ECONOMY; designed as a General Book of Reference for the Manufacturer, Tradesman, Amateur, and Heads of Families. Fourth and greatly enlarged Edition, 8vo., 28*s.*

W. WHITE COOPER, F.R.C.S.

I.

ON WOUNDS AND INJURIES OF THE EYE. Illustrated by 17 Coloured Figures and 41 Woodcuts. 8vo., 12*s.*

II.

ON NEAR SIGHT, AGED SIGHT, IMPAIRED VISION, AND THE MEANS OF ASSISTING SIGHT. With 31 Illustrations on Wood. Second Edition. Fcap. 8vo., 7*s.* 6*d.*

S. COOPER.

A DICTIONARY OF PRACTICAL SURGERY AND ENCYCLOPÆDIA OF SURGICAL SCIENCE. New Edition, brought down to the present time. By SAMUEL A. LANE, F.R.C.S., assisted by various eminent Surgeons. Vol. I. 8vo., £1. 5*s*.

R. P. COTTON, M.D., F.R.C.P.

PHTHISIS AND THE STETHOSCOPE; OR, THE PHYSICAL SIGNS OF CONSUMPTION. Fourth Edition. Foolscap 8vo., 3*s*. 6*d*.

WALTER J. COULSON, F.R.C.S.

I.

A TREATISE ON SYPHILIS. 8vo., 10*s*.

II.

STONE IN THE BLADDER: Its Prevention, Early Symptoms, and Treatment by Lithotrity. 8vo., 6*s*.

T. B. CURLING, F.R.C.S., F.R.S.

I.

OBSERVATIONS ON DISEASES OF THE RECTUM. Third Edition. 8vo., 7*s*. 6*d*.

II.

A PRACTICAL TREATISE ON DISEASES OF THE TESTIS, SPERMATIC CORD, AND SCROTUM. Third Edition, with Engravings. 8vo., 16*s*.

THOMAS CUTLER, M.D.

NOTES ON SPA; OR OBSERVATIONS ON ITS CHALYBEATE SPRINGS. Ninth Edition. Crown 8vo., 2*s*.

WILLIAM DALE, M.D.LOND.

A COMPENDIUM OF PRACTICAL MEDICINE AND MORBID ANATOMY. With Plates, 12mo., 7*s*.

DONALD DALRYMPLE, M.P., M.R.C.P.

THE CLIMATE OF EGYPT: METEOROLOGICAL AND MEDICAL OBSERVATIONS, with Practical Hints for Invalid Travellers. Post 8vo., 4*s*.

JOHN DALRYMPLE, F.R.C.S., F.R.S.

PATHOLOGY OF THE HUMAN EYE. Complete in Nine Fasciculi: imperial 4to., 20*s*. each; half-bound morocco, gilt tops, 9*l*. 15*s*.

FRED. DAVIES, M.D., F.R.C.S.

THE UNITY OF MEDICINE: its CORRUPTIONS and DIVISIONS by LAW ESTABLISHED; their Causes, Effects and Remedy. With a Coloured Chart. Second Edition. 8vo., 10*s*.

HERBERT DAVIES, M.D., F.R.C.P.

ON THE PHYSICAL DIAGNOSIS OF DISEASES OF THE LUNGS AND HEART. Second Edition. Post 8vo., 8*s*.

JAMES G. DAVEY, M.D., M.R.C.P.

I.

THE GANGLIONIC NERVOUS SYSTEM: its Structure, Functions, and Diseases. 8vo., 9*s*.

II.

ON THE NATURE AND PROXIMATE CAUSE OF INSANITY. Post 8vo., 3*s*.

HENRY DAY, M.D., M.R.C.P.

CLINICAL HISTORIES; with Comments. 8vo., 7*s.* 6*d.*

CAMPBELL DE MORGAN, F.R.S., F.R.C.S.,

THE ORIGIN OF CANCER considered with Reference to the Treatment of the Disease. Crown 8vo., 3*s.* 6*d.*

JAMES DIXON, F.R.C.S.

A GUIDE TO THE PRACTICAL STUDY OF DISEASES OF THE EYE. Third Edition. Post 8vo., 9*s.*

HORACE DOBELL, M.D.

I.

DEMONSTRATIONS OF DISEASES IN THE CHEST, AND THEIR PHYSICAL DIAGNOSIS. With Coloured Plates. 8vo., 12*s.* 6*d.*

II.

LECTURES ON THE GERMS AND VESTIGES OF DISEASE, and on the Prevention of the Invasion and Fatality of Disease by Periodical Examinations. 8vo., 6*s.* 6*d.*

III.

ON TUBERCULOSIS: ITS NATURE, CAUSE, AND TREATMENT; with Notes on Pancreatic Juice. Second Edition. Crown 8vo., 3*s.* 6*d.*

IV.

LECTURES ON WINTER COUGH (CATARRH, BRONCHITIS, EMPHYSEMA, ASTHMA); with an Appendix on some Principles of Diet in Disease. Second Edition, with Coloured Plates. 8vo., 8*s.* 6*d.*

V.

LECTURES ON THE TRUE FIRST STAGE OF CONSUMPTION. Crown 8vo., 3*s.* 6*d.*

C. TOOGOOD DOWNING, M.D.

NEURALGIA its various Forms, Pathology, and Treatment. THE JACKSONIAN PRIZE ESSAY FOR 1850. 8vo., 10*s.* 6*d.*

ROBERT DRUITT, F.R.C.S.

THE SURGEON'S VADE-MECUM; with numerous Engravings on Wood. Tenth Edition. Foolscap 8vo., 12*s.* 6*d.*

CHARLES ELAM, M.D., F.R.C.P.

I.

ON CEREBRIA AND OTHER DISEASES OF THE BRAIN. 8vo., 6*s.*

II.

MEDICINE, DISEASE, AND DEATH: being an Enquiry into the Progress of Medicine as a Practical Art. 8vo., 3*s.* 6*d.*

EDWARD ELLIS, M.D.

A PRACTICAL MANUAL OF THE DISEASES OF CHILDREN. With a Formulary. Crown 8vo., 6*s.*

SIR JAMES EYRE, M.D.

THE STOMACH AND ITS DIFFICULTIES. Sixth Edition, by Mr. BEALE. Fcap. 8vo., 2*s.* 6*d.*

J. FAYRER, M.D., F.R.C.S., C.S.I.

CLINICAL SURGERY IN INDIA. With Engravings. 8vo., 16*s.*

SAMUEL FENWICK, M.D., F.R.C.P.

I.

THE MORBID STATES OF THE STOMACH AND DUODENUM, AND THEIR RELATIONS TO THE DISEASES OF OTHER ORGANS. With 10 Plates. 8vo., 12*s.*

II.

THE STUDENT'S GUIDE TO MEDICAL DIAGNOSIS. Second Edition. With 60 Engravings. Fcap. 8vo., 6*s.* 6*d.*

SIR WILLIAM FERGUSSON, BART., F.R.C.S., F.R.S.

I.

A SYSTEM OF PRACTICAL SURGERY; with 463 Illustrations on Wood. Fifth Edition. 8vo., 21*s.*

II.

LECTURES ON THE PROGRESS OF ANATOMY AND SURGERY DURING THE PRESENT CENTURY. With numerous Engravings. 8vo., 10*s.* 6*d.*

W. H. FLOWER, F.R.C.S., F.R.S.

DIAGRAMS OF THE NERVES OF THE HUMAN BODY, exhibiting their Origin, Divisions, and Connexions, with their Distribution to the various Regions of the Cutaneous Surface, and to all the Muscles. Folio, containing Six Plates, 14*s.*

BALTHAZAR W. FOSTER, M.D.

METHOD AND MEDICINE: an Essay on the Past, Present, and Future of Medicine. 8vo., 2*s.* 6*d.*

G. FOWNES, PH.D., F.R.S.

I.

A MANUAL OF CHEMISTRY; with 187 Illustrations on Wood. Tenth Edition. Fcap. 8vo., 14*s.*
Edited by H. Bence Jones, M.D., F.R.S., and Henry Watts, B.A., F.R.S.

II.

CHEMISTRY, AS EXEMPLIFYING THE WISDOM AND BENEFICENCE OF GOD. Second Edition. Fcap. 8vo., 4*s.* 6*d.*

III.

INTRODUCTION TO QUALITATIVE ANALYSIS. Post 8vo., 2*s.*

D. J. T. FRANCIS, M.D., F.R.C.P.

CHANGE OF CLIMATE; considered as a Remedy in Dyspeptic, Pulmonary, and other Chronic Affections; with an Account of the most Eligible Places of Residence for Invalids, at different Seasons of the Year. Post 8vo., 8*s.* 6*d.*

W. H. FULLER, M.D., F.R.C.P.

I.

ON DISEASES OF THE LUNGS AND AIR PASSAGES. Second Edition. 8vo., 12*s.* 6*d.*

II.

ON DISEASES OF THE HEART AND GREAT VESSELS. 8vo., 7*s.* 6*d.*

III.

