Essays on hydrocephalus acutus, or water in the brain / by J. Cheyne.

ESSAYS

ON

HYDROCEPHALUS ACUTUS.

ESSAYS

ON

HYDROCEPHALUS ACUTUS;

OR

WATER IN THE BRAIN.

SECOND EDITION.

BY

J. CHEYNE, M. D. F. R. S. E. &c.

DUBLIN:

PRINTED FOR HODGES AND M'ARTHUR, COLLEGE-GREEN;
LONGMAN, HURST, REES, ORME, AND BROWNE; E. COX AND SON; J. CALLOW; J. AND G. UNDERWOOD; ANDERSON AND CHASE; BURGESS AND HILL, LONDON:
AND ADAM BLACK, EDINBURGH.

1819.

CRAISBERRY AND CAMPBELL,
PRINTERS.

THIS VOLUME IS INSCRIBED

TO

MR. CHARLES BELL,

IN TESTIMONY

OF

RESPECT

AND

GRATITUDE.

ADVERTISEMENT.

IN the following Historical Introduction, written several years ago, I have not adverted to any work illustrative of Hydrocephalus which has appeared since the publication of my first Essay in 1808. Some of these works are entitled to the utmost attention, others of them are open to censure, but I have withheld my opinion of the merits of their respective authors, as the animadversions of a fellow candidate for professional approbation might appear invidious.

Dublin,
July the 1st, 1819.

INTRODUCTION.

SOME traces of a fatal kind of fever, incident to children, attended with strabismus, dilatation of the pupil, coma, and convulsions, may be discovered in the earlier annals of medical science; but it is only within the last fifty years that physicians have become acquainted with the disease which has now acquired the name of acute Hydrocephalus. We are chiefly indebted to British physicians for the information which we possess relative to the history and pathology of Hydrocephalus; hence it will be no difficult matter to present the inexperienced reader with a short account of the principal treatises which have been published on that disease; treatises, most of which he will find in every medical library.

The first case of Hydrocephalus which I have been able to discover in the writings of our countrymen, will be found in the second volume of the Edinburgh Medical Essays and Observations (Ann. 1733.) The author of it, Dr. St. Clair, Professor of Medicine in Edinburgh, considered that case as one of fever; but it possesses all the features of Hydrocephalus. The disease occurred in a delicate boy, ten years old, who had been subject to disordered bowels, and to scrofulous ophthalmia. It commenced with languor, anorexia, and vomiting, irregular fever, and headach. It was attended, at one period, with slow pulse, delirium, grinding of the teeth, coma, scanty urine; with involuntary discharges, raving, shrieking, rapid pulse, and deep sighing; and the patient had but

one motion during Doctor St. Clair's attendance, which lasted eight days.

In the third volume of the same collection (Ann. 1734) there is a communication by Mr. John Paisley, Surgeon in Glasgow, entitled "A Hydrocephalum with remarkable "symptoms." This paper contains a case of acute Hydrocephalus; and the following passage, which is annexed to the case, entitles Mr. Paisley to be considered as the first person who, generalizing his observations, has pointed out certain symptoms, which are those of Hydrocephalus, as constituting a specific disease: "Since this case was "under my care," says Mr. Paisley, "I have seen seve-"ral children who complained of a pain in one particular "part of the head, having a great drowsiness, and heaviness "in their eye-lids, a pulse much slower than natural, no "drought, a great averson to food or drink, an inclina-"tion to vomit, and other symptoms, as this boy had, "which made me judge them to labour under the same "disease; and the dissection of two, which were all I was "allowed to open, showed my opinion to be just, the "parts being found in much the same manner above "described (the ventricles distended with fluid) only that "I could observe, in neither of them, any thing like the "little tumour mentioned in the former case." The tumour alluded to was a small watery tumour, not unlike a Hydatid, in the dura mater.

In 1768 were published Dr. Whytt's "Observations on "the Dropsy of the Brain." In this, which is a posthumous work from the pen of that celebrated physiologist, the history of Hydrocephalus is accurate, and excellently arranged, and the reasoning upon the phenomena of the disease is ingenious. But although a highly valuable monograph, the author has applied the theories which prevailed half a century ago, of the formation of dropsy, to the disease in question, and hence much of the pathological matter is out of date. He has also, without

sufficient caution, adopted an opinion that Hydrocephalus does not betray itself by its proper symptoms until fluid is so accumulated, as, by its pressure on the sides of the ventricles, to disturb the action of the brain: he was led to suppose that the disease was always incurable. He frankly owns that he never had been so fortunate as to cure a single patient who had the symptoms which, with certainty, denote the existence of Hydrocephalus.

In the same year Dr. Fothergill read to a society in London his "Remarks," and Dr. Watson his "Observations" on Hydrocephalus internus (Medical Observations and Inquiries, vol. 4.) Dr. Fothergill's description of the disease is less masterly than Whytt's, yet it includes some symptoms which the latter had omitted, in particular the nature of the stools is described, which, although very peculiar, had escaped the notice of Whytt. Dr. Fothergill's practice in Hydrocephalus was merely palliative; he does not suggest any probable means of curing that disease, which had baffled his skill, both when alone, and when in consultation with the ablest of the faculty. As he did not deem the cure of the disease within the compass of art, the ostensible reason for publishing his paper was, to exhibit such an idea of Hydrocephalus, as might serve to make its fatal tendency known to the practitioner, so as to justify him to himself, and to those who might deplore his ill success.

In Dr. Watson's "Observations" there is nothing to demand criticism; but, in an "Appendix," contained in the same volume, there is a case which ought to have abated the despondency to which physicians long continued to yield, when they had once ascertained that a patient was labouring under Hydrocephalus.

A boy, about a fortnight after having received a smart blow on the head from a stone, made frequent complaints of headach. His breath was offensive, and his belly some-

what enlarged. In a few days more the pain increased; he had a considerable degree of fever, was exceedingly restless, and lost his speech. The second day after the loss of his speech, Dr. Watson first saw him; he found his pulse quick, his skin hot, and his cheeks flushed; he sweated much about the head, face, and neck; he was in a lethargic state, scarcely sensible of any thing which was said to him, and he parted with his urine and stools involuntarily; the pupils of both his eyes were in the greatest state of dilatation, and they did not contract when a lighted candle was brought suddenly near them: the right arm was enfeebled (paralysed?); when roused the patient was constantly rubbing his forehead with his left arm and hand, as he rolled his head from side to side on the pillow; whenever he awoke from his short sleeps he shrieked for a considerable time. Besides frequent returns of general convulsions, the muscles of his face, eyes, and eyelids, were particularly convulsed, as at times was also his right enfeebled arm.

It ought to be remarked that the patient was seen by Dr. Watson after the period at which the pulse is in general slow, and also that both in his "Observations" and the "Appendix," Dr. Watson has omitted to advert to the condition of the stools in Hydrocephalus, or to mention sighing as a symptom of that disease. This boy had all the other symptoms of Hydrocephalus, of which, it can scarce be doubted, he was in the third stage, in that stage in which the diagnostics are as certain as in any internal disease with which we are acquainted.

But let us proceed with Dr. Watson's account of this case. Although he judged that there were but small hopes of relief, he ordered a blister to the head, some medicines to abate fever, and he kept the bowels gently soluble by means of proper liquids and nourishment. For four or five days from this time, every symptom encreased to such a degree, that death was hourly expected. The

patient was indeed reduced to an extreme of debility; in the course of a few days more, however, the symptoms were milder. He took every second day an opening medicine, and as the feverish heat abated, he was allowed weak broth, and aliment more nutritious, with a small proportion of wine. In about a fortnight after Dr. Watson's first visit, his patient's pupils contracted at times, and he gave indications of being able at such times to distinguish objects. The convulsions, flushings, great restlessness, crying out upon waking, and other symptoms, continued, although in a less degree, for nearly a month longer, by which time his sight was quite restored, and his right arm had recovered its strength: in about a fortnight more his speech returned, after having lost it two months; by slow degrees he recovered his strength, and he was on the 30th of April perfectly well.

For four or five days after the blister was applied every symptom increased. "Nature (as Dr. Watson expresses himself) was but moderately assisted," and therefore I have again brought this case forward, to shew that the powers of the constitution ought not, in this disease, to be so much distrusted as to lead us to withold our assistance, even under circumstances the most discouraging. With respect to medical practice, pyrrhonism is a much more dangerous extreme for a Physician to fall into than credulity.

A case of Hydrocephalus, published in the 6th volume of the Medical Observations and Inquiries, which occurred to Dr. Dobson of Liverpool in 1775, and which terminated favourably, made a considerable impression on the minds of Physicians. Dr. Dobson, to use his own words, had no hopes of doing any thing effectual for the recovery of his patient. He paid his visits, prescribed, and gave directions with a foreboding and heavy heart; however he determined to deviate from the beaten track, and was led to the use of mercurials from an expectation that they

might enter into the course of the circulation, and reach the absorbents in the ventricles of the brain. By promoting the activity of these vessels he hoped to remove the extravasated fluid;—this was his hypothesis. Recovery took place from all the symptoms of a disease, which had already been fatal to three children of the family to which his patient belonged.

In the history of Hydrocephalus the introduction of mercury forms an important era; antecedently, the disease was accounted incurable. Mercury, in consequence of the reports which were daily received of its great efficacy in many diseases incident to Europeans in the East Indies, was beginning to be generally employed in England. Had Dr. Dobson never formed his hypothesis of its mode of operation, it would have found its way into prescription as a remedy for Hydrocephalus. Dr. Lysons, of Bath, had already recommended it in continued fevers. Dr. Hamilton, of Lynn Regis, was using it in inflammations. Dr. Clarke, of Newcastle, in dysentery; nay, Dr. Haygarth, of Chester, who appears all his life to have been no less zealous in the improvement of his profession, than benevolent in the application of his knowledge, had made trial of mercury in Hydrocephalus even before Dr. Dobson, although the latter had the advantage of prior publication. Dr. Haygarth had been induced to prescribe it in the hope that, "by producing an aqueous evacuation from the neighbourhood, it might be a means of removing the fluid accumulated in the ventricles." But indeed, after certain prejudices concerning the effects of mercury were removed, it is probable that the first physician who chanced to remark the following passage in Harris, on the acute diseases of infants, would have prescribed calomel in Hydrocephalus:—"Concerning the repeated sublimation or dulcoration of mercury," says Harris, "I had some conversation last summer with a physician of experience, who practises with great success. This gentleman informed me, that he had

" an hundred times saved children in fevers attended with " unusual stupor, and even coma, which is the most dan- " gerous symptom in fever, by giving them mercurius " dulcis six times sublimed."

In 1777, Dr. Simmons, in a criticism in the 5th volume of the Medical Commentaries, upon a case communicated by Dr. Percival of Manchester, recommends blisters and opium, as a promising method of treating Hydrocephalus. This had been the practice of Dr. Ambrose Dawson, in two supposed cases of Hydrocephalus, which terminated favourably. Blisters were thought also, by Dr. White of Bury, to have cured a case of Hydrocephalus, which he published in the 3d volume of the London Medical Journal (Ann. 1783.)

Hitherto the hypotheses of Whytt, that the effusion depends upon a mere laxity of the exhalents, or upon a thin and watery state of the blood, had not been called in question, or at least they were still generally admitted, when, in 1779, Dr. Quin, profiting by the observations and instructions of his learned father (who was a physician of the first eminence in Dublin), published a new theory of dropsy of the brain, in his Inaugural Dissertation. In the present condition of medical science, the individual who first happens to announce an improvement in pathology, often communicates knowledge which was about to reach the public by some other channel. Both Dr. Withering and Dr. Rush had not only been induced to entertain doubts of the common theory of Hydrocephalus, before they heard of Dr. Quin's thesis; they had even substituted, for the hypothesis of Whytt, a doctrine very much like that which Dr. Quin has taught.

Dr. Quin published his " Treatise on the Dropsy of the " Brain," in 1790. This is the finished work, of which his inaugural dissertation was a sketch. Of this work, in which, by the way, the account of the symptoms is rather deficient, the excellency consists in its containing a

new doctrine of the disease, founded upon the basis of dissection. The author maintains that the causes of Hydrocephalus are allied to the causes of inflammatory diseases. He has produced two dissections, in which there were remains of greatly increased vascular action in the brain, and yet no effusion of fluid had taken place, although there had been unequivocal symptoms of Hydrocephalus. In four of the dissections which Dr. Quin has recorded, while the quantity of fluid contained in the ventricles was considerable, the blood-vessels were remarkably turgid, and (what was still more decisive of inflammatory action) preternatural adhesions connected the meninges, which were thickened and opake, and coated with coagulable lymph. Dr. Quin moreover dwells upon the similarity between the symptoms of Hydrocephalus, and those produced by external injury.

To the remedies formerly employed in Hydrocephalus, Dr. Quin has added venesection and cold applications to the head. He speaks with proper caution of the hazard of drawing large quantities of blood, in certain cases of the disease, but he scarce seems sufficiently aware of the extent to which it is necessary to carry blood-letting in other cases. Cold applications are proposed as a hopeful experiment, but one which he had not tried. In the second stage of Hydrocephalus, mercurials are proposed by Dr. Quin, on the principle of Dr. Dobson, namely, to stimulate the languid absorbents of the brain, yet he recommends mercury without much confidence in its efficacy; indeed the reader, while he must admit the great merit of Dr. Quin's treatise, rises from its perusal with a feeling that the author has but little confidence in the resources of art after the first stage is over.

Dr. Withering, in his "Account of the Fox Glove, published in 1785, informs the reader that he had embraced an opinion relative to the nature of Hydrocephalus similar to that held by Dr. Quin, which he had acted

upon with success before the publication of Dr. Quin's Thesis. Dr. Withering explicitly declares that the disease originates in inflammation, and that the water contained in the ventricles of the brain is the consequence, and not the cause of the illness. Dr. Withering used digitalis in Hydrocephalus, but not in a sufficient number of cases to enable him to ascertain its powers.

Dr. Rush, (Medical Observations and Inquiries, Ann. 1789,) while he affirms with Drs. Quin and Withering, that the effusion of water is the consequence of primary inflammation, has made an important addition to the history of Hydrocephalus, by showing that it may be produced by a variety of other diseases; in particular, he has instanced fevers, rheumatism, pulmonary consumption, the exanthemata, and worms. He has also referred to an instance of death from Hydrocephalus, in which there was not more than a tea-spoon full of water found in the ventricles of the brain. Two such dissections have been made under my eye: death, in both cases, seemed to have arisen from excess of vascular action in the brain, the abdominal and thoracic viscera being apparently sound. The peculiarity in Dr. Rush's practice in Hydrocephalus was, that he carried blood-letting to a greater extent than any former author; he also used very active purgation. Dr. Rush had but little confidence in mercurials, which he at last ceased to prescribe, unless in combination with some purgative medicine, with a view of dislodging worms. It ought, however, to be remarked, that he seems to have embraced an opinion similar to Dr. Haygarth's, which led him to suppose that the virtues of mercury were limited to its operation as a sialagogue. Dr. Rush, while he possessed both ability and zeal, is not entitled to the first rank among the observers of disease; there is a hastiness in the manner of his observations, and a want of caution not merely in his terms, but in his conclusions, which is constantly giving rise to distrust in the mind of his reader: yet it is

better that a physician should suppose, with Rush, that the progress of dropsy of the brain may be as easily arrested as that of any other acute disease, than that he should imagine it incurable.

Dr. Percival, of Manchester, in 1791, sent a valuable paper on Hydrocephalus to the Editor of the Medical Facts and Observations, by whom it was published in the first volume of that collection. In this paper the physician is encouraged to combine the various remedies, which individually have proved serviceable, in remedying the disease, or palliating its distressing symptoms. In conjunction with a mercurial course Dr. Percival prescribed opium, musk, squills, or blisters, according to the indication, whether it were to mitigate pain or spasm, to promote absorption, or to increase the serous discharges of the body. In one case he ascribes recovery to two grains of opium, which were given when the system was charged with mercury. On this circumstance I dwell with the more satisfaction, as of late I have been induced to entertain a very favourable opinion of the combination of opium and mercury. I feel so much anxiety to improve the practice in this disease, that I am happy to find, on a reperusal of the writings upon Hydrocephalus, that I have Dr. Percival's sanction for the use of this combination, even although I may thereby be deprived of the credit of having first suggested it as a remedy for that disease.

Dr. Percival's paper contains many valuable observations, in particular the dissection of an infant belonging to a family that had repeatedly suffered from Hydrocephalus, which perished before effusion took place. There are also observations which serve to connect Hydrocephalus with Scrofula, and instances of conversion of Hydrocephalus to a disease of the lungs, and *vice versa*. In estimating the merits of this excellent paper, I must, however, observe, that the author appears unnecessarily apprehensive of the consequences of blood-letting.

A work on Hydrocephalus, published in Dublin in 1794, had till very lately escaped my notice. The author, Dr. Paterson, of Londonderry, seems to have had a lively interest in the improvement of his profession. The work consists of a series of letters to Dr. Quin, whose views of the disease Dr. Paterson criticises with acrimony, the less necessary, as he in general agrees with that writer in his pathological opinions, and in his practical rules also. With regard to the former, he thinks it nearly demonstrated that acute Hydrocephalus is an inflammatory disease, and that the watery effusion is the consequence of inflammation. From analogy, and more especially from its effects in phrenitic inflammation, Dr. Paterson recommends the combination of calomel and opium in Hydrocephalus. With Dr. Percival, upon whose authority he leans, he affirms that opium would be improper if the patient were in a state of coma. It does not, however, appear that Dr. Paterson had ever prescribed the combination of opium and calomel in Hydrocephalus.

In Dr. Monro's "Three Treatises on the Brain, the Eye, and the Ear," published in 1797, there are some observations upon Hydrocephalus. Dr. Monro combats the opinion, once so prevalent, that the substance of the brain is melted down by the fluid which is effused from the exhalent vessels; he teaches us that the part of the brain which disappears, in order to make room for the fluid in the ventricles, is removed by the action of the absorbent vessels; and he conceives that, as the substance of the brain is not compressible, when there is enlargement of the blood-vessels, with increase of their number, this must be connected with previous absorption. In other respects Dr. Monro's observations upon Hydrocephalus, possess less interest than might be expected, considered as the work of so distinguished a pathologist.

The last essay on Hydrocephalus which I shall mention, was written by Dr. Garnett, and published in 1801, in the

5th volume of the Medical and Physical Journal. The case which forms the basis of the essay terminated favourably. The remedies used were, first an opiate and antispasmodics, which aggravated the disease; then a stimulating glyster, blisters, leeches, digitalis, with mercurials which produced salivation, Kali sulphuratum to abate the salivation; one pill of opium; nitre, effervescing draughts, and a return to mercurials and digitalis; and, during convalescence, Rufus's pill and calomel, to obviate costiveness, to which there was left a tendency.

In Dr. Garnett's Observations on Hydrocephalus, he has maintained that the disease depends upon, and is accompanied by, a plethoric state of the vessels of the brain, occasioning a considerable degree of inflammation, and generally, *though not always*, producing an extravasation of watery fluid before death; and he seems to think that the symptoms, which usually show themselves in this disease, do not depend upon the effused fluid, which he conceived to be the consequence of the disease rather than the cause of it. In so far he has acquiesced in the views of Dr. Quin. He founds his belief of the existence of an inflamed state of the vessels of the brain, 1st, on the appearance of the blood, which in some cases was as decidedly inflammatory as he ever observed it in a pleurisy. 2dly, On the acuteness of the pain and fullness of the pulse. 3dly, On the aggravation of the symptoms from the exhibition of stimulants, and the relief which always, in the first stage of the disease, attends the antiphlogistic plan; and lastly, upon the appearances on dissection.

Dr. Garnett's recommendation of bleeding is qualified; general bloodletting he recommends only in strong subjects who have attained the age of puberty; but even in such patients he prefers local bleeding, because eventually a great degree of debility comes on, and also, because it seemed probable to him, that the accumulation in the

vessels of the head might be most effectually relieved by evacuations made from as near the seat of the disease as possible. Being aware that the case did not admit of specific rules, he states the principle which ought to guide the physician with respect to the extent of bleeding, in the following terms: "I am convinced that there often "exists, not only in Hydrocephalus, but in some other "diseases of the inflammatory kind, a local inflammation, "without much general sthenic diathesis; and when the "vessels have taken on an inflammatory action in any "part, general bleeding may be employed to such an ex-"tent as to weaken the system very much, without con-"siderably abating the increased action, while local bleed-"ing, especially after one general evacuation, often pro-"duces a speedy solution of the inflammation."

Dr. Garnett recommends digitalis as possessing the quality of diminishing the action of the arterial system in a very remarkable degree, and as being a diuretic more certain and powerful when conjoined with mercury; hence he thinks that it is applicable both to the inflammatory stage and to the stage of effusion.

There are many valuable cases of Hydrocephalus published in our journals, accompanied with appropriate observations, which it is not in my power to notice, lest this sketch, growing into a dissertation, should swell the work to an inconvenient size. I rather think enough has been said to show the state of opinion, when, I applied myself to illustrate this disease. Of my own labours I have only to observe, that I have endeavoured, in as far as my opportunities and humble abilities permitted, to follow the steps of those physicians who have advanced their profession, by connecting morbid dissections with a careful observation of symptoms, and the effects of remedies.

In general, each succeeding writer on Hydrocephalus seems to have acquired a little more confidence in the re-

sources of art than his predecessor. And having seen and heard of a greater number of recoveries from Hydrocephalus of late, than when I began to practise my profession, I should hope that this confidence is still increasing. I know, however, from unquestionable authority, that some physicians still remain in ignorance of the nature of the disease—others argue in a circle, that the disease is incurable, and therefore those patients who recover had not laboured under Hydrocephalus. And I think it proper to state, that in the cases in which my affections were most engaged, I have been least successful; nor do I mean to affirm that I have been generally successful. The disease, in a great majority of cases, still baffles our efforts. But I think we ought to attribute our ill success to any thing rather than to a want of means of cure. We ought to attribute it to our want of skill in detecting the commencement of the disease; to the progress which it may have made; to our inability to adapt our remedies to the individual instance; to want of zeal or perseverance which arises from a habit of desponding; or lastly, to something defective in the usual mode of attendance in very acute diseases. One visit a day, which is the usual rate of attendance, is not sufficient in a disease which is so irregular in its progress. Several patients have been saved, as it appeared to me, by the vigilance of their physicians, by whom every increase of danger was promptly encountered. The Physician who has charge of a case of Hydrocephalus ought to be constantly on the alert. The following narrative, which is derived from the writings of a man distinguished for accurate observation, Dr. Hunter, the army physician, illustrates the vigilance which is necessary in the treatment of a disease, namely, remittent fever, which is much more uniform in its course than Hydrocephalus. It also shows of how much more importance, in our profession, diligence and attention are

than those more brilliant qualities for which men are apt to value themselves and others; and hence, in a work chiefly addressed to the junior part of the profession, it may be introduced without any apology.