ON RHEUMATISM, RHEUMATIC GOUT, AND SCIATICA: their Pathology, Symptoms, and Treatment. Third Edition. 8vo., 12*s.* 6*d.*

REMIGIUS FRESENIUS.

## A SYSTEM OF INSTRUCTION IN CHEMICAL ANALYSIS,

Edited by ARTHUR VACHER.

QUALITATIVE. Seventh Edition. 8vo., 9*s.*

QUANTITATIVE. Fifth Edition. 8vo., 12*s.* 6*d.*

ROBERT GALLOWAY.

I.

## THE FIRST STEP IN CHEMISTRY. With numerous Engravings.

Fourth Edition. Fcap. 8vo., 6*s.* 6*d.*

## A KEY TO THE EXERCISES. 2*s.* 6*d.*

II.

## THE SECOND STEP IN CHEMISTRY; or, the Student's Guide to the Higher Branches of the Science. With Engravings. 8vo., 10*s.*

III.

## A MANUAL OF QUALITATIVE ANALYSIS. Fifth Edition.

With Engravings. Post 8vo., 8*s.* 6*d.*

IV.

## CHEMICAL TABLES. On Five Large Sheets, for School and Lecture Rooms. Second Edition. 4*s.* 6*d.*

J. SAMPSON GAMGEE, M.R.C.S.

## ON THE TREATMENT OF FRACTURES OF THE LIMBS.

With Plates. 8vo., 10*s.* 6*d.*

F. J. GANT, F.R.C.S.

I.

## THE PRINCIPLES OF SURGERY: Clinical, Medical, and Operative. With Engravings. 8vo., 18*s.*

II.

## THE SCIENCE AND PRACTICE OF SURGERY: a complete System and Textbook. With 470 Engravings. 8vo, £1. 4*s.*

III.

## THE IRRITABLE BLADDER: its Causes and Treatment. Third Edition, with Engravings. Crown 8vo., 6*s.*

C. B. GARRETT, M.D.

## IRRITATIVE DYSPEPSIA AND ITS IMPORTANT CONNECTION with IRRITATIVE CONGESTION of the WINDPIPE, and with the Origin and Progress of Consumption. Crown 8vo., 2*s.* 6*d.*

GEORGE GASKOIN, SURGEON.

## THE MEDICAL WORKS OF FRANCISCO LOPEZ DE VILLALOBOS, the celebrated Court Physician of Spain; containing the Poem on the Pestiferous Bubas; Dialogues on Medicine (15th and 16th centuries); &c. With Biography and Commentary. Post 8vo., 10*s.* 6*d.*

JOHN GAY, F.R.C.S.

## ON VARICOSE DISEASE OF THE LOWER EXTREMITIES.

LETTSOMIAN LECTURES. With Plates. 8vo., 5*s.*

SIR DUNCAN GIBB, BART., M.D.

## THE LARYNGOSCOPE IN DISEASES OF THE THROAT,

with a Chapter on RHINOSCOPY. Third Edition, with Engravings. Crown 8vo., 5*s.*

ROBERT G. GLENN, LL.B., BARRISTER-AT-LAW.

A MANUAL OF THE LAWS AFFECTING MEDICAL MEN. With a Chapter on Medical Etiquette by Dr. A. Carpenter. 8vo, 14*s.*

BENJAMIN GODFREY, M.D., F.R.A.S.

DISEASES OF HAIR: a popular Treatise upon the Affections of the Hair System. Fcap. 8vo., 3*s.* 6*d.*

C. A. GORDON M.D., C.B.

I.

ARMY HYGIENE. 8vo., 20*s.*

II.

CHINA, FROM A MEDICAL POINT OF VIEW; IN 1860 AND 1861; With a Chapter on Nagasaki as a Sanatarium. 8vo., 10*s.* 6*d.*

MICHAEL C. GRABHAM, M.D., M.R.C.P.

THE CLIMATE AND RESOURCES OF MADEIRA, as regarding chiefly the Necessities of Consumption and the Welfare of Invalids. With Map and Engravings. Crown 8vo., 5*s.*

R. J. GRAVES, M.D., F.R.S.

STUDIES IN PHYSIOLOGY AND MEDICINE. Edited by Dr. Stokes. With Portrait and Memoir. 8vo., 14*s.*

T. GRIFFITHS.

CHEMISTRY OF THE FOUR SEASONS—Spring, Summer, Autumn, Winter. Illustrated with Engravings on Wood. Second Edition. Foolscap 8vo., 7*s.* 6*d.*

W. A. GUY, M.B., F.R.S., AND JOHN HARLEY, M.D., F.R.C.P.

HOOPER'S PHYSICIAN'S VADE-MECUM: OR, MANUAL OF THE PRINCIPLES AND PRACTICE OF PHYSIC. Seventh Edition. With Engravings. Foolscap 8vo., 12*s.* 6*d.*

GUY'S HOSPITAL REPORTS. Third Series. Vol. XVII., 8vo. 7*s.* 6*d.*

S. O. HABERSHON, M.D., F.R.C.P.

I.

ON DISEASES OF THE ABDOMEN, comprising those of the Stomach and other Parts of the Alimentary Canal, Œsophagus, Stomach, Cæcum, Intestines, and Peritoneum. Second Edition, with Plates. 8vo., 14*s.*

II.

ON THE INJURIOUS EFFECTS OF MERCURY IN THE TREATMENT OF DISEASE. Post 8vo., 3*s.* 6*d.*

III.

ON DISEASES OF THE LIVER Lettsomian Lectures for 1872. Post 8vo., 3*s.* 6*d.*

C. RADCLYFFE HALL, F.R.C.P.

TORQUAY IN ITS MEDICAL ASPECT AS A RESORT FOR PULMONARY INVALIDS. Post 8vo., 5*s.*

REV. T F. HARDWICH.

A MANUAL OF PHOTOGRAPHIC CHEMISTRY. With Engravings. Seventh Edition. Foolscap 8vo., 7*s.* 6*d.*

GEORGE HARLEY, M.D., F.R.S., F.R.C.P.

LECTURES ON THE URINE AND ITS DERANGEMENTS with the Application of Physiological Chemistry to the Diagnosis and Treatment of Constitutional as well as Local Diseases. Post 8vo., 9*s.*

J. BOWER HARRISON, M.D., M.R.C.P.

I.

LETTERS TO A YOUNG PRACTITIONER ON THE DISEASES OF CHILDREN. Foolscap 8vo., 3*s.*

II.

ON THE CONTAMINATION OF WATER BY THE POISON OF LEAD, and its Effects on the Human Body. Foolscap 8vo., 3*s.* 6*d.*

GEORGE HARTWIG, M.D.

I.

ON SEA BATHING AND SEA AIR. Second Edition. Fcap. 8vo., 2*s.* 6*d.*

II.

ON THE PHYSICAL EDUCATION OF CHILDREN. Fcap. 8vo., 2*s.* 6*d.*

ALFRED HAVILAND, M.R.C.S.

CLIMATE, WEATHER, AND DISEASE; being a Sketch of the Opinions of the most celebrated Ancient and Modern Writers with regard to the Influence of Climate and Weather in producing Disease. With Four coloured Engravings. 8vo., 7*s*

W. HAYCOCK, M.R.C.V.S.

HORSES; HOW THEY OUGHT TO BE SHOD: being a plain and practical Treatise on the Principles and Practice of the Farrier's Art. With 14 Plates. 7*s.* 6*d.*

F. W. HEADLAND, M.D., F.R.C.P.

I.

ON THE ACTION OF MEDICINES IN THE SYSTEM. Fourth Edition. 8vo., 14*s.*

II.

A MEDICAL HANDBOOK; comprehending such Information on Medical and Sanitary Subjects as is desirable in Educated Persons. Second Thousand. Foolscap 8vo., 5*s.*

J. N. HEALE, M.D., M.R.C.P.

I.

A TREATISE ON THE PHYSIOLOGICAL ANATOMY OF THE LUNGS. With Engravings. 8vo., 8*s.*

II.

A TREATISE ON VITAL CAUSES. 8vo., 9*s.*

CHRISTOPHER HEATH, F.R.C.S.

I.

PRACTICAL ANATOMY: a Manual of Dissections. With numerous Engravings. Second Edition. Fcap. 8vo., 12*s.* 6*d.*

II.

A MANUAL OF MINOR SURGERY AND BANDAGING, FOR THE USE OF HOUSE-SURGEONS, DRESSERS, AND JUNIOR PRACTITIONERS. With 74 Engravings. Fourth Edition. Fcap. 8vo., 5*s.* 6*d.*

III.

INJURIES AND DISEASES OF THE JAWS. JACKSONIAN PRIZE ESSAY. Second Edition. With Engravings. 8vo., 12*s.*

---

JOHN HIGGINBOTTOM, F.R.S., F.R.C.S.E.