" The first battalion of the 60th regiment consisted of twelve companies. The regiment was provided with two hospitals and two surgeons, each of whom took charge of the sick of six companies. It was presently found that one hospital was much fuller than the other, which did not appear to proceed from a greater sickness among one division of the companies than the other, for there was no material difference in the number of sick sent from the several companies. In order to bring the sick in the two hospitals to an equality, a company was taken from one division and annexed to the other. The sick of the five companies were, however, still more numerous than that of the seven; and after a short trial, they were divided into four and eight companies, and then the sick in the two hospitals were nearly equal, and varied from forty to sixty in each. It may be supposed, that so great a difference depended upon the method of treatment being entirely different in the two hospitals. That, however, was not the case; the general plan of treatment was nearly the same in both, as appeared from the medicines entered in the hospital book. It was owing to the following circumstances: One surgeon visited his hospital *four or five times a-day*, the other only twice a-day; the first seldom allowed any remission to pass without taking advantage of it, the latter often; one was always at hand to palliate the untoward symptoms, as vomitings, or purgings, proceeding either from the medicines or the disease; the other not. Add to these, that vigilance in the surgeon at the head of an hospital extends itself to the servants and nurses under him, and thence a greater degree of attention both in administering nourishment and medicines.

The effect of all those causes was, that the men recovered in half the time in one hospital that they did in the other, and therefore the hospital for eight companies had no greater number of sick, than that for four."

ON

HYDROCEPHALUS ACUTUS.

ESSAY I.

HYDROCEPHALUS ACUTUS, the disease which it is the object of the following pages to illustrate, occurs chiefly in childhood. It is attended with pyrexia, and with symptoms indicative of a diseased state of the sensorium. It generally terminates in death; after which, along with other morbid appearances, the ventricles of the brain are almost always found enlarged, and full of lymph.

Authors have acknowledged the extreme difficulty of drawing up a distinct account of Hydrocephalus. They have been unable to determine upon its essential symptoms, and have, with due candour, admitted that the disease does not always retain a strong resemblance to the general histories of it which they have delivered. Having felt the difficulties of the undertaking in common with my predecessors, I have done my best to remove them, by endeavouring to arrange under distinct classes the various forms which the disease assumes.

I. In that class of the disease which I am first to describe, we find, before any characteristic signs appear, that the patient for some days, or even weeks, has complained

of pains in his head or belly, while at the same time he has been slightly feverish, dull, vertiginous, sallow, without appetite, or perhaps with an increased or capricious appetite, and with a considerable disorder in all the functions of the abdominal viscera. In some instances a dragging of one of the legs has been observed, which has led to a fruitless examination of the hip joint, and spine; in others a very painful crick in the neck has taken place, as the first symptom of diseasa. These complaints arise gradually, and the child's friends are not awakened to a sense of danger, until, advancing a step farther, the commencement of a specific disease has more distinctly shewn itself. The dullness and severe pains in the head are now accompanied with vomiting, usually upon getting up in the morning, or after the child has begun to stir about. Yet even this symptom is often disregarded until the second or third day of its recurrence, and the disease has made considerable progress before the illness of the patient is suspected to arise from a disordered condition of the brain.

When the attention is more particularly excited by these symptoms, the headach or pain in the forehead will be observed returning at shorter intervals. The child often affectingly complains of his head; he sighs frequently, is dull, his head requires to be supported; he complains of weariness in his eyes; the pupils appear unusually contracted, and he has an aversion to light, but in the dark he sometimes fancies he sees flashes of light. His tongue is white, and his belly generally costive; the stools at first are of the colour of clay, but as the disease advances they become of a gelatinous consistence, of a dark green colour, and they have a peculiar smell, not unlike the smell of the breath in the beginning of some of the exanthemata. The pulse becomes quick, and at particular times these symptoms are attended with febrile heat and irritability, and the child complains not of headach only, but of pains in different parts of the body, which are sometimes exceed-

ingly acute. At one time he will complain of pains in his limbs; at another, of pain in his breast, or in the nape of the neck, very often in his bowels; but before his friends can make any preparation to relieve him, the pain ceases, or is transferred to some other part; at another time, he will lie long on his mother's knee, restless and whining, from dull rheumatic pains. These disorders cannot last long without impairing the child's strength; and accordingly, in ten days, or a fortnight, the period usually occupied by the first stage of this attack, his appearance is altered; his manner becomes peevish; his hand tremulous; and his gait tottering.

II. In the second form of the attack, which is less frequent, the disease runs a more rapid course. After the child has been in a drooping state for a short time, which, although it sometimes may escape observation, is generally recollected, there is a sudden change to a fever, attended, even from the first, with a great degree of pyrexia, with frequent but short and irregular remissions, flushing, severe headach, tenderness all over the abdomen, and increased sensibility, with sometimes brilliancy of the eyes. It is said to be often difficult immediately to distinguish Hydrocephalus from fever, and this is the form in which there is the greatest resemblance between the two diseases; but we are led to suspect some deeply-seated evil, from his frantic screams, and complaints of his head and belly, alternating with stupor, or rather lowness and unwillingness to be roused; and we are struck with the great irritability of the stomach, which exists in a degree beyond what we generally find it in the fevers of this country,—retching and vomiting being brought on by a change of posture, and certainly by every attempt to sit up in bed; and the disordered state of the bowels which attends this irritability of the stomach, is also remarkable. And when at any time the child has a little respite from the violence of these symptoms, we find our suspicions confirmed by his look;

for, when the features do not express pain or terror, there is not unfrequently a vacancy of look, the eyes being set, with an expression of dejection, which is peculiar to certain diseases of the brain.

III. I have observed less frequently than the first case, yet I think more so than the second, what may be described as the third form of Hydrocephalus. This last may be considered as an instance of conversion of disease, and it is attended with considerable variety of symptoms. When Hydrocephalus arises after an indifferent state of health, as for example, after there had existed a scrofulous disease which has subsided; or where, from pre-disposition, and from the anomalism of the symptoms, some such disease might have been expected; or where the child has had some epidemic disease, as measles, or scarlatina, from which he has not perfectly recovered, or regained sound health, the attack is sometimes made with all the violence which I have described as distinguishing the second form. When again the attack comes on as the sequel of an acute disease, as for instance, remittent fever, hooping cough, dentition, the child almost imperceptibly slips into Hydrocephalus; there are scarcely any of the symptoms of the early stages; and palsy and convulsions are sometimes the first indications of the new disorder. In such instances, however, were we not lulled into security by the previous disease, we might perhaps sooner detect a tendency to Hydrocephalus. I have reason to think in one case of this variety, that the symptoms resembled those described in the first form of the attack, but they were thought a part of the original disease. Instances of Hydrocephalus unattended with pain, are mentioned by more than one author, and have repeatedly occurred in my practice. Dr. Quin adverts to a case, in which, during the child's illness, there was no symptom to suggest the real cause of death, yet when the

body was examined, a large quantity of fluid was found within the ventricles of the brain.

The situation of the patient is not yet desperate; for, after the appearance of most, or even of all the symptoms which have been enumerated in describing the first two forms of Hydrocephalus, the child sometimes recovers. Cases are recorded, in which, without the use of any active medicine, the disease has gradually subsided, leaving the child in the enjoyment of health.

I consider the first form of the disease as the most favourable; perhaps the second might be equally favourable were it detected early; but in cases of the second class, the first two or three days, which are decisive, are generally lost; from the third form, recoveries, I believe, are rare. The second form of the disease is the most regular in its progress; in the examples of it which I have seen, not only the first, but all the stages, were distinctly marked. I would have it understood that the distinction which I have made is chiefly applicable to the commencement of the disease, as in the latter stages of it there is little diversity in the symptoms.

But in all the stages, and in every form of this disease, we have proofs of irregular excitement; these, indeed, become more conspicuous as the disease advances, but are often observable, even in the early part of it: at one time the pulse is quick and throbbing; the heat of the body is increased, the skin parched; there is a deep blush on the face, or on one cheek; and the breathing is sighing, laborious, and quick: at another time the blood circulates more equably; the skin is of a natural warmth, or moist with perspiration; the countenance is pale; and the breathing so soft that it cannot be heard. The appetite and thirst vary; sometimes exhibiting nearly a natural state of the stomach; at other times the heavy smelling breath, which has erroneously been supposed peculiar to this disease, the total absence of appetite, and a continued

vomiting, even for days, show the stomach to be in the greatest disorder. The bowels are never regular; they are generally slow, but now and then a severe bilious purging attends the vomiting. The urine is sometimes retained for twenty-four or thirty-six hours; yet I have seen a patient with a constant desire to pass urine, which was voided with excruciating pain, followed by great increase of the pain of the head. And not only are the vital and natural functions irregular, we find the same extremes in the animal functions: to this, indeed, the diseases of the brain owe much of their peculiar character. The senses are often entire, or perhaps morbidly acute; in general, the retina is painfully sensible to light, and the child is sometimes much disturbed by slight sounds; on the contrary, sometimes, even in the early days of the disease, the mind is subdued, and there is the greatest dullness of apprehension. Towards the end of the disease, after delirium, convulsions, and insensibility, I have been surprised to find, in several instances, a complete return of intellect before death.

Dr. Whytt, and after him other authors, observing the remarkable variations which so often take place in the pulse, have divided Hydrocephalus into three stages, of each of which the peculiar condition of the circulation is made the predominant symptom. And doubtless, in most cases, after the signs enumerated in describing the attack of this disease have continued for a certain time, the pulse changes, becoming first unequal and irregular, and then slow, but doubled by the least exertion. There is often this peculiarity in the pulse: It beats ten or twelve strokes at the rate of 60 in the minute, and the next six or eight at the rate of 100. With the slow pulse there is a greater degree of dullness and more torpor; at first, the pain in the head does not abate; nay, I have known it increase; but when the slow pulse has continued for some time, the pain is less complained of. And now we ob-

serve a very dilated pupil, and a want of consent between the eyes, attended with imperfect, and not unfrequently double vision; the child is no longer able to sit up, even for the shortest period; he lies in a dozing state, which is interrupted by startings and wild expressions of pain, and often by a troublesome cough; still, however, there is not much incoherence; sometimes the stage which has been characterized by the slow pulse, advances with regularity, after the child has been eight or ten days ill, and then, although it is impossible with certainty to predict a second change in the pulse, perhaps in three or four days more, it becomes more rapid than ever; and thus it marks the commencement of what is called the third stage, and ushers in, some time before death, a still more hopeless series of symptoms.