A PRACTICAL ESSAY ON THE USE OF THE NITRATE OF SILVER IN THE TREATMENT OF INFLAMMATION, WOUNDS, AND ULCERS. Third Edition, 8vo., 6*s.*

---

JOHN D. HILL, F.R.C.S.

AN ANALYSIS OF 140 CASES OF ORGANIC STRICTURE OF THE URETHRA, of which 120 were submitted to HOLT'S OPERATION, and 20 to PERINEAL SECTION. 8vo., 3*s.*

---

WILLIAM HINDS, M.D.

THE HARMONIES OF PHYSICAL SCIENCE IN RELATION TO THE HIGHER SENTIMENTS; with Observations on Medical Studies, and on the Moral and Scientific Relations of Medical Life. Post 8vo., 4*s.*

---

RICHARD HODGES, M.D.

THE NATURE, PATHOLOGY, AND TREATMENT OF PUERPERAL CONVULSIONS. Crown 8vo., 3*s.*

---

DECIMUS HODGSON, M.D.

THE PROSTATE GLAND, AND ITS ENLARGEMENT IN OLD AGE. With 12 Plates. Royal 8vo., 6*s.*

---

LUTHER HOLDEN, F.R.C.S.

I.

HUMAN OSTEOLOGY: with Plates, showing the Attachments of the Muscles. Fourth Edition. 8vo., 16*s.*

II.

A MANUAL OF THE DISSECTION OF THE HUMAN BODY. With Engravings on Wood. Third Edition. 8vo., 16*s.*

---

BARNARD HOLT, F.R.C.S.

ON THE IMMEDIATE TREATMENT OF STRICTURE OF THE URETHRA. Third Edition, Enlarged. 8vo., 6*s.*

C. HOLTHOUSE, F.R.C.S.

ON HERNIAL AND OTHER TUMOURS OF THE GROIN and its NEIGHBOURHOOD; with some Practical Remarks on the Radical Cure of Ruptures. 8vo., 6*s.* 6*d.*

P. HOOD, M.D.

I.

A TREATISE ON GOUT, RHEUMATISM, AND THE ALLIED AFFECTIONS. Crown 8vo., 10*s.* 6*d.*

II.

THE SUCCESSFUL TREATMENT OF SCARLET FEVER; also, OBSERVATIONS ON THE PATHOLOGY AND TREATMENT OF CROWING INSPIRATIONS OF INFANTS. Post 8vo., 5*s.*

JOHN HORSLEY.

A CATECHISM OF CHEMICAL PHILOSOPHY; being a Familiar Exposition of the Principles of Chemistry and Physics. With Engravings on Wood. Designed for the Use of Schools and Private Teachers. Post 8vo., 6*s.* 6*d.*

JAMES A. HORTON, M.D.

PHYSICAL AND MEDICAL CLIMATE AND METEOROLOGY OF THE WEST COAST OF AFRICA. 8vo., 10*s.*

LUKE HOWARD, F.R.S.

ESSAY ON THE MODIFICATIONS OF CLOUDS. Third Edition, by W. D. and E. HOWARD. With 6 Lithographic Plates, from Pictures by Kenyon. 4to., 10*s.* 6*d.*

A. HAMILTON HOWE, M.D.

A THEORETICAL INQUIRY INTO THE PHYSICAL CAUSE OF EPIDEMIC DISEASES. Accompanied with Tables. 8vo. 7*s.*

C. W. HUFELAND.

THE ART OF PROLONGING LIFE. Second Edition. Edited by ERASMUS WILSON, F.R.S. Foolscap 8vo., 2*s.* 6*d.*

W. CURTIS HUGMAN, F.R.C.S.

ON HIP-JOINT DISEASE; with reference especially to Treatment by Mechanical Means for the Relief of Contraction and Deformity of the Affected Limb. With Plates. Re-issue, enlarged. 8vo., 3*s.* 6*d.*

G. Y. HUNTER, M.R.C.S.

BODY AND MIND: the Nervous System and its Derangements. Fcap. 8vo., 3*s.* 6*d.*

JONATHAN HUTCHINSON, F.R.C.S.

A CLINICAL MEMOIR ON CERTAIN DISEASES OF THE EYE AND EAR, CONSEQUENT ON INHERITED SYPHILIS; with an appended Chapter of Commentaries on the Transmission of Syphilis from Parent to Offspring, and its more remote Consequences. With Plates and Woodcuts, 8vo., 9*s*.

T. H. HUXLEY, LL.D., F.R.S.

I.

MANUAL OF THE ANATOMY OF VERTEBRATED ANIMALS. With 110 Engravings. Fcap. 8vo., 12*s*.

II.

INTRODUCTION TO THE CLASSIFICATION OF ANIMALS. With Engravings. 8vo., 6*s*.

THOMAS INMAN, M.D., M.R.C.P.

FOUNDATION FOR A NEW THEORY AND PRACTICE OF MEDICINE. Second Edition. Crown 8vo., 10*s*.

JAMES JAGO, M.D.OXON., A.B.CANTAB.

ENTOPTICS, WITH ITS USES IN PHYSIOLOGY AND MEDICINE. With 54 Engravings. Crown 8vo., 5*s*.

M. PROSSER JAMES, M.D., M.R.C.P.

SORE-THROAT: ITS NATURE, VARIETIES, AND TREATMENT; including the Use of the LARYNGOSCOPE as an Aid to Diagnosis. Second Edition, with numerous Engravings. Post 8vo., 5*s*.

C. HANDFIELD JONES, M.B., F.R.C.P., F.R.S.

STUDIES ON FUNCTIONAL NERVOUS DISORDERS. Second Edition, much enlarged. 8vo., 18*s*.

H. BENCE JONES, M.D., F.R.C.P., D.C.L., F.R.S.

I.

LECTURES ON SOME OF THE APPLICATIONS OF CHEMISTRY AND MECHANICS TO PATHOLOGY AND THERAPEUTICS. 8vo., 12*s*.

II.

CROONIAN LECTURES ON MATTER AND FORCE. Fcap. 8vo., 5*s*.

C. HANDFIELD JONES, M.B., F.R.S., & E. H. SIEVEKING, M.D., F.R.C.P.

A MANUAL OF PATHOLOGICAL ANATOMY. Illustrated with numerous Engravings on Wood. Foolscap 8vo., 12*s*. 6*d*.

JAMES JONES, M.D., M.R.C.P.

ON THE USE OF PERCHLORIDE OF IRON AND OTHER CHALYBEATE SALTS IN THE TREATMENT OF CONSUMPTION. Crown 8vo., 3*s.* 6*d.*

T. WHARTON JONES, F.R.C.S., F.R.S.

I.

A MANUAL OF THE PRINCIPLES AND PRACTICE OF OPHTHALMIC MEDICINE AND SURGERY; with Nine Coloured Plates and 173 Wood Engravings. Third Edition, thoroughly revised. Foolscap 8vo., 12*s.* 6*d.*

II.

THE WISDOM AND BENEFICENCE OF THE ALMIGHTY, AS DISPLAYED IN THE SENSE OF VISION. Actonian Prize Essay. With Illustrations on Steel and Wood. Foolscap 8vo., 4*s.* 6*d.*

III.

DEFECTS OF SIGHT AND HEARING: their Nature, Causes, Prevention, and General Management. Second Edition, with Engravings. Fcap. 8vo., 2*s.* 6*d.*

IV.

A CATECHISM OF THE MEDICINE AND SURGERY OF THE EYE AND EAR. For the Clinical Use of Hospital Students. Fcap. 8vo., 2*s.* 6*d.*

V.

A CATECHISM OF THE PHYSIOLOGY AND PHILOSOPHY OF BODY, SENSE, AND MIND. For Use in Schools and Colleges. Fcap. 8vo., 2*s.* 6*d.*

FURNEAUX JORDAN, F.R.C.S.

THE TREATMENT OF SURGICAL INFLAMMATIONS BY A NEW METHOD, WHICH GREATLY SHORTENS THEIR DURATION. With Plates. 8vo., 7*s.* 6*d.*

U. J. KAY-SHUTTLEWORTH, M.P.

FIRST PRINCIPLES OF MODERN CHEMISTRY: a Manual of Inorganic Chemistry. Second Edition. Crown 8vo., 4*s.* 6*d.*

GEORGE KENNION, M.D., F.R.C.P.

OBSERVATIONS ON THE MINERAL SPRINGS OF HARROGATE. Revised and Enlarged by ADAM BEALEY, M.A., M.D., F.R.C.P. Ninth Edition. Crown 8vo, 1*s.*

DR. LAENNEC.

A MANUAL OF AUSCULTATION AND PERCUSSION. Translated and Edited by J. B. SHARPE, M.R.C.S. Fcap. 8vo., 3*s.*

SIR WM. LAWRENCE, BART., F.R.S.

I.

LECTURES ON SURGERY. 8vo., 16*s.*

II.

A TREATISE ON RUPTURES. The Fifth Edition, considerably enlarged. 8vo., 16*s.*

ARTHUR LEARED, M.D., F.R.C.P.

IMPERFECT DIGESTION: ITS CAUSES AND TREATMENT. Fifth Edition. Foolscap 8vo., 4*s.* 6*d.*

HENRY LEE, F.R.C.S.

PRACTICAL PATHOLOGY. Third Edition, in 2 Vols. Containing Lectures on Suppurative Fever, Diseases of the Veins, Hæmorrhoidal Tumours, Diseases of the Rectum, Syphilis, Gonorrhœal Ophthalmia, &c. 8vo., 10*s.* each vol.

ROBERT LEE, M.D, F.R.C.P., F.R.S.

I.

CONSULTATIONS IN MIDWIFERY. Foolscap 8vo., 4*s.* 6*d.*

II.

A TREATISE ON THE SPECULUM; with Three Hundred Cases. 8vo., 4*s.* 6*d.*

III.

CLINICAL REPORTS OF OVARIAN AND UTERINE DISEASES, with Commentaries. Foolscap 8vo., 6*s.* 6*d.*

WM. LEISHMAN, M.D., F.F.P.S.

THE MECHANISM OF PARTURITION: An Essay, Historical and Critical. With Engravings. 8vo., 5*s.*

F. HARWOOD LESCHER.

THE ELEMENTS OF PHARMACY. 8vo., 7*s.* 6*d.*

DR. LIEBREICH.

ATLAS OF OPHTHALMOSCOPY: representing the Normal and Pathological Conditions of the Fundus Oculi as seen with the Ophthalmoscope. Composed of 12 Chromo-lithographic Plates (containing 59 Figures), accompanied by an Explanatory Text, translated into English by H. Rosborough Swanzy, M.B. Dub. Second Edition, Enlarged and Revised. 4to., £1. 10*s.*

ROBERT LISTON, F.R.S.

PRACTICAL SURGERY. Fourth Edition. 8vo., 22*s.*

D. D. LOGAN, M.D., M.R.C.P.LOND.

ON OBSTINATE DISEASES OF THE SKIN. Fcap. 8vo., 2*s.* 6*d.*

LONDON HOSPITAL.

CLINICAL LECTURES AND REPORTS BY THE MEDICAL AND SURGICAL STAFF. With Illustrations. Vols. I. to IV. 8vo., 7*s.* 6*d.*

LONDON MEDICAL SOCIETY OF OBSERVATION.

WHAT TO OBSERVE AT THE BED-SIDE, AND AFTER DEATH. Published by Authority. Second Edition. Foolscap 8vo., 4*s.* 6*d.*

HENRY LOWNDES, M.R.C.S.

AN ESSAY ON THE MAINTENANCE OF HEALTH. Fcap. 8vo., 2*s.* 6*d.*

WILLIAM MACCORMAC, F.R.C.S., M.R.I.A.

NOTES AND RECOLLECTIONS OF AN AMBULANCE SURGEON; being an Account of Work done under the Red Cross during the Campaign of 1870. With 8 Plates. 8vo., 7*s.* 6*d.*

MORELL MACKENZIE, M.D. LOND., M.R.C.P.

I.

GROWTHS IN THE LARYNX, with Reports and an Analysis of 100 consecutive Cases treated by the Author since the Invention of the Laryngoscope. With Coloured Plates. 8vo., 12*s.* 6*d.*

II.

HOARSENESS, LOSS OF VOICE, AND STRIDULOUS BREATHING in relation to NERVO-MUSCULAR AFFECTIONS of the LARYNX. Second Edition. Fully Illustrated. 8vo., 3*s.* 6*d.*

III.

THROAT HOSPITAL PHARMACOPŒIA, containing upwards of 150 Formulæ. Fcap. 8vo., 2*s.* 6*d.*

A. C. MACLEOD, M.R.C.P.LOND.

ACHOLIC DISEASES; comprising Jaundice, Diarrhœa, Dysentery, and Cholera. Post 8vo., 5*s.* 6*d.*

GEORGE H. B. MACLEOD, M.D., F.R.C.S.EDIN.

NOTES ON THE SURGERY OF THE CRIMEAN WAR; with REMARKS on GUN-SHOT WOUNDS. 8vo., 10*s.* 6*d.*

WM. MACLEOD, M.D., F.R.C.P.EDIN.

THE THEORY OF THE TREATMENT OF DISEASE ADOPTED AT BEN RHYDDING. Fcap. 8vo., 2*s.* 6*d.*

JOSEPH MACLISE, F.R.C.S.

I.

SURGICAL ANATOMY. A Series of Dissections, illustrating the Principal Regions of the Human Body. Second Edition, folio, cloth, £3. 12*s.*; half-morocco, £4. 4*s.*

II.

ON DISLOCATIONS AND FRACTURES. This Work is Uniform with "Surgical Anatomy;" folio, cloth, £2. 10*s.*; half-morocco, £2. 17*s.*

N. C. MACNAMARA.

I.

A MANUAL OF THE DISEASES OF THE EYE. With Coloured Plates. Fcap. 8vo., 12*s.* 6*d.*

II.

A TREATISE ON ASIATIC CHOLERA; with Maps. 8vo., 16*s.*

WM. MARCET, M.D., F.R.C.P., F.R.S.

ON CHRONIC ALCOHOLIC INTOXICATION; with an INQUIRY INTO THE INFLUENCE OF THE ABUSE OF ALCOHOL AS A PREDISPOSING CAUSE OF DISEASE. Second Edition, much enlarged. Foolscap 8vo., 4*s.* 6*d.*

J. MACPHERSON, M.D.

CHOLERA IN ITS HOME; with a Sketch of the Pathology and Treatment of the Disease. Crown 8vo., 5*s*.

W. O. MARKHAM, M.D., F.R.C.P.

I.

DISEASES OF THE HEART: THEIR PATHOLOGY, DIAGNOSIS, AND TREATMENT. Second Edition. Post 8vo., 6*s*.

II.

SKODA ON AUSCULTATION AND PERCUSSION. Post 8vo., 6*s*.

ALEXANDER MARSDEN, M.D., F.R.C.S.

A NEW AND SUCCESSFUL MODE OF TREATING CERTAIN FORMS OF CANCER; to which is prefixed a Practical and Systematic Description of all the Varieties of this Disease. With Coloured Plates. 8vo., 6*s*. 6*d*.

SIR RANALD MARTIN, C.B., F.R.C.S., F.R.S.

INFLUENCE OF TROPICAL CLIMATES IN PRODUCING THE ACUTE ENDEMIC DISEASES OF EUROPEANS; including Practical Observations on their Chronic Sequelæ under the Influences of the Climate of Europe. Second Edition, much enlarged. 8vo., 20*s*.

P. MARTYN, M.D.LOND.

HOOPING-COUGH; ITS PATHOLOGY AND TREATMENT. With Engravings. 8vo., 2*s*. 6*d*.

C. F. MAUNDER, F.R.C.S.

OPERATIVE SURGERY. With 158 Engravings. Post 8vo., 6*s*.

R. G. MAYNE, M.D., LL.D.

I.

AN EXPOSITORY LEXICON OF THE TERMS, ANCIENT AND MODERN, IN MEDICAL AND GENERAL SCIENCE. 8vo., £2. 10*s*.

II.

A MEDICAL VOCABULARY; or, an Explanation of all Names, Synonymes, Terms, and Phrases used in Medicine and the relative branches of Medical Science. Third Edition. Fcap. 8vo., 8*s*. 6*d*.

EDWARD MERYON, M.D., F.R.C.P.

PATHOLOGICAL AND PRACTICAL RESEARCHES ON THE VARIOUS FORMS OF PARALYSIS. 8vo., 6*s*.

W. J. MOORE, M.D.

I.

HEALTH IN THE TROPICS; or, Sanitary Art applied to Europeans in India. 8vo., 9*s*.

II.

A MANUAL OF THE DISEASES OF INDIA. Fcap. 8vo., 5*s*.

JAMES MORRIS, M.D.LOND.

I.

GERMINAL MATTER AND THE CONTACT THEORY: An Essay on the Morbid Poisons. Second Edition. Crown 8vo., 4*s.* 6*d.*

II.

IRRITABILITY: Popular and Practical Sketches of Common Morbid States and Conditions bordering on Disease; with Hints for Management, Alleviation, and Cure. Crown 8vo., 4*s.* 6*d.*

G. J. MULDER.

THE CHEMISTRY OF WINE. Edited by H. BENCE JONES, M.D., F.R.S. Fcap. 8vo., 6*s.*

W. MURRAY, M.D., M.R.C.P.

EMOTIONAL DISORDERS OF THE SYMPATHETIC SYSTEM OF NERVES. Crown 8vo., 3*s.* 6*d.*

W. B. MUSHET, M.B., M.R.C.P.

ON APOPLEXY, AND ALLIED AFFECTIONS OF THE BRAIN. 8vo., 7*s.*

ARTHUR B. R. MYERS, M.R.C.S.

ON THE ETIOLOGY AND PREVALENCE OF DISEASES of the HEART among SOLDIERS. With Diagrams. The "Alexander" Prize Essay. 8vo., 4*s.*

GEORGE NAYLER, F.R.C.S.