Whatever difficulty there may be in ascertaining the disease in its commencement, there is no disease so easily distinguished when far advanced. Indeed how can we mistake, when we see a child rolling his head on the pillow, or perhaps sawing the air with one hand, while the opposite side is palsied; with a hectic on the cheek, the eyelids half concealing the pupil, and the eye deprived of its vivacity by the filmy appearance of the cornea, the complete dilatation of one or both of the pupils, and the suffusion of the adnata; drawing long sighs; frequently grinding his teeth; incoherent, or in a state of complete insensibility; with a burning heat of his skin, or a sweat forced from every pore; and all these symptoms alternating with, and at last finished by, stertorous breathing, and violent convulsions.

But the student will be disappointed if he expect, as Dr. Whytt has taught, that these stages will always follow each other in a regular and measured progress. A child has sometimes appeared in health on the very night on which he was seized with convulsions, which were symptomatic of Hydrocephalus. I have observed a slow pulse, unattended with any other change in the disease, for some

days; and although there is, for the most part, a period, sometimes at the very beginning of the disease, during which the pulse is slow, yet it often lasts for so short a time, that unless the child is very attentively observed, it will escape notice. There is reason to believe that there have been cases of Hydrocephalus, in which the pulse has never come down to the standard, while in other cases the pulse has never exceeded the standard of health. One of these cases, Dr. Grogan of Limerick related to me, in which the pulse never, not even within a few hours of death, exceeded eighty pulsations. And every attentive observer must have found the pulse slow and quick, and then again slow—constantly varying towards the end of the disorder.

Although Dr. Whytt leads us to expect a regularity in the progress of this disease which does not belong to it, and has adopted, as the distinguishing symptom, one, which, though striking and important, does not uniformly or correctly indicate the changes in the disease, and which is common to many diseases of the brain, yet in most cases these changes are so regular, that a division into stages is, upon the whole, advantageous. To accomplish this is not easy, considering the alterations in the excitement, and the variety in the course of the symptoms in every different constitution. Still retaining the three stages, I shall venture to present them under some change of character. The first, as the stage of increased sensibility; the second, as the stage of diminished sensibility; the third, as distinguished by palsy or convulsions.

In the first stage, every stimulus produces an impression more than proportioned to its common effects. There is generally a great aversion to light and to sounds; there is watching, sickness, pain, a quick pulse. In the second stage, the child is not easily roused, his pupil is dilated, his pulse slow; he is lethargic, with obstinately costive bowels. In the third stage, which perhaps might be

considered as a continuation of the second, there is squinting, rolling of the head, raving, stupor, convulsions, with a rapid thready pulse.

It must be allowed by every physician who has had frequent opportunities of seeing this disease, that its duration is uncertain when once the pulse has become slow, or rather when the stage of torpor has arrived. I have known instances where, in the forenoon, the child, although subdued, was perfectly collected in mind, and the slow pulse of very short duration, and yet before night the patient was dead. When the disease has advanced to the last stage, it is not to be expected that nature will long sustain the struggle, and accordingly in some children it is over in a few hours; but others, particularly those more advanced in life, sometimes linger for a long time. I have been painfully obliged to continue my visits day after day, for a week or ten days, at every visit thinking the child had only a few hours to live, and hence I conclude, that no symptom, except the hurried breathing, can with certainty be said to indicate the speedy approach of death.

When the disease has ended favourably, large bilious stools, an increased flow of urine, or an abundant perspiration have occurred;* and when the patient is moribund, a profuse sweating about the neck or back part of the head may sometimes be remarked.

* The following communication I owe to a professional friend: "My "father used to mention the case of Mr. W. S—'s child, where a very "profuse perspiration had the appearance of being critical. This child "was attended by my father and an eminent physician in Edinburgh. The "disease was considered by both as Hydrocephalus, and treated accord-"ingly, 'till the child was thought past all hope. The physician's visits "were discontinued. A profuse sweat broke out on the head and neck, "and flowed so copiously, that the pillows had to be shifted, one after "another, as I have heard my father say, and as I have been told by the "child's father and mother, to whom I addressed myself for further in-"formation. From that moment, the child, who had for days lain in an "insensible and hopeless state, is said sensibly to have recovered, and yet "lives. Seven years have elapsed since his recovery."

From the date of the first symptom, Dr. Whytt supposes the disease to extend four, five, or six weeks. Dr. Fothergill has found that it is almost always over in three weeks. Like most diseases of the brain its duration is uncertain; in some cases in the second, and also in the third variety of the attack, it appears to run its course in a few days; and I have known it in the first variety, from the great length of the first stage, last many weeks. But the result of my observation, even in that variety, has been in favour of the more limited period assigned by Dr. Fothergill. There is indeed a variety of Hydrocephalus which continues for many months, which is attended with headachs, disordered digestion, sallowness, languor, dullness, not much derangement of the understanding; at last some of the forms of palsy with marasmus take place. But such cases are much more allied to chronic Hydrocephalus than to the disease I am describing; for the head enlarges a little, a slight separation of the sutures takes place, and the quantity of fluid in the ventricles is very considerable, not by any means equal to what generally exists in chronic Hydrocephalus, when congenital, but much more than is usually witnessed after acute Hydrocephalus.

In children at the breast we do not so readily distinguish the attacks of Hydrocephalus; we indeed see somewhat of its peculiar expression; we observe the child moaning, feverish, watchful, frowning; the expression of pain not violent. The disease evidently not from any of the common disorders in the breast or bowels, for the respiratory organs are unaffected, and there is not the flinging out of the limbs, and extreme impatience, which children evince in colic or griping pain. In Hydrocephalus, the stools generally differ from those which attend any of the bowel complaints of children at the breast; and in no other infantine complaint do we perceive the same knitting of the eyebrows unaccompanied with crying. The head hanging over the nurse's shoulder, and the half closed eyelids are

also alarming symptoms. The disease certainly wants much of the decided character which it assumes in childhood and youth; but even in infancy, Hydrocephalus may, in general, be early detected by an attentive observer.

Hydrocephalus is the disease of every season of the year. Were I to trust to my own observation I should say that it prevails most in summer. It is also the disease of every stage of life, perhaps with the exception of old age. Hydrocephalus is, however, more particularly the disease of children—of the middle years between weaning and puberty. I am inclined to think that there is a foundation for the remark of Ludwig, "post decimum annum ingruens, plerumque puellas adflixit," before the tenth year, boys and girls seem alike subject to it. It chiefly falls upon the children of families having a considerable strumous taint; at least upon children having those peculiarities of skin, complexion and features, which indicate a great tendency to scrofula. Dr. Percival observes, that "of twenty-two "cases of which he had kept notes, eleven were cer- "tainly strumous children, and four were probably so." Sometimes Hydrocephalus attaches itself to particular families. I have attended in several families in which many of the children have died of this disease. I have heard of one unfortunate father who lost five, and two who lost ten or eleven children of Hydrocephalus. When a whole family is swept away by Hydrocephalus, the disease has probably an intimate connexion with a strumous taint. Sauvage says—"Novi familiam cujus infantes circa sextum aetatis annum omnes periere ex hoc morbo, scrofula huic effusioni ansam praebente."—Sauvages alludes to the connection between Hydrocephalus and scrofula in more places than one. "Accidit (Hydrocephalus) infantibus trium, quatuor, quinque annorum, maxime illis qui scrofuloso viru sunt infecti, quorum mesenterium glandulis duris est obsitum." And Ludwig gives an opinion on this subject

equally explicit—" habitum scrofulosum forte habere vim praedisponendi, &c." In families which have suffered most from Hydrocephalus, the disease, however, does not appear in a less curable form. It has been observed that where mania is a hereditary disease it is more easy of cure. I am inclined to think, that this is also the case with Hydrocephalus when a family complaint, as I have several times seen the disease brought to a favourable issue in families in which previously it had been fatal.

I can safely affirm, that not only are children, in whom scrofula is active, very liable to Hydrocephalus, but conversely, that all the symptoms of Hydrocephalus are sometimes exchanged for a scrofulous disease.

Upon dissection we generally find, within the cranium, the veins, particularly those of the membranes on the surface of the brain and lining the ventricles, gorged with dark-coloured blood; sometimes considerable adhesion between, and thickening of the membranes, and minute and florid vessels upon the pia mater. The ventricles contain from two to five or six ounces of limpid serum; we also find fluid in a small quantity, along with portions of coagulable lymph under the tunica arachnoides, both above and at the base of the brain. The substance of the brain is generally, but not always soft and blanched, fimbriated, and particularly soft where it forms the ventricles. The substance of the fornix is often like a soft curd. In the abdomen I have found the intestines inflamed, and constricted as from spasm, and the surface of the liver of a bright red colour, abounding in minute vessels, and sometimes extensively adhering to the peritoneum. In many dissections I have also found the surface of the liver studded with small white tubercles, not larger than grains of mustard. The glands of the mesentery are often diseased, as is evinced by their enlargement, and the caseous depositions which exist in their substance.

After the attempt which I have made to deliver a full

history, it might be thought unnecessary to describe minutely the combination of symptoms which distinguish Hydrocephalus from other diseases. I shall, therefore satisfy myself with little more than a short notice of the causes from which similar symptoms arise.

1st. They arise from an immediate affection of the sensorium, in consequence of some general disease, as fever.

2dly. From other organic diseases of the brain, as tumours of the brain, or partial inflammation, ending in suppuration.

3dly. From the brain morbidly sympathising with a distant part.

It is in general easy, even in the more early periods of the two diseases, to distinguish Hydrocephalus from fever. We must particularly attend to the train of the symptoms. The gradual commencement, the more irregular remissions; the state of the stomach; the nature of the excretions, in particular the glairy, dark and unnatural stools; the great aversion to light; the whole expression of the disease, differing much from that of fever. The peculiar nature of the pains which attend Hydrocephalus; the acute pains of the body; the peculiar pain of the head. The pain, when fixed, is oftener dull than acute; but so overpowering, that it does not admit of the head being raised from the pillow. It is sometimes a very acute pain, but it is not increased by every throb of the artery, like the phlegmonic pain. Generally it is deep seated, like the pain attending some visceral inflammations; but it differs in this, that it is not increased, or rendered more frequent, by any muscular exertion. At intervals, and these sometimes regular, it darts through the centre of the brain, and the child is roused with an expression of helpless anguish from the dozing which preceded this acute pain, and into which he instantly relapses, when it is gone.

Hydrocephalus resembles several of the varieties of fe-

ver, but none so much as the acute infantine remittent fever. The two diseases may be distinguished among other symptoms by the following, which are peculiar to the latter. 1st. The regular and complete remission. Dr. Butter, (the author of an accurate description of the infantine remittent fever,) refines too much when he says that there are three remissions, one in the forenoon, one in the afternoon, and one during the night. Unless in the advanced stages, and in the worst form of this fever (when perhaps the remission is hardly to be observed) there is generally one remarkable remission in the morning, sometimes early in the forenoon, and the exacerbation commences late in the forenoon, or in the afternoon, and lasts till next morning, the nights being restless and delirious. Had Dr. Armstrong attended to the remission, he could not have experienced so much difficulty in distinguishing Hydrocephalus from that low kind of fever, in which "the intes-"tines are loaded with green, viscid, fœtid excrement." 2nd. Fæculent dark brown stools. I must however admit, that I have occasionally in remittent fever observed stools which resemble those so often passed in Hydrocephalus, which consist of a glairy, deep green discharge. It ought, however, to be recollected, that remittent fever not unfrequently degenerates into Hydrocephalus, and that the danger of this conversion is greatest when the exacerbations are least regular. A young physician cannot too much habituate himself to the variety of expression which he will find in the countenances of the sick. In going into the ward of an hospital, or approaching the bedside in the chambers of the sick, he ought, in the first place, to try to discover the disease in the countenance of the patient; he will thus acquire a faculty like the tactus eruditus of the surgeon, which is very imperfectly derived from books; which he cannot, it is true, easily communicate, but which notwithstanding is of sterling value. To this faculty, which gives both method and simplicity to a clinical in-

vestigation, the experienced physician owes his real and deserved superiority. Hydrocephalus and fever are thus often known by a glance of the eye.