ON THE DISEASES OF THE SKIN. With Plates. 8vo., 10*s.* 6*d.*

J. BIRKBECK NEVINS, M.D.

THE PRESCRIBER'S ANALYSIS OF THE BRITISH PHARMACOPEIA of 1867. 32mo., 3*s.* 6*d.*

PATRICK NICOL, M.B.

A TRANSLATION OF DR. DILLNBERGER'S HANDY-BOOK of the TREATMENT of WOMEN'S and CHILDREN'S DISEASES according to the VIENNA MEDICAL SCHOOL. With Prescriptions. Fcap. 8vo., 5*s.*

H. M. NOAD, PH.D., F.R.S.

THE INDUCTION COIL, being a Popular Explanation of the Electrical Principles on which it is constructed. Third Edition. With Engravings. Fcap. 8vo., 3*s.*

SELBY NORTON, M.D.

INFANTILE DISEASES: their Causes, Prevention, and Treatment, showing by what Means the present Mortality may be greatly reduced. Fcap. 8vo., 2*s.* 6*d.*

FRANCIS OPPERT, M.D., M.R.C.P.

I.

HOSPITALS, INFIRMARIES, AND DISPENSARIES; their Construction, Interior Arrangement, and Management, with Descriptions of existing Institutions. With 58 Engravings. Royal 8vo., 10*s.* 6*d.*

II.

VISCERAL AND HEREDITARY SYPHILIS. 8vo., 5*s.*

WM. MILLER ORD, M.B. LOND.

NOTES ON COMPARATIVE ANATOMY: A Syllabus of a Cours of Lectures delivered at St. Thomas's Hospital. Crown 8vo 5*s*.

LANGSTON PARKER, F.R.C.S.

THE MODERN TREATMENT OF SYPHILITIC DISEASES, both Primary and Secondary; comprising the Treatment of Constitutional and Confirmed Syphilis, by a safe and successful Method. Fifth Edition, 8vo., 10*s*. 6*d*.

E. A. PARKES, M.D., F.R.C.P., F.R.S.

I.

A MANUAL OF PRACTICAL HYGIENE; intended especially for the Medical Officers of the Army. With Plates and Woodcuts. 3rd Edition, 8vo., 16*s*.

II.

THE URINE: ITS COMPOSITION IN HEALTH AND DISEASE, AND UNDER THE ACTION OF REMEDIES. 8vo., 12*s*.

JOHN PARKIN, M.D., F.R.C.S.

THE ANTIDOTAL TREATMENT AND PREVENTION OF THE EPIDEMIC CHOLERA. Third Edition. 8vo., 7*s*. 6*d*.

JAMES PART, F.R.C.S.

THE MEDICAL AND SURGICAL POCKET CASE BOOK, for the Registration of important Cases in Private Practice, and to assist the Student o Hospital Practice. Second Edition. 2*s*. 6*d*.

JOHN PATTERSON, M.D.

EGYPT AND THE NILE AS A WINTER RESORT FOR PULMONARY AND OTHER INVALIDS. Fcap. 8vo., 3*s*.

F. W. PAVY, M.D., F.R.S., F.R.C.P.

I.

DIABETES: RESEARCHES ON ITS NATURE AND TREATMENT. Second Edition. With Engravings. 8vo., 10*s*.

II.

DIGESTION: ITS DISORDERS AND THEIR TREATMENT. Second Edition. 8vo., 8*s*. 6*d*.

T. B. PEACOCK, M.D., F.R.C.P.

I.

ON MALFORMATIONS OF THE HUMAN HEART. With Original Cases and Illustrations. Second Edition. With 8 Plates. 8vo., 10*s*.

II.

ON SOME OF THE CAUSES AND EFFECTS OF VALVULAR DISEASE OF THE HEART. With Engravings. 8vo., 5*s*.

JONATHAN PEREIRA, M.D., F.R.S.

SELECTA E PRÆSCRIPTIS. Fifteenth Edition. 24mo., 5*s*.

JAMES H. PICKFORD, M.D.

HYGIENE; or, Health as Depending upon the Conditions of the Atmosphere, Food and Drinks, Motion and Rest, Sleep and Wakefulness, Secretions, Excretions, and Retentions, Mental Emotions, Clothing, Bathing, &c. Vol. I. 8vo., 9*s*.

WILLIAM PIRRIE, M.D., C.M., F.R.S.E.

THE PRINCIPLES AND PRACTICE OF SURGERY. With numerous Engravings on Wood. Second Edition. 8vo., 24*s*.

WILLIAM PIRRIE, M.D.

ON HAY ASTHMA, AND THE AFFECTION TERMED HAY FEVER. Fcap. 8vo., 2*s*. 6*d*.

HENRY POWER, F.R.C.S., M.B.LOND.

ILLUSTRATIONS OF SOME OF THE PRINCIPAL DISEASES OF THE EYE: With an Account of their Symptoms, Pathology and Treatment. Twelve Coloured Plates. 8vo., 20*s*.

HENRY F. A. PRATT, M.D., M.R.C.P.

I.

THE GENEALOGY OF CREATION, newly Translated from the Unpointed Hebrew Text of the Book of Genesis, showing the General Scientific Accuracy of the Cosmogony of Moses and the Philosophy of Creation. 8vo., 14*s*.

II.

ON ECCENTRIC AND CENTRIC FORCE: A New Theory of Projection. With Engravings. 8vo., 10*s*.

III.

ON ORBITAL MOTION: The Outlines of a System of Physical Astronomy. With Diagrams. 8vo., 7*s*. 6*d*.

IV.

ASTRONOMICAL INVESTIGATIONS. The Cosmical Relations of the Revolution of the Lunar Apsides. Oceanic Tides. With Engravings. 8vo., 5*s*.

V.

THE ORACLES OF GOD: An Attempt at a Re-interpretation. Part I. The Revealed Cosmos. 8vo., 10*s*.

THE PRESCRIBER'S PHARMACOPŒIA; the Medicines arranged in Classes according to their Action, with their Composition and Doses. By a Practising Physician. Fifth Edition. 32mo., cloth, 2*s*. 6*d*.; roan tuck (for the pocket), 3*s*. 6*d*.

JOHN ROWLISON PRETTY, M.D.

AIDS DURING LABOUR, including the Administration of Chloroform, the Management of Placenta and Post-partum Hæmorrhage. Fcap. 8vo., 4*s*. 6*d*.

P. C. PRICE, F.R.C.S.

AN ESSAY ON EXCISION OF THE KNEE-JOINT. With Coloured Plates. With Memoir of the Author and Notes by Henry Smith, F.R.C.S. Royal 8vo., 14*s*.

LAKE PRICE.

PHOTOGRAPHIC MANIPULATION: A Manual treating of the Practice of the Art, and its various Applications to Nature. With numerous Engravings. Second Edition. Crown 8vo., 6*s.* 6*d.*

W. O. PRIESTLEY, M.D., F.R.C.P.

LECTURES ON THE DEVELOPMENT OF THE GRAVID UTERUS. 8vo., 5*s.* 6*d.*

F. H. RAMSBOTHAM, M.D., F.R.C.P.

THE PRINCIPLES AND PRACTICE OF OBSTETRIC MEDICINE AND SURGERY. Illustrated with One Hundred and Twenty Plates on Steel and Wood; forming one thick handsome volume. Fifth Edition. 8vo., 22*s.*

THOMAS READE, M.B.T.C.D., L.R.C.S.I.

SYPHILITIC AFFECTIONS OF THE NERVOUS SYSTEM, AND A CASE OF SYMMETRICAL MUSCULAR ATROPHY; with other Contributions to the Pathology of the Spinal Marrow. Post 8vo., 5*s.*

DU BOIS REYMOND.

ANIMAL ELECTRICITY; Edited by H. Bence Jones, M.D., F.R.S. With Fifty Engravings on Wood. Foolscap 8vo., 6*s.*

J. RUSSELL REYNOLDS, M.D.LOND., F.R.C.P., F.R.S.

I.

EPILEPSY: ITS SYMPTOMS, TREATMENT, AND RELATION TO OTHER CHRONIC CONVULSIVE DISEASES. 8vo., 10*s.*

II.

THE DIAGNOSIS OF DISEASES OF THE BRAIN, SPINAL CORD, AND THEIR APPENDAGES. 8vo., 8*s.*

III.

LECTURES ON THE CLINICAL USES OF ELECTRICITY delivered at University College Hospital. Post 8vo., 3*s.* 6*d.*

B. W. RICHARDSON, M.D., F.R.C.P., F.R.S.

I.

ON THE CAUSE OF THE COAGULATION OF THE BLOOD. Being the Astley Cooper Prize Essay for 1856. With a Practical Appendix. 8vo., 16*s.*

II.

DISCOURSES ON PRACTICAL PHYSIC 8vo., 5*s.*

WILLIAM ROBERTS, M.D., F.R.C.P.