I have seen several cases of the fatal disease of the brain and its membranes, which arises in scrofulous habits from a caries of the temporal bone. There are first suppurations of the ear: these may happen at distant intervals; indeed this is a disease not confined to children. These suppurations are not, in the first instance, attended with very great pain, for while the discharge of matter from the ear is free, there is little other inconvenience. At last, however, one of these attacks of suppuration is followed by extreme pain, darting from the crown of the head to the ear or mastoid process, with disorder in the stomach and bowels, stupor and palsy. As all organic diseases of the brain have a general resemblance; this at first sight might be mistaken for Hydrocephalus; but in the examples which I have seen, the disease was much more tedious than Hydrocephalus. This scrofulous disease may be known by attending to the previous suppurations; to the pain striking through the head; the fixed pain, sometimes inflammation and swelling behind the ear; the stiffness of the jaw, which is sometimes nearly locked, and opened only with extreme pain; the inability to turn the head, the great pain in the attempt; and the swelling of the chain of lymphatic glands in the neck. In dissection, after this disease, we find a considerable portion of the bone diseased, the membrane destroyed, and the brain, particularly the cerebellum, often extensively suppurated. I confess that there is sometimes great difficulty in the diagnostic between Hydrocephalus and some other of the organic diseases of the brain. There is a tubercular state of the brain which is apt to occur in such children as have a strong disposition to scrofulous complaints, which it is not easy to distinguish from Hydrocephalus. All the other organic diseases of the brain in

children, which have fallen under my observation, with the exception of phrenitis, and a species of cataphora, to which they are liable, have had a more tedious course than Hydrocephalus.

In this species of cataphora the child is affected with convulsions at a very early period of the disease. The rapidity and strength of the pulse, and the state of the skin, show a very high degree of fever, which is attended with great disorder of the nervous system, as is apparent from restlessness and frequent startings. The disease lasts from three to seven days; during the last two or three days the child lies in a state of stupor, with some of the symptoms and much of the expression of the last stage of Hydrocephalus.

Another disease of infancy requires to be briefly adverted to in treating of the diagnosis of Hydrocephalus. This disease has been known to some authors under the titles of inward fits, chronic croup, &c. It begins with a crowing inspiration, like that which takes place in the commencement of a paroxysm of pertussis. As at first there are long intervals between these spasmodic inspirations, (several days perhaps) as they appear to be connected with a disordered stomach, and absence of bile in the bowels; to arise from sudden exertion, or fits of passion; and as the child often continues to thrive notwithstanding the disease is not much attended to. At last, however, the spasmodic inspirations excite just alarm, they occur frequently without any apparent cause, when the child is perfectly tranquil; the complexion becomes purple, insensibility follows, and not unfrequently universal convulsion, or rigidity of the muscles, with the thumbs clenched in the hands; these convulsions, in seven instances, to my knowledge, have ended in death. However, after continuing many weeks, or even months, this affection often terminates favourably with the cutting of one or more of the teeth, or it may be relieved by effectually scarifying the gums,

changing the air and diet, and alternating mercurials with carminative purgatives. The pathognomonick of this disease is a crowing inspiration with purple complexion, not followed by cough. In some cases this affection is attended not merely with a permanent clenching of the hand upon the thumb, but also with a very remarkable fixed spasm of the toes, particularly the great toe, which gives a look of swelled deformity to the upper part of the foot.

It is desirable, though frequently very difficult, to trace the convulsions of infants and children to their source. When convulsions arise from Hydrocephalus, I have observed one side of the body more affected than the other: one arm or leg is with some regularity retracted and flung out again, while the other is affected with spasmodic catchings; the eyes are suffused; there is often a circumscribed blush on the cheeks; and the breathing is slow and irregular; sometimes, however, it is sobbing; whereas in convulsions not radically depending upon an organic disease of the brain, I have observed both sides of the body equally affected: the head is thrown back, the shoulders elevated, the eye ghastly, the white of the eye generally bloodless, and the pupil dilated; the eye not unlike its appearance after death, and the whole countenance uniformly flushed. But in most instances we must wait until the convulsions subside before we can discover their origin.

I have lastly to mention that a train of symptoms, similar to those of Hydrocephalus, often arises from the brain, morbidly sympathizing with the alimentary canal, the liver, or the urinary organs. I have indeed seen symptoms resembling those of Hydrocephalus connected with a previously deranged state of all these organs, but it is chiefly from a morbid state of the liver and alimentary canal that these symptoms arise.

I am naturally led to attend to the sympathetic connexion between the abdominal viscera, and the brain, not merely to establish the diagnosis, but to regulate the prac-

tice, as I am convinced, that the disease of which I am treating, is often established, in consequence of the sympathy which the brain has with these organs. I shall state the considerations which appear to render this conjecture probable, admitting at the same time, that it is one of those positions which it would be difficult to prove.

I. Cases must have ocurred to every physician, of children, especially in the lower ranks of life, relieved by a short course of active purgative medicines, from a situation in which much of the expression, and many of the symptoms of Hydrocephalus were combined—irregular fever, retching, headach, lethargy to a great extent; symptoms which evidently arise from a disordered state of the abdominal viscera*.

* Case communicated by a friend, "Christie Mac Lean, a girl about "nine years old, complained of headach in the evening; her mother bathed "her feet, and put her to bed. She soon fell asleep, and no notice was "taken of her till next morning. She was still asleep, and her mother "became alarmed when she found she could not awaken her. I saw her "about noon sleeping profoundly, respiring fully and slowly, with now and "then a heavy sigh or moan: the pulse 100, and intermitting. When the "eyelids were lifted up, the eye appeared fixed, and the pupil large and "immoveable. The flame of a candle excited indeed a slow, feeble, and un-"dulating contraction. I was informed that she had been extremely cos-"tive, and what her mother called drooping, for some days; and that two "days ago she had taken a dose of senna, without effect."

"I ordered a purgative injection to be given immediately, which evacuated "her bowels twice. She was soon after so far roused as to swallow a bolus "of jalap and calomel. It also operated powerfully; and next morning I "was presented with two chamber pots loaded with the most extraordinary "collection of fæces I ever saw. But my patient was perfectly recovered."

This was a case of lethargy. I shall add a similar case from Piso, which was relieved in a similar manner. "Henricus Piso, filiorum meorum minor "natu, duos cum dimidiato agens annos, anno 1611, circa Pleiadum occasum, "febre, simulque alto sopore comprehenditur, et quem fere ἀδιήγητον, id est "non inexpugnabilem dicere posses. Illi oculi perpetuo clausi, aures ad "strepitum et clamorem surdæ; nullis puer stimulis excitari, nec etiam "admotis curcubitalis sensum punctionis exhibere, nullam vocem, nullam

II. In many cases, previously to the appearance of Hydrocephalus, the chylopoietic viscera have been disordered for many weeks. The appetite has been impaired, the bowels costive, the stools betraying disorder in the hepatic system; there has been all that want of alacrity, both of body and mind, so invariably the consequence of derangement of the biliary secretion; and in several children, previous to the existence of any morbid sensation, the first symptom of indisposition has been the loss of the healthy colour of the skin.

III. In children predisposed to Hydrocephalus, while removing a vitiated biliary secretion and disordered state of the bowels, by a course of purgative medicines, in which mercury was generally an ingredient, the very same symptoms have been removed which had presented themselves in other children of the same family, when attacks of Hydrocephalus, which actually proved fatal, were supposed to be established.

IV. In children who had not any known tendency to disease, the symptoms which are always found in the beginning of Hydrocephalus, have often been removed by the same means.

V. In many cases it has been remarked that children in the early stage of Hydrocephalus, when the region of the liver was pressed upon, have complained much more than they did when the same pressure was applied to any other part of the abdomen.

" edere querelam, nullum denique sensus alicujus vigentis indicium dare: " incompositum praeterea corpus immotumque stipitis seu saxi instar jacere, " nisi quod applicatum labris sive julepum rosaceum, sive decoctum gallinæ " pinguedinis expers, et refrigeratum, non aliter atque maternæ mammæ " pupillam exsugere videbatur: et una alioqui restabat respiratio libera, " suique juris. Nono demum die, a medicamento purgante, eoque *hydragogo*, " in os volenti nolenti apertum, naribus adstrictis, injecto, *repurgato feliciter* " *corpore*, primum puer, ante a mulieribus conclamatus, aperire oculos, sen- " susque sopore illo excusso evigilare, et a febri paululum liberari cœpit," C. Piso, Sect. II. Cap. III.

VI. In dissections after Hydrocephalus I have found the liver inflamed, adhering preternaturally to the peritoneum, enlarged, studded with tubercles, and otherwise differing from its sound state.

VII. In one or two cases, alarming from their great resemblance to Hydrocephalus, during recovery, the enlarged liver has been greatly reduced by mercurial purgatives.

On a former occasion I endeavoured to enforce the necessity of observing more attentively the connexions of the liver, in order fully to comprehend some of the diseases of infancy, and I am now induced to direct the attention of my readers to the derangements of that important organ as a frequent cause of disease of the brain.

In many dissections I have observed the remains of an encreased arterial action on the surface of the liver, which to every appearance had been of some standing, and in several instances, from the extent of the adhesions, it evidently had been of great intensity.

When the disease is forming, there is generally a defect in the function of the liver. It seems to admit of only a scanty and imperfect formation of bile, insufficient to stimulate the intestinal canal, which thus becomes torpid, and is sometimes loaded with fœtid clay-coloured excrement. This state of the canal, in conjunction with the disordered condition of the liver, is perhaps one cause of the derangement of the stomach, which is almost invariably present in the beginning of Hydrocephalus, although it is not to be denied, that the vomiting, in the more advanced stages of the disorder, is more naturally explained by supposing, as Dr. Whytt has done, that the stomach sympathizes with the diseased state of the brain.

When Hydrocephalus is established, the stools, although scanty, contain an unusual proportion of bile. Indeed they appear to be solely a mixture of dark bile, with the mucus of the intestines; but the state of the

bowels shows that this bile is an imperfect secretion, which, I apprehend, is in a great measure the explanation of the torpor of the intestines, not, in this stage of the disease, that they are slow from paralysis.

Vertigo occasions a flow of bile into the stomach and sickness and vomiting, as may be seen in sickness from swinging, or in sea-sickness, and in sickness from vertigo, originating in organic affections of the brain. Injuries of the brain have been succeeded by abscesses of the liver, &c.; and in dissections after apoplexy, the liver is often found greatly diseased. On the other hand, there are many instances of apoplexy succeeding to jaundice; and sudden death in gouty persons has apparently arisen from a metastasis from the liver to the brain. Thus, in many diseases, the direct sympathy between the liver and the brain is obvious. Examples of sympathy between the alimentary canal and the brain must be in the recollection of every reader.