AN ESSAY ON WASTING PALSY; being a Systematic Treatise on the Disease hitherto described as ATROPHIE MUSCULAIRE PROGRESSIVE. With Four Plates. 8vo., 5*s*.

C. H. F. ROUTH, D.M., M.R.C.P.

INFANT FEEDING, AND ITS INFLUENCE ON LIFE; Or, the Causes and Prevention of Infant Mortality. Second Edition. Fcap. 8vo., 6*s*.

W. H. ROBERTSON, M.D., M.R.C.P.

I.

THE NATURE AND TREATMENT OF GOUT. 8vo., 10*s*. 6*d*.

II.

A TREATISE ON DIET AND REGIMEN. Fourth Edition. 2 vols. Post 8vo., 12*s*.

JAMES ROGERS, M.D.

ON THE PRESENT STATE OF THERAPEUTICS. With some Suggestions for placing it on a more scientific basis. 8vo., 6*s*. 6*d*.

G. R. ROWE, M.D.

NERVOUS DISEASES, LIVER AND STOMACH COMPLAINTS, LOW SPIRITS, INDIGESTION, GOUT, ASTHMA, AND DISORDERS PRODUCED BY TROPICAL CLIMATES. With Cases. Sixteenth Edition. Fcap. 8vo., 2*s*. 6*d*.

J. F. ROYLE, M.D., F.R.S. AND F. W. HEADLAND, M.D., F.R.C.P.

A MANUAL OF MATERIA MEDICA AND THERAPEUTICS. With numerous Engravings on Wood. Fifth Edition. Fcap. 8vo., 12*s*. 6*d*.

J. T. SABBEN, M.D. AND J. H. BALFOUR BROWNE.

HANDBOOK OF LAW AND LUNACY; or, the Medical Practitioners Complete Guide in all Matters relating to Lunacy Practice. 8vo. 5*s*.

ST. GEORGE'S HOSPITAL REPORTS. Vols. I to V. 8vo., 7*s*. 6*d*.

ST. THOMAS'S HOSPITAL REPORTS. Vols. I. and II., New Series, 8vo., 8*s*.

H. HYDE SALTER, M.D., F.R.C.P., F.R.S.

ASTHMA. Second Edition. 8vo., 10*s*.

W. H. O. SANKEY, M.D.LOND., F.R.C.P.

LECTURES ON MENTAL DISEASES. 8vo., 8*s*.

A. E. SANSOM, M.D.LOND., M.R.C.P.

CHLOROFORM: ITS ACTION AND ADMINISTRATION. A Handbook. With Engravings. Crown 8vo., 5*s*.

HENRY SAVAGE, M.D.LOND., F.R.C.S.

THE SURGERY, SURGICAL PATHOLOGY, AND SURGICAL ANATOMY of the FEMALE PELVIC ORGANS, in a Series of Coloured Plates taken from Nature. With Commentaries, Notes and Cases. Second Edition, greatly enlarged. 4to., £1. 11*s*. 6*d*.

JOHN SAVORY, M.S.A.

A COMPENDIUM OF DOMESTIC MEDICINE, AND COMPANION TO THE MEDICINE CHEST; intended as a Source of Easy Reference for Clergymen, and for Families residing at a Distance from Professional Assistance. Eighth Edition. 12mo., 5*s*.

HERMANN SCHACHT.

THE MICROSCOPE, AND ITS APPLICATION TO VEGETABLE ANATOMY AND PHYSIOLOGY. Edited by FREDERICK CURREY, M.A. Post 8vo., 6*s*.

R. E. SCORESBY-JACKSON, M.D., F.R.S.E.

MEDICAL CLIMATOLOGY; or, a Topographical and Meteorological Description of the Localities resorted to in Winter and Summer by Invalids of various classes both at Home and Abroad. With an Isothermal Chart. Post 8vo., 12*s*.

R. H. SEMPLE M.D., M.R.C.P.

ON COUGH: its Causes, Varieties, and Treatment. With some practical Remarks on the Use of the Stethescope as an aid to Diagnosis. Post 8vo., 4*s*. 6*d*.

THOS. SHAPTER, M.D., F.R.C.P.

THE CLIMATE OF THE SOUTH OF DEVON, AND ITS INFLUENCE UPON HEALTH. Second Edition, with Maps. 8vo., 10*s*. 6*d*.

E. SHAW, M.R.C.S.

THE MEDICAL REMEMBRANCER; OR, BOOK OF EMERGENCIES. Fifth Edition. Edited, with Additions, by JONATHAN HUTCHINSON, F.R.C.S. 32mo., 2*s*. 6*d*.

JOHN SHEA, M.D., B.A.

A MANUAL OF ANIMAL PHYSIOLOGY. With an Appendix of Questions for the B.A. London and other Examinations. With Engravings. Foolscap 8vo., 5*s*. 6*d*.

FRANCIS SIBSON, M.D., F.R.C.P., F.R.S.

MEDICAL ANATOMY. With 21 coloured Plates. Imperial folio. Cloth, £2. 2*s.*; half-morocco, £2. 10*s.*

E. H. SIEVEKING, M.D., F.R.C.P.

ON EPILEPSY AND EPILEPTIFORM SEIZURES: their Causes, Pathology, and Treatment. Second Edition. Post 8vo., 10*s.* 6*d.*

E. B. SINCLAIR, M.D., F.K.Q.C.P., AND G. JOHNSTON, M.D., F.K.Q.C.P.

PRACTICAL MIDWIFERY: Comprising an Account of 13,748 Deliveries, which occurred in the Dublin Lying-in Hospital, during a period of Seven Years. 8vo., 10*s.*

J. L. SIORDET, M.B.LOND., M.R.C.P.

MENTONE IN ITS MEDICAL ASPECT. Foolscap 8vo., 2*s.* 6*d.*

ALFRED SMEE, M.R.C.S., F.R.S.

GENERAL DEBILITY AND DEFECTIVE NUTRITION; their Causes, Consequences, and Treatment. Second Edition. Fcap. 8vo., 3*s.* 6*d.*

WM. SMELLIE, M.D.

OBSTETRIC PLATES: being a Selection from the more Important and Practical Illustrations contained in the Original Work. With Anatomical and Practical Directions. 8vo., 5*s.*

HENRY SMITH, F.R.C.S.

I.

ON STRICTURE OF THE URETHRA. 8vo., 7*s.* 6*d.*

II.

HÆMORRHOIDS AND PROLAPSUS OF THE RECTUM: Their Pathology and Treatment, with especial reference to the use of Nitric Acid. Third Edition. Fcap. 8vo., 3*s.*

III.

THE SURGERY OF THE RECTUM. Lettsomian Lectures. Third Edition. Fcap. 8vo., 3*s.* 6*d.*

JOHN SMITH, M.D., F.R.C.S.EDIN.

HANDBOOK OF DENTAL ANATOMY AND SURGERY, FOR THE USE OF STUDENTS AND PRACTITIONERS. Second Edition. Fcap. 3vo., 4*s.* 6*d.*

J. BARKER SMITH.

PHARMACEUTICAL GUIDE TO THE FIRST AND SECOND EXAMINATIONS. Crown 8vo., 6*s.* 6*d.*

W. TYLER SMITH, M.D., F.R.C.P.

A MANUAL OF OBSTETRICS, THEORETICAL AND PRACTICAL. Illustrated with 186 Engravings. Fcap. 8vo., 12*s.* 6*d.*

JOHN SNOW, M.D.

ON CHLOROFORM AND OTHER ANÆSTHETICS: THEIR ACTION AND ADMINISTRATION. Edited, with a Memoir of the Author, by Benjamin W. Richardson, M.D. 8vo., 10*s.* 6*d.*

STANHOPE TEMPLEMAN SPEER, M.D.

PATHOLOGICAL CHEMISTRY, IN ITS APPLICATION TO THE PRACTICE OF MEDICINE. Translated from the French of MM. BECQUEREL and RODIER. 8vo., reduced to 8*s*.

J. K. SPENDER, M.D.LOND.

A MANUAL OF THE PATHOLOGY AND TREATMENT OF ULCERS AND CUTANEOUS DISEASES OF THE LOWER LIMBS. 8vo., 4*s*.

PETER SQUIRE.

I.

A COMPANION TO THE BRITISH PHARMACOPÆIA. Eighth Edition. 8vo., 10*s*. 6*d*.

II.

THE PHARMACOPÆIAS OF THE LONDON HOSPITALS, arranged in Groups for easy Reference and Comparison. Second Edition. 18mo., 5*s*.

WM. SQUIRE, M.R.C.P.LOND.

TEMPERATURE OBSERVATIONS; containing (1) Temperature Variations in the Diseases of Children, (2) Puerperal Temperatures, (3) Infantile Temperatures in Health and Disease. 8vo., 5*s*.

JOHN STEGGALL, M.D.

I.

A MEDICAL MANUAL FOR APOTHECARIES' HALL AND OTHER MEDICAL BOARDS. Twelfth Edition. 12mo., 10*s*.