I am not prepared to frame rules by which we may decide, that the symptoms arise from the morbid sympathy of the brain with a deranged state of the stomach or intestines, or, on the contrary, that they originate in a disordered state of the brain, unconnected with any distant organ. Perhaps future observation may prove that we shall not err, when we trace the disease to the organ which first has its functions sensibly disturbed: in a great proportion of cases I have thought that the series of diseased actions commenced in the abdominal viscera. To this opinion it is not a sufficient objection, that the symptoms which denote a morbid state of the abdominal viscera were much less striking than those which indicate a disorder of the brain; for it should be recollected that it is a law in morbid sympathy, that the sympathetic affection apparently bears no proportion to the diseased action in which it originates. Contenting myself with having, in this imperfect sketch, connected the appearances, upon dissection, with the disordered functions of the abdominal viscera, as

observable in the early period of Hydrocephalus, I shall, for the present, relinquish a subject, the consideration of which has led me to adopt a mode of practice which many of the cases contained in this volume, will be found to illustrate.

I have accidentally mentioned Dr. Whytt's way of accounting for retching in the beginning of Hydrocephalus. There is a section of his paper entitled, "An Attempt to "account for some of the most remarkable symptoms at- "tending a dropsy in the brain." The inclination to vomit is explained by the sympathy of the stomach with the disordered state of the brain; the aversion to light by the increased sensibility of the retina; the slow irregular pulse, in the second stage, by the defective sensibility of the cardiac nerves, in consequence of a general want of nervous energy. The quick pulse in the third stage, is said to arise from the violence done to the medullary fibres of the brain, causing such an irritation as must quicken the pulse; the dilatation of the pupil, from the insensibility of the retina; the apoplectic breathing, from compression of the brain. This, he supposes, prevents the uneasy sensation, occasioned by the accumulation of blood in the lungs, from being so soon felt; so that the inspiration is not made until there is a sense of suffocation in the breast. In the last stage of Hydrocephalus, in which the whole system is excited from the injury sustained by the substance of the brain, the pulse, as happens in all cases of great exhaustion, is not merely rapid, it is feeble and thready also.

In dissections after apoplexy we sometimes find the appearance of the brain scarcely altered. Numerous references to such dissections, in the writings of physicians

both of the present and of the last age, might be produced. Idiopathic epilepsy sometimes terminates fatally, without leaving the brain to appearance diseased. That a state of danger, prior to any discernible change in the structure of that organ, or even to any increased vascular activity, as discoverable by dissection, often exists in Hydrocephalus, as well as in other diseases of the brain, is highly probable. In a dissection made by Mr. Abernethy, after symptoms which "left no doubt of the existence of Hydrocephalus, the brain appeared perfectly healthy."

In the dissection of the brain after Hydrocephalus, the most striking appearance is the fluid contained in the ventricles; but in reasoning on the immediate cause of the symptoms, the importance of this effusion appears to have been overrated. What is only an effect of the disease, has been assumed as the cause of all the symptoms of it.

Dr. Fothergill thinks that Hydrocephalus arises from the rupture of a lymphatic vessel in the brain; but as lymphatics have not been discovered in the brain, this opinion of his is altogether hypothetical. Equally so are the suppositions of Dr. Whytt, that Hydrocephalus is produced by an original weakness or laxity of the brain, whereby the small exhalent arteries throw out the lymph faster than the absorbent vessels can imbibe it, or that it is produced by a too thin and watery state of the blood. Perhaps there does not exist a dropsy of this kind. My notion of dropsy is nearly conveyed in the following aphorism of the venerable Heberden: "Hydrops non tam ipse morbus est, quam alicujus morbi signum." Before the dropsical effusion takes place, it is obvious that the condition of the part, as it exists in health, must be altered; and this altered condition of the part is the proximate cause of the disease. Accelerated circulation as certainly precedes the effusion of lymph, as it does the formation of purulent matter. Science must be in a very advanced state, before the nature of the various modifications of in-

creased vascular action can be satisfactorily explained; in the present instance, although I do not pretend to offer an explanation of the peculiarities of the morbid action, which certainly differs from all those to which it has been assimilated; yet in the circumstances which produce the effusion into the ventricles, there apparently is nothing at variance with the phenomena of effusion into any other cavity, as arising from a previously diseased condition of a viscus, or its investing membranes.

Dr. Quin says, that Hydrocephalus "owes its origin to a morbid accumulation of blood in the vessels of the brain, sometimes proceeding to a degree of inflammation, and generally, but not always, producing an extravasation of watery fluid before death."

I do not mean to question the merit of this ingenious physician, who rectified the error (which rested on the authority of Whytt and Fothergill,) that this disease is a passive dropsy of the brain; and who has done much towards the present improved treatment of the disease; but I fear I cannot accord with his view of the pathology of Hydrocephalus. I am not disposed to cavil at an inaccurate mode of expression; but, in the present instance, the explanation offered appears to arise from a view of the subject, which is not sufficiently clear, to serve as the basis of reasoning and practice.

Without involving myself in a protracted discussion, I would merely observe, that there must be an active before there can be a passive state. There certainly is some change prior to the morbid accumulation of blood. The term, inflammation, may not adequately express this change, but Dr. Quin's view would be less exceptionable had it been thus announced,—That Hydrocephalus owes its origin to a degree of inflammation, which produces a morbid accumulation of blood, and generally an extravasation of watery fluid before death. It must be admitted, however, that it is easier to object to the theories of this dis-

ease, which have been promulgated, than to substitute any thing satisfactory in their place. I have no theory or hypothesis to propose; I have only to observe, that the following stages occur in the course of the diseased action, upon which the symptoms depend; the knowledge of these stages we collect from observation, and more particularly from dissection,—First, there is often disease of a distant part, then increased irritability, which is soon attended with increased arterial action; then absorption of the substance of the brain, next there is venous congestion, and lastly, effusion of serous fluid. There is no proof whatever that the effusion into the ventricles is the cause of any of the violent symptoms. In the chronic form of Hydrocephalus, the effusion is not attended by these symptoms; and there is reason for thinking, that the increased arterial action, though perhaps modified, does not cease even when congestion and effusion have taken place.

Dr. Darwin imputes the morbid increase of fluid in the ventricles, to a debility of the absorbents. An explanation, which appears irreconcilable with the symptoms of the first stage, and with dissection, especially after the more violent attacks of the disease. This would be little more than a return to the exploded opinion of Whytt.

Dropsy, I suspect, never appears before the balance which, in perfect health, exists between the venous and arterial systems is lost, by the inordinate activity of the latter. Serous effusion is one of the long list of evils arising from venous debility. After a certain time, by the laws of our constitution, without any manifest disease, the balance in the circulation is lost: so that, after the prime of life, every year takes something from the vigorous action of the veins, admitting more and more of congestion in that system of vessels; and venous congestion is as distinctly, although less strikingly demonstrated, in the effusion into the ventricles, and upon the surface of the brain, in those who have been long paralytic and infirm, as when it is pro-

duced more quickly by the effects of Hydrocephalus; yet in neither case is the effusion itself, I apprehend, productive of injurious effects. In the early part of Hydrocephalus, when, perhaps, there is arterial action without much congestion although there is irregularity in the excitement, yet increased irritability predominates; but inirritability becomes the prevailing state towards the end of the disease, when, added to increased arterial action, there exists venous congestion also; the vital functions are oppressed; irregularity of breathing takes place; and the pulse becomes slow and labouring.

I have met with a case accompanied with all the symptoms of Hydrocephalus, in which after death there was no fluid in the ventricles.* The disease was in reality the acute Hydrocephalus, which, from the violence of the attack, terminated fatally, as I believe, in the first stage. When, as in this case, the child dies early in the disease, with every symptom of accelerated arterial action, we shall probably find

* Instances of Hydrocephalus are mentioned by several authors, in which the disease early terminated in death before effusion took place. The following case I owe to an ingenious and learned friend.

"The most acute case of Hydrecephalus I ever attended was that of "Captain W———'s child, a boy in his fifth year. He died within eight "days after the first sensible illness, and was confined to bed only four "days. The progress of the disease, though rapid, was regular; the three "stages of Dr. Whytt were well marked. He died, at length, convulsed. "The head was opened. The ventricles contained not more than a table-"spoonful of watery fluid, but the brain was so turgid, that when the bones "were sawn fairly round, the section was forced up half an inch by the sud-"den and forcible protrusion of the cerebrum. Not only the veins of the "pia mater were loaded with blood in a very remarkable degree; the me-"dully substance of the brain was finely dotted with numerous red points, "and the cortical substance streaked with pencils of red parallel lines."

The following is a quotation from Heberden: "Neque tamen perpetuum "est, ut haec signa ex hydrope cerebri nascuntur; etenim vidi ea omnia in "puero, cujus cerebrum non nisi consueta humeris copia humectatum erat, "teste peritissimo anatomico, qui cadaver inciderat."

but little fluid in the ventricles. When, on the contrary, the patient long survives the slow pulse, and when, from the continuance of the disease, we have reason to think that congestion had existed for a considerable time, then a large quantity of fluid may be expected. In such cases, I have discovered within the head little appearance of increased arterial action, as marked by the tissue of minute and loaded vessels; the stage of the disease to which this state of the vessels belongs was over; yet the effects of inflammation abundantly appeared in the effusion of coagulable lymph; in the thickening and greater adhesion of the membranes; in the great congestion of blood; indeed, from the pain, suffusion of the eye, &c. we cannot doubt but that increased arterial action, exists, in a degree, to the last.

The great pain, pyrexia, convulsions, and suffused eye, can scarcely be deduced from a small quantity of fluid in the ventricles, since immense quantities of fluid, of exactly the same nature, collected in the brain, have not produced such symptoms. Persons have lived under chronic Hydrocephalus, after the ventricles were distended with twenty pounds of fluid.* I have in three cases of acute Hydrocephalus, after the child had been delirious, convulsed, and blind, seen him, shortly before death, recover the use of his understanding, and, what was less to be expected, of his sight; the effusion cannot, therefore, be held as the cause of the suspension of the animal functions. It rather appears that death is occasioned by the morbid action of the blood-vessels destroying the brain, or unfitting it for its functions. The brain, when it contains fluid, is not only wasted, but, in general, it is also pulpy and disorganized: and I cannot help thinking, were it possible suddenly to remove the fluid from the ventricles, after a large portion of the brain has been absorbed to make room

* V. Sandifort, 2 vol. I.H. Gaudelius, Dissertatio de Hydrocephalo.

for it, that the patient would soon die, from the sudden removal of the support which the organ receives from the effused fluid, an opinion which is strengthened by the generally fatal effects of tapping the brain in chronic Hydrocephalus.

Could we suspend the diseased action, after the effusion even of a considerable quantity of fluid into the ventricles of the brain, provided its structure were not injured, probably we should find little irregularity or defect in the functions of the body; for, upon dissection, quantities of effused fluid have been found in the ventricles, when no complaint of pain in the head, or symptoms denoting an oppressed brain, had existed before death. Maniacal patients, in whose ventricles many ounces of fluid have been discovered upon dissection, have not evinced any symptoms of Hydrocephalus, or of oppressed brain. Fluid will be found in the ventricles whenever the substance of the brain has been absorbed in consequence of increased action: in dissecting patients who have laboured under a scrofulous disease of the brain, of firm tubercles called scirrhus of the brain, of suppuration from a diseased bone, of the consequence of trepan, I have observed effusion to a great extent: there is scarcely an organic affection of the brain which is not accompanied by serous effusion. The opinion that effusion into the ventricles of the brain is not necessarily destructive, is also supported by the appearances sometimes found in the dissection of those who have had apoplexy. Cavities of a large size, containing fluid, the effect of a former attack, have been discovered in the substance of the brain, and the person has enjoyed good health between the first and fatal attack. Cases are recorded of Hydrocephalus having abated, after the appearance of those symptoms which are generally considered as indicating fluid already effused.

When, from an attack of scrofula, there is a change to Hydrocephalus, it would at first appear that the symp-

toms of the latter were a continuation of the former disease. But there is a difficulty in the way of this conclusion, which inclines me to consider these changes as instances not of mere metastasis or translation, but of conversion. There is a diseased condition of the brain, which is certainly produced by the agency of scrofula, I mean a tubercular state of the brain, and therefore, if a morbid action be uniform when it seizes the same structure, and this I believe is generally admitted, Hydrocephalus cannot well be considered as the effect of scrofula. It would appear that we are not warranted in admitting more than that by the one affection a great tendency to the other is established.

Although Dr. Cullen has considered Hydrocephalus as a variety of apoplexy, there appears to be little affinity between these diseases: age, indolence, and intemperance lead to apoplexy; in their predisposing causes no two diseases can be more unlike. I believe Hydrocephalus was never known to arise from any one of the many occasional causes of apoplexy, mentioned by Dr. Cullen; and of the proximate cause of Hydrocephalus, I have indeed given a very erroneous view, if it be the same with the proximate cause, according to Dr. Cullen, of apoplexy, viz. "some compression of the origin of the nerves." The attack in apoplexy is momentary, in Hydrocephalus it is sometimes gradual; and when those diseases are established, there is as little resemblance in the symptoms as in the mode of attack.

Although I refer most of the symptoms of the disease to the morbid state of the circulation in the brain, I am equally far from thinking with Dr. Rush, that this action resembles that which takes place in phrenitis. To arrive at a just conclusion we may apply the same test, and compare the causes, symptoms, and in particular the morbid changes produced by the two diseases. Now, in these respects, the view which Dr. Rush has taken, appears erro-

neous. Granting that he were right, his opinion is objectionable, both in point of perspicuity and simplicity.

Dr. Rush observes, that the disease in its first stage is the effect of causes which produce a less degree of that inflammation which constitutes phrenitis; and that its second stage is the effect of a less degree of that effusion which produces serous apoplexy, and hence he has been induced to call the former stage phrenicula, from its being a diminutive species or state of phrenitis; for the second stage, he has preferred the name of chronic apoplexy.

Are we to understand that the same causes, operating less powerfully than when they occasion phrenitis, will produce Hydrocephalus? This is not exactly what is expressed, but I rather think it is intended. If not I am at a loss to know what those causes really are which produce a less degree of that inflammation which constitutes phrenitis. The exciting causes of phrenitis, we all know, are excess in wine, external violence, insolation, indulgence in the more violent passions, or indeed excess in any kind of mental exertion. Now children are not usually subject to the influence of any of these causes, if we except external violence. To this, indeed, they are abundantly exposed; and violence being stated by Dr. Rush, in another part of his paper, as a direct or exciting cause of Hydrocephalus, I shall explain the way in which it appears to me to operate in the present case.

I have not met one instance of Hydrocephalus being directly, and I believe only one of its being indirectly, occasioned by external violence. In three cases which I attended, the disease was said to be occasioned by accidents. In two of these, there was an interval of nearly two months of perfect health; therefore, the accident, as an exciting cause, must go for nothing. In the third case, it is noted, that about ten weeks before the boy who was the

subject of it died, he had, while at play, a severe fall upon his head. The scar of a wound on the upper and middle part of his forehead, at the time of his death, was about an inch long. Some days after this fall, he began to complain of pain in his head; but having a severe cold, the headach was supposed to arise from the troublesome cough. The child continued now and then complaining of his head, and coughing; but declining, almost insensibly, until the eighth week after the accident, when he could no longer walk about, and his friends became alarmed, &c. This is the only case in upwards of 100 which I have attended, that can with probability be ascribed to external violence; and I would observe, even in this instance, that an obstinate catarrh was more likely to impair the child's health, and to predispose to Hydrocephalus, than the accident.*

Sometimes, shortly after an accident, there has been observed, as in this case, a drooping state of the patient, with disordered digestion, long before there were symptoms of an affection of the brain. I do not affirm that injuries of the head never give rise to Hydrocephalus; all I contend for is, that in general they do so indirectly, by inducing this disorder of the digestive organs, or by calling into activity what, from good management, or fortunate circumstances, had previously been dormant; I mean a scrofulous condition of the system, which is frequently produced by severe accidents, and which greatly favours the establishment of Hydrocephalus.

From the causes of Hydrocephalus Dr. Rush proceeds to explain the morbid condition of the brain. He affirms, that the two diseases differ only in degree: that Hydrocephalus is only a diminutive species of phrenitis; and in calling the former phrenicula, he is followed by later writers. So far has this view prevailed, that the disease,

* June, 1816. Within the last eight or nine years I have heard of several cases, and have seen one which occurred shortly after a blow upon the head.

undergoing another change of name, has been called Hydrocephalus Phreniticus; and this name has been adopted by some late writers.

Now it ought to be recollected, that Hydrocephalus scarcely ever affects the adult, and that phrenzy seldom occurs in childhood. They are diseases of different conditions of the brain, of the nascent and adult state of the organ. Phrenzy is an endemic disease. Hydrocephalus, I should suppose, to be unconnected with locality, at least it prevails in different situations, both in the new and the old world. Hydrocephalus I have seen mostly in children with dark eyes and complexion; phrenitis is the disease of the sanguine and the choleric. All this would imply something very different in the essence of the two diseases. Hydrocephalus often indeed appears in children who had been previously healthy; yet, as I have already remarked, it is in strumous constitutions, that we meet with the disease most frequently: it often, too, succeeds imperfect recovery from fevers, particularly of the eruptive kind, and attends the debility which follows many infantine diseases. If it be maintained that the cachectic state which follows an injury of the head, arises from the commencing affection of the brain, this, it must be admitted, would evince a truly chronic disease, and one differing widely from phrenzy, which is among the most sudden to which our frame is liable. Lastly, it ought to be recollected, that, in Hydrocephalus, the centre of the brain is the part chiefly affected; at least, in most cases, we find the effusion on the surface of the brain bearing no proportion to that in the ventricles, and the cortical part of the brain is sound, while the central parts are broken and dissolved; whereas the effects of phrenitis are most remarkable in the more superficial parts, being sometimes apparently confined to the membranes. The assertion of Dr. Rush, that the second stage of Hydrocephalus is the effect of a less degree of that effusion which produces serous apoplexy, is gratui-

tous; and the violation of nosological propriety in giving a distinct name, *chronic apoplexy*, to this stage, is unnecessary; for it is not effusion which produces apoplexy; neither, as I have already stated, are the symptoms of the second stage of Hydrocephalus the effect of effusion; nor is the effusion less in degree in Hydrocephalus than in apoplexy.

These observations apply to the disease in which ever of the two first forms it makes its approach. If it be said that, in the second variety, there is much of the violence of a phrenitic attack, it may be urged in reply, that although, as asserted by a very respectable writer (Ludwig,) the attack be modified by the constitution of the child, "Quo robustiores sunt infantes, eo violentior prima morbi "accessio esse solet, et contra," or by some less obvious cause, yet there is an identity of action in all the varieties of this disease, as may be proved by the uniformity of the symptoms in the second and third stages, by the termination of the disease, and by the change produced in the structure of the organ.

Dr. Darwin has said, that "Hydrocephalus internus, "or dropsy of the brain, is fatal to many children, and "some adults. When the disease is less in quantity it "probably produces a fever, termed a nervous fever, and "which is sometimes called a worm fever, according to the "opinion of Dr. Gilchrist in the Scots's Medical Essays." There is an obscurity in this passage which it is hardly possible to dispel. Perhaps, *mutatis mutandis*, I may recur to the form of words used by Dr. Rush, and conceive it to have been Dr. Darwin's opinion that Hydrocephalus is the effect of causes which, when less powerful, produce nervous fever. To nervous fever we have Dr. Darwin's authority for saying, that the typhus mitior is synonymous, but this is very rarely called worm fever, and very erroneously, when so called. Synonymous to worm fever are febris lenta infantum, febris lenta remit-

tens. Typhus, it is generally admitted, is produced by contagion, which, in its progress, it reproduces. For this last disease, Dr. Darwin, as remedies, advises stimulating medicines: wine, opium, &c. Now we certainly are so little assisted by this analogy, that we may dismiss it without any ceremony. If there were any merit in Dr. Darwin's opinion, it rather appears due to Dr. Macbride, who has said "that the disease which Dr. Whytt has described so accurately, under the name of the internal dropsy of the brain, appears to be a nervous fever, and might rather be termed the Hydrocephalic fever, as the appellation of dropsy gives an idea of a chronic disease. It is peculiar to young subjects, and is the most deceitful of all febrile diseases, beginning for the most part like a common fever, &c."*

To conclude, Hydrocephalus appears to consist in a diseased action of a peculiar kind, but of what kind we can as little explain as we can the nature of the scrofulous or syphilitic action. Our object, therefore, here, as in these diseases, is to register and arrange every essential fact, and never to relax in our inquiry, until by this induction we shall arrive at a successful method of practice.

Before entering upon the consideration of the plan of treatment, I beg leave to recapitulate some circumstances characteristic of Hydrocephalus, which appear upon taking an attentive view of that disease.

1st. Hydrocephalus often arises after a manifest disorder of the digestive organs has existed for a considerable time.

2dly. The symptoms of the disease, when of short standing, often disappear while we are correcting the state of these organs.

* Methodical Introduction to the Theory and Practice of Medicine, vol. ii. p. 49.

Are we not justified by every analogy in stating, as a thing probable in the highest degree, that Hydrocephalus often arises from the brain sympathizing with the disordered condition of the liver and alimentary canal?

3dly, In its first stage, Hydrocephalus is evidently attended with a considerably increased arterial action.

4thly, This disease differs essentially from fever, apoplexy, or phrenitis.

5thly. Several diseases seem to produce a disposition to Hydrocephalus.

6thly. But, in as far as we know, scrofula alone is liable to mutual conversion with Hydrocephalus.

7thly. Increased secretion of urine, and profuse sweating, especially from the head, have occurred when this disease was terminating favourably.