II.

A MANUAL FOR THE COLLEGE OF SURGEONS; intended for the Use of Candidates for Examination and Practitioners. Second Edition. 12mo., 10*s*.

III.

FIRST LINES FOR CHEMISTS AND DRUGGISTS PREPARING FOR EXAMINATION AT THE PHARMACEUTICAL SOCIETY. Third Edition. 18mo., 3*s*. 6*d*.

WM. STOWE, M.R.C.S.

A TOXICOLOGICAL CHART, exhibiting at one view the Symptoms, Treatment, and Mode of Detecting the various Poisons, Mineral, Vegetable, and Animal. To which are added concise Directions for the Treatment of Suspended Animation. Twelfth Edition, revised. On Sheet, 2*s*.; mounted on Roller, 5*s*.

FRANCIS SUTTON, F.C.S.

A SYSTEMATIC HANDBOOK OF VOLUMETRIC ANALYSIS; or, the Quantitative Estimation of Chemical Substances by Measure. With Engravings. Second Edition, much enlarged. 8vo., 12*s*.

W. P. SWAIN, F.R.C.S.

INJURIES AND DISEASES OF THE KNEE-JOINT, and their Treatment by Amputation and Excision Contrasted. Jacksonian Prize Essay. With 36 Engravings. 8vo., 9*s*.

J. G. SWAYNE, M.D.

OBSTETRIC APHORISMS FOR THE USE OF STUDENTS COMMENCING MIDWIFERY PRACTICE. With Engravings on Wood. Fifth Edition. Fcap. 8vo., 3*s*. 6*d*.

JOHN TANNER, M.D., M.R.C.P.EDIN.

PRACTICAL MIDWIFERY AND OBSTETRICS, including Anæsthetics. With Numerous Engravings. 8vo., 6*s.* 6*d.*

SIR ALEXANDER TAYLOR, M.D., F.R.S.E.

THE CLIMATE OF PAU; with a Description of the Watering Places of the Pyrenees, and of the Virtues of their respective Mineral Sources in Disease. Third Edition. Post 8vo., 7*s.*

ALFRED S. TAYLOR, M.D., F.R.C.P., F.R.S.

I.

THE PRINCIPLES AND PRACTICE OF MEDICAL JURISPRUDENCE. With 176 Wood Engravings. 8vo., 28*s.*

II.

A MANUAL OF MEDICAL JURISPRUDENCE. Eighth Edition. With Engravings. Fcap. 8vo., 12*s.* 6*d.*

III.

ON POISONS, in relation to MEDICAL JURISPRUDENCE AND MEDICINE. Second Edition. Fcap. 8vo., 12*s.* 6*d.*

THEOPHILUS THOMPSON, M.D., F.R.C.P., F.R.S.

CLINICAL LECTURES ON PULMONARY CONSUMPTION; with additional Chapters by E. SYMES THOMPSON, M.D. With Plates. 8vo., 7*s.* 6*d.*

ROBERT THOMAS, M.D.

THE MODERN PRACTICE OF PHYSIC; exhibiting the Symptoms, Causes, Morbid Appearances, and Treatment of the Diseases of all Climates. Eleventh Edition. Revised by ALGERNON FRAMPTON, M.D. 2 vols. 8vo., 28*s.*

SIR HENRY THOMPSON, F.R.C.S.

I.

STRICTURE OF THE URETHRA AND URINARY FISTULÆ their Pathology and Treatment. Jacksonian Prize Essay. With Plates. Third Edition. 8vo., 10*s.*

II.

THE DISEASES OF THE PROSTATE; their Pathology and Treatment. With Plates. Third Edition. 8vo., 10*s.*

III.

PRACTICAL LITHOTOMY AND LITHOTRITY; or, An Inquiry into the best Modes of removing Stone from the Bladder. With numerous Engravings. Second Edition. 8vo., 10*s.*

IV.

CLINICAL LECTURES ON DISEASES OF THE URINARY ORGANS. With Engravings. Second Edition. Crown 8vo. 5*s.*

J. C. THOROWGOOD, M.D.LOND.

NOTES ON ASTHMA; its Nature, Forms and Treatment. Crown 8vo., 4*s.*

J. L. W. THUDICHUM, M.D., M.R.C.P.

A TREATISE ON GALL STONES: their Chemistry, Pathology, and Treatment. With Coloured Plates. 8vo., 10*s.*

E. J. TILT, M.D., M.R.C.P.

I.

ON UTERINE AND OVARIAN INFLAMMATION, AND ON THE PHYSIOLOGY AND DISEASES OF MENSTRUATION. Third Edition. 8vo., 12*s*.

II.

A HANDBOOK OF UTERINE THERAPEUTICS AND OF DISEASES OF WOMEN. Third Edition. Post 8vo., 10*s*.

III.

THE CHANGE OF LIFE IN HEALTH AND DISEASE: a Practical Treatise on the Nervous and other Affections incidental to Women at the Decline of Life. Third Edition. Rewritten and Enlarged. 8vo., 10*s*. 6*d*.

ROBERT B. TODD, M.D., F.R.S.

I.

CLINICAL LECTURES ON THE PRACTICE OF MEDICINE. *New Edition, in one Volume, Edited by* Dr. Beale, 8*vo*., 18*s*.

II.

ON CERTAIN DISEASES OF THE URINARY ORGANS, AND ON DROPSIES. Fcap. 8vo., 6*s*.

JOHN TOMES, F.R.S.

A MANUAL OF DENTAL SURGERY. With 208 Engravings on Wood. Fcap. 8vo., 12*s*. 6*d*.

JAS. M. TURNBULL, M.D., M.R.C.P.

I.

AN INQUIRY INTO THE CURABILITY OF CONSUMPTION, ITS PREVENTION, AND THE PROGRESS OF IMPROVEMENT IN THE TREATMENT. Third Edition. 8vo., 6*s*.

II.

A PRACTICAL TREATISE ON DISORDERS OF THE STOMACH with FERMENTATION; and on the Causes and Treatment of Indigestion. 8vo., 6*s*.

DUNCAN TURNER, L.R.C.P.

A MANUAL OF DIET FOR THE INVALID AND DYSPEPTIC; With Hints on Nursing. Second Edition. Crown 8vo., 2*s*. 6*d*.

R. V. TUSON, F.C.S.

A PHARMACOPŒIA; including the Outlines of Materia Medica and Therapeutics, for the Use of Practitioners and Students of Veterinary Medicine. Post 8vo., 7*s*.

ALEXR. TWEEDIE, M.D., F.R.C.P., F.R.S.

CONTINUED FEVERS: THEIR DISTINCTIVE CHARACTERS, PATHOLOGY, AND TREATMENT. With Coloured Plates. 8vo., 12*s*.

DR. UNDERWOOD.

TREATISE ON THE DISEASES OF CHILDREN. Tenth Edition, with Additions and Corrections by Henry Davies, M.D. 8vo., 15*s*.

VESTIGES OF THE NATURAL HISTORY OF CREATION. Eleventh Edition. Illustrated with 106 Engravings on Wood. 8vo., 7*s*. 6*d*.

WM. Q. VALENTIN, F.C.S.

A TEXT-BOOK OF PRACTICAL CHEMISTRY: a Guide to the Course of Practical Instruction given in the Laboratories of the Royal College of Chemistry. With 90 Engravings. 8vo., 10*s.* 6*d.*

J. L. C. SCHROEDER VAN DER KOLK.

THE PATHOLOGY AND THERAPEUTICS OF MENTAL DISEASES. Translated by Mr. RUDALL, F.R.C.S. 8vo., 7*s.* 6*d.*

MISS VEITCH.

HANDBOOK FOR NURSES FOR THE SICK. Crown 8vo., 2*s.* 6*d.*

ROBERT WADE, F.R.C.S.

STRICTURE OF THE URETHRA, ITS COMPLICATIONS AND EFFECTS; a Practical Treatise on the Nature and Treatment of those Affections. Fourth Edition. 8vo., 7*s.* 6*d.*

ADOLPHE WAHLTUCH, M.D.

A DICTIONARY OF MATERIA MEDICA AND THERAPEUTICS. 8vo., 15*s.*

J. WEST WALKER, M.B.LOND.

ON DIPHTHERIA AND DIPHTHERITIC DISEASES. Fcap. 8vo., 3*s.*

CHAS. WALLER, M.D.

ELEMENTS OF PRACTICAL MIDWIFERY; or, Companion to the Lying-in Room. Fourth Edition, with Plates. Fcap. 8vo., 4*s.* 6*d.*

HAYNES WALTON, F.R.C.S.

SURGICAL DISEASES OF THE EYE. With Engravings on Wood. Second Edition. 8vo., 14*s.*

STEPHEN H. WARD, M.D. LOND., F.R.C.P.

ON SOME AFFECTIONS OF THE LIVER AND INTESTINAL CANAL; with Remarks on Ague and its Sequelæ, Scurvy, Purpura, &c. 8vo. 7*s.*

E. J. WARING, M.D., F.R.C.P.LOND.

I.

A MANUAL OF PRACTICAL THERAPEUTICS. Third Edition, Revised. Fcap. 8vo., 12*s.* 6*d.*

II.

THE TROPICAL RESIDENT AT HOME. Letters addressed to Europeans returning from India and the Colonies on Subjects connected with their Health and General Welfare. Crown 8vo., 5*s.*

A. T. H. WATERS, M.D., F.R.C.P.

I.

DISEASES OF THE CHEST. CONTRIBUTIONS TO THEIR CLINICAL HISTORY, PATHOLOGY, AND TREATMENT. With Plates. 8vo., 12*s.* 6*d.*

II.

THE ANATOMY OF THE HUMAN LUNG. The Prize Essay to which the Fothergillian Gold Medal was awarded by the Medical Society of London. Post 8vo., 6*s.* 6*d.*

III.

RESEARCHES ON THE NATURE, PATHOLOGY, AND TREATMENT OF EMPHYSEMA OF THE LUNGS, AND ITS RELATIONS WITH OTHER DISEASES OF THE CHEST. With Engravings. 8vo., 5*s.*

ALLAN WEBB, M.D., F.R.C.S.L.

THE SURGEON'S READY RULES FOR OPERATIONS IN SURGERY. Royal 8vo., 10*s.* 6*d.*

J. SOELBERG WELLS. F.R.C.S.

I.

A TREATISE ON THE DISEASES OF THE EYE. With Coloured Plates and Wood Engravings. Second Edition. 8vo., 24*s.*

II.

ON LONG, SHORT, AND WEAK SIGHT, and their Treatment by the Scientific Use of Spectacles. Third Edition. With Plates. 8vo., 6*s.*

T. SPENCER WELLS, F.R.C.S.

SCALE OF MEDICINES FOR MERCHANT VESSELS. With Observations on the Means of Preserving the Health of Seamen, &c., &c. Seventh Thousand. Fcap. 8vo., 3*s.* 6*d.*

WEST RIDING LUNATIC ASYLUM REPORTS. Edited by J. Crichton Browne, M.D., F.R.S.E. Vol. I. 8vo, 7*s.* 6*d.*

CHARLES WEST, M.D., F.R.C.P.

LECTURES ON THE DISEASES OF WOMEN. Third Edition. 8vo., 16*s.*

JAMES WHITEHEAD, M.D., M.R.C.P.

ON THE TRANSMISSION FROM PARENT TO OFFSPRING OF SOME FORMS OF DISEASE, AND OF MORBID TAINTS AND TENDENCIES. Second Edition. 8vo., 10*s.* 6*d.*

FORBES WINSLOW, M.D., D.C.L. OXON.

OBSCURE DISEASES OF THE BRAIN AND MIND. Fourth Edition. Carefully Revised. Post 8vo., 10*s.* 6*d.*

T. A. WISE, M.D., F.R.C.P.EDIN.

REVIEW OF THE HISTORY OF MEDICINE AMONG ASIATIC NATIONS. Two Vols. 8vo., 16*s.*

G. C. WITTSTEIN.

PRACTICAL PHARMACEUTICAL CHEMISTRY: An Explanation of Chemical and Pharmaceutical Processes, with the Methods of Testing the Purity of the Preparations, deduced from Original Experiments. Translated from the Second German Edition, by Stephen Darby. 18mo., 6*s.*

ERASMUS WILSON, F.R.C.S., F.R.S.

I.

THE ANATOMIST'S VADE-MECUM: A SYSTEM OF HUMAN ANATOMY. With numerous Illustrations on Wood. Eighth Edition. Fcap. 8vo., 12*s.* 6*d.*

II.

ON DISEASES OF THE SKIN: A SYSTEM OF CUTANEOUS MEDICINE. Sixth Edition. 8vo., 18*s.*

THE SAME WORK; illustrated with finely executed Engravings on Steel, accurately coloured. 8vo., 36*s.*

III.

HEALTHY SKIN: A Treatise on the Management of the Skin and Hair in relation to Health. Seventh Edition. Foolscap 8vo. 2*s.* 6*d.*

IV.

PORTRAITS OF DISEASES OF THE SKIN. Folio. Fasciculi I. to XII., completing the Work. 20*s.* each. The Entire Work, half morocco, £13.

V.

THE STUDENT'S BOOK OF CUTANEOUS MEDICINE AND DISEASES OF THE SKIN. Post 8vo., 8*s.* 6*d.*

VI.

LECTURES ON EKZEMA AND EKZEMATOUS AFFECTIONS; with an Introduction on the General Pathology of the Skin, and an Appendix of Essays and Cases. 8vo. 10*s.* 6*d.*

VII.

LECTURES ON DERMATOLOGY DELIVERED AT THE ROYAL COLLEGE OF SURGEONS, JANUARY, 1870: Synopsis of Diseases of the Skin. 8vo., 6*s.*

VIII.

ON SYPHILIS, CONSTITUTIONAL AND HEREDITARY; AND ON SYPHILITIC ERUPTIONS. With Four Coloured Plates. 8vo., 16*s.*

IX.

A THREE WEEKS' SCAMPER THROUGH THE SPAS OF GERMANY AND BELGIUM, with an Appendix on the Nature and Uses of Mineral Waters. Post 8vo., 6*s.* 6*d.*

X.

THE EASTERN OR TURKISH BATH: its History, Revival in Britain, and Application to the Purposes of Health. Foolscap 8vo., 2*s.*

---

A WOLFF, F.R.C.S.

ZYMOTIC DISEASES: their Correlation and Causation. Post 8vo., 5*s.*

---

HENRY G. WRIGHT, M.D., M.R.C.P.

I.

UTERINE DISORDERS: their Constitutional Influence and Treatment. 8vo., 7*s.* 6*d.*

II.

HEADACHES; their Causes and their Cure. Fourth Edition. Fcap 8vo. 2*s.* 6*d.*

# CHURCHILL'S SERIES OF MANUALS.

Fcap. 8vo., 12*s.* 6*d.* each.

"We here give Mr. Churchill public thanks or the positive benefit conferred on the Medical Profession, by the series of beautiful and cheap Manuals which bear his imprint."—*British and Foreign Medical Review.*

**AGGREGATE SALE, 160,000 COPIES.**

**ANATOMY.** With 280 Engravings. Eighth Edition. By Erasmus Wilson, F.R.C.S., F.R.S.

**BOTANY.** With 1,127 Engravings. Second Edition. By Robert Bentley, F.L.S.

**CHEMISTRY.** With 193 Engravings. Tenth Edition, 14*s.* By George Fownes. F.R.S., H. Bence Jones, M.D., F.R.S., and Henry Watts, B.A., F.R.S.

**DENTAL SURGERY.** With 208 Engravings. By John Tomes, F.R.S.

**EYE, DISEASES OF.** With 14 coloured Plates and 52 Wood Engravings. By C. Macnamara.

**MATERIA MEDICA.** With 113 Engravings. Fifth Edition. By J. Forbes Royle, M.D., F.R.S., and F. W. Headland, M.D., F.R.C.P.

**MEDICAL JURISPRUDENCE.** With 45 Engravings. Eighth Edition. By Alfred Swaine Taylor, M.D., F.R.S.

**PRACTICE OF MEDICINE.** Second Edition. By G. Hilaro Barlow, M.D., M.A.

**The MICROSCOPE and its REVELATIONS.** With 25 Plates and 412 Wood Engravings. Fourth Edition. By W. B. Carpenter, M.D., F.R.S.

**NATURAL PHILOSOPHY.** With 701 Engravings. Sixth Edition. By Charles Brooke, M.B., M.A., F.R.S. *Based on the Work of the late Dr. Golding Bird.*

**OBSTETRICS.** With numerous Engravings. By W. Tyler Smith, M.D., F.R.C.P. (*Reprinting*).

**OPHTHALMIC MEDICINE and SURGERY.** With 9 coloured Plates and 173 Wood Engravings. Third Edition. By T. Wharton Jones, F.R.C.S., F.R.S.

**PATHOLOGICAL ANATOMY.** With 167 Engravings. By C. Handfield Jones, M.B., F.R.S., and E. H. Sieveking, M.D., F.R.C.P.

**PHYSIOLOGY.** With 2 Steel Plates and 250 Engravings. Fourth Edition. By William B. Carpenter, M.D., F.R.S.

**POISONS.** Second Edition. By Alfred Swaine Taylor, M.D., F.R.S.

**PRACTICAL ANATOMY.** With 226 Engravings. Second Edition. By Christopher Heath, F.R.C.S.

**SURGERY.** With numerous Engravings. By Thomas Bryant, F.R.C.S. (*In the Press*).

**THERAPEUTICS.** Third Edition. By E. J. Waring, M.D., F.R.C.P.

BLANCHARD & SONS, PRINTERS, 62, MILLBANK STREET;
AND HORSE-AND-GROOM YARD, WOOD STREET, WESTMINSTER.