In the progress of Hydrocephalus we have reason to think that the state of the brain undergoes considerable changes. Even when the disease is so far advanced, that the patient is feverish, averse to light, sick, disturbed in his sleep, in short, alarmingly ill, were life then terminated, dissection might not display any very striking remains of increased arterial action: in cases in which from the symptoms there was no doubt of the existence of Hydrocephalus, diseased appearances have not been discovered in the brain; we however know, from dissection, that before the patient has continued for many days in this alarming state, sufficient proofs of the existence of arterial action may generally be detected. When the pulse is becoming irregularly slow, the effusion is probably beginning; and, when the torpor has been of some continuance, and the pulse again quick, all the remains of increased arterial action,—opacity and adhesion of the membranes, great congestion, effusion of coagulable lymph and serous fluid, and even a change in the structure of the brain, may be detected. When there have been convulsions or paralysis,

we shall discover all these appearances of increased action, the effusion being relative to the duration of the disease.

One class of medicines, or one kind of regimen, can scarcely be expected to suit all these states of the brain; on the contrary, it is probable that every different stage, certainly every different form of the disease, requires a considerable difference of treatment.

I have made the general history unusually full, as the early detection of the disease is one great object of this essay; and on the second or third day from the commencement of the attack, it often appears with so distinct a character, that all the danger is laid open to the diligent inquirer; and without delay he must employ the most active measures: there is no time for regulating his practice by the result of doubtful remedies. For this disease, which unfortunately he has too often to encounter, the physician must always be on the watch: whenever a child complains of head-ach, he ought to procure a history of the case previous to this complaint, and to examine it in connexion with every ambiguous symptom. In a small note-book, I have the following scheme of Hydrocephalus, and while prosecuting my inquiries into the nature of that disease, I have frequently had recourse to it, and not without advantage.

Constitutional tendency. Hydrocephalus a disease in the family. Scrofulous constitution.

Previous diseases. Exanthemata; fevers; disorders in the alimentary canal; injuries of the head; scrofula active.

Precursory symptoms. Uncertain appetite; defective secretion of bile, and irritation of the mucous membrane of the stomach, evident in the sickly breath; white tongue; tumid hypochondria; torpid and irregular bowels, and unnatural stools; disturbed sleep, occasional languor

and drowsiness; loss of the usual freshness of the complexion and natural softness and transparency of the skin; transient headach or giddiness; flashes of light seen, especially in the dark, epistaxis.

1st, Or stage of increased sensibility. *Expression.* Contracted pupils; absent, or reserved and timid manner; aversion to light and sounds. Sighing. *Febrile symptoms.* State of the pulse and tongue; general irritability; watching; starting from sleep; headach; sympathetic pains. *State of the abdominal viscera.* Vomiting; nature of the stools; pain in the bowels; fullness or tenderness of the belly. Smell of the breath.

2d, Or stage of torpor. *Pulse.* Irregular; unequal; slow; how altered by exertion. *Breathing.* Low, irregular, suspirious. *Expression.* Subdued manner; enlarged pupils; slight strabismus; lethargic. *State of the intellect.* Incapacity of attention; immediate exhaustion soon after every effort, mental or bodily; tendency to delirium; pain indistinctly complained of. Urine; stools. Changes in the excitement.

3d, Stage. *Expression.* Vacant;—permanent suffusion of the eyes; occasional suffusion of the countenance; hectic flush. Quick and thready pulse. *State of the intellect.* Insensibility, raving, coma, with an occasional recovery of the powers of the mind. *Palsies and convulsions.* State of the pupil; squinting, sawing with one hand, opposite side palsied. Hurried respiration; purple, then sallow, and marbled complexion. Manner of death.

In Hydrocephalus, the chance of cure depends, in a great degree, upon the duration of the symptoms; if early discovered, although a dangerous disease, it ought not to

be considered as incurable ; while a doubt with respect to the nature of the disease remains, or in other words, until the disease is in a hopeless form, some authors, on the subject, and several physicians with whom I have acted, proceed as if the symptoms arose from worms, or some cause of irritation, unconnected with the state of the brain. After what has been written I need scarcely say, that when our fears are once awakened, we ought not to lose an hour in prescribing the remedies from which we might expect benefit, were the disease in the most unquestionable shape.

I now proceed to the indications of cure, which are,

I. To remove from the system every irritation which may have given rise to the diseased action in the brain, or may have assisted, by morbid sympathy, in prolonging it.

II. To diminish the increased activity of the circulation in the brain.

III. To alleviate pain and sickness.

IV. To support and renew the strength ; to recruit it more particularly under any critical discharge.

In attempting to explain the best mode of fulfilling these objects, I would observe, that the cases which are added to this essay shew that the disease will yield to different methods of treatment, and that some of the remedies which are recommended are opposite in their tendency to others. This seeming inconsistence, while it points out the necessity of unwearied attention on the part of the physician, can be reconciled by keeping in view the general indications of cure. I would also observe, that this is one of those diseases too little contemplated by theoretic writers, in which the state of the organ affected appears at variance with the state of the system; in which, as the increased action of the vessels of a part follows general debility, we must, in order to avoid impending destruction, employ

measures contraindicated by the existing diathesis. It may be added, that there is no disease which is more influenced by the age, constitution, and temperament of the patient.

Our attention, in the first place, must be directed to the state of the alimentary canal.

In perhaps every instance, upon the first appearance of symptoms of Hydrocephalus, it will be proper to use some active cathartic medicine, and to repeat such medicine as circumstances may require. But, should we ascertain that the alimentary canal is torpid, and imperfectly performing its functions, that it is full of fæculent matter, or that the secretions flowing into it are vitiated or diminished in quantity, which we infer from the appearance and pungent fætor of the stools, we must, by steadily pursuing the purgative plan, endeavour to effect a change in them. While we are producing a change in the appearance of the stools, by the continued stimulus of suitable cathartics, we may possibly effect a most important change in the hepatic system, alimentary canal, and all the parts which are connected with them.

In the commencement of the disease, we ought to prescribe the largest dose which can with safety be given, of some powerfully cathartic combination, of which a mercurial ought to be an ingredient, two, three, or four times a day, and this to be continued for several days, or until healthy stools are procured. The advantage of keeping the liver and intestinal canal under the continued influence of purgatives, is often very remarkable, more especially when the stools obtained are large and fæculent.

But not unfrequently the most active purgatives will be unavailing; which arises from an excitement of the mucous membrane, and perhaps in part from an inverted motion of the alimentary canal. As combined with nausea, it is always difficult to rectify this condition of the bowels; but when the strength of the patient is such as to

render the practice admissible, it will best be remedied by general blood-letting.* After blood-letting, a drachm or two of magnesia saturated with lemon juice, given every second or third hour, will often be more effectual than the most powerful purgatives.

These observations apply to the disease, from what cause soever it may have arisen; not so the following. The family constitution; the constitution, age, and strength of the child; the immediate and remote causes of the attack, and the symptoms present, must be taken into account. By these considerations, at least in as far as blood-letting is concerned, the remaining part of the plan will be regulated. I conceive that the physician who, like Dr. Rush, recommends very free blood-letting in all cases, and he who, considering Hydrocephalus as a passive dropsy, or diease purely of debility, altogether proscribes bleeding, are equally mistaken in their practice.

In most cases, local bleeding by leeches, or cupping, or general blood-letting from the external jugular vein or temporal artery, according to the state of the pulse, and strength of the patient, must be practised. This evacuation will not only bring down the pulse, and relieve the pain, but it will be of signal service in preparing the way for other medicines, whether they be such as correct any disordered functions, or modify local or general arterial action.† But I am convinced that blood-letting, unless in very

* The mode of correcting the disorder of the bowels will be explained more fully in Essay 2d.

† In Macgregor's Med. Sketches of the Expedition to Egypt from India, 178, there is a confirmation of this opinion, with respect to the assistance derived from bleeding, when we would ensure the speedy effect of mercury. He writes thus, while treating of Hepatitis. "Sometimes in Egypt, and in "many instances in India, I have observed that I could not affect the gums "with mercury, or with acid, till venesection was performed. After this "operation, I have often succeeded, and induced a flow of saliva, in cases "which had long resisted a liberal use of mercury and nitric acid." I conceive that we must, in a great degree subdue the violence of the inflammation

robust constitutions, or in the second variety of the attack, is not always to be repeated without danger; on this subject, however, the reader is referred to the cases. In these he will discover that the amount of blood to be removed must depend upon the existing circumstances of the case, and in particular the form which it assumes, rather than upon any special therapeutick rules. There are cases of Hydrocephalus in which it is necessary to carry bloodletting to an extent which would suffice for the cure of the most violent phrenitis; and it may be added, that in cases in which we are unable to discover any disorder in the viscera of the abdomen, we must in the commencement treat the disease as if it were one of the phlegmasiae.

I have frequently ordered leeches and blisters to the region of the liver, to prepare the way for, and co-operate with purgative medicines of the cholagogue class, in restoring that viscus to a proper performance of its functions; and great relief has been obtained from these applications, in many instances.

After endeavouring to subdue the disorder in the bowels, there ought to be no delay in commencing a course of mercury, which, it must be allowed, has cured Hydrocephalus, even when far advanced. In the practice of Percival, Dobson, and others, this medicine has been successfully administered, and some of the cases subjoined will place the virtues of mercury in a strong light: and the observation, that when the mercurial influence has been fully established, the course of the symptoms is interrupted, and the termination of the disease, although fatal, is unlike that which takes place when mercury has not been used, should

in Hydrocephalus before the system will submit to the influence of mercury. I believe this principle is of general application, and ought not to be overlooked when mercury is to be given, particularly in diseases of high action. The vigor of the system, in robust young men, must be brought down by confinement and a reduced diet, when we would bring on a salivation for the cure of the venereal complaint, which shews that even the vigorous state of the vessels in health is unfavourable to the mercurial influence.

give us more confidence in that remedy. After the establishment of a salivation the convulsions have been suspended; the senses, both external and internal, restored; the disease has appeared to be checked, but the debility was such, that the vital functions languished, and the constitution had received so great a shock, that every effort to sustain them was unavailing.*

The digitalis purpurea has repeatedly been recommended for the cure of Hydrocephalus. I have not used that medicine frequently, and some of the cases in which I prescribed it were nearly hopeless when I took charge of them; therefore the observations upon it which I have to make will be few. Yet I cannot be altogether silent, as I have observed it productive of a great, and in two cases, I conceive, of a salutary influence. Of these cases, which are added, I shall however leave the reader to form his own opinion.

Digitalis operates so differently on different constitutions, that it must be considered as a medicine of great uncer-

* Zoonomia, Class I. 2, 3, 12. "A solution of hydrargyrus muriatus, "corrosive sublimate of mercury, three grains, dissolved in an ounce of recti- "fied spirit of wine, is said to produce instantaneous and violent salivation as "described Class II. 1, 5, 1. Could a small quantity of this violent stimu- "lus be used, according to the age of the child, with probable good effect? "Could the trephine be used with safety or advantage, when the affected side "can be distinguished?" Turning to Class II, 1, 5, 1, we find it stated that "Mr. Wright, an elderly surgeon in Derby, thirty years ago assured the "author, that he had frequently given half a drachm of corrosive sublimate "as an emetic, without any inconvenience to the patient."

All this appears very inconsiderate; and it is the more objectionable, as proceeding from a physician, whose writings, from the extent of his observation, are of good authority. The suggestion about the trephine is innocent, as no surgeon in his senses would, in such a case, listen to the proposal: even the mentioning such a thing betrays an ignorance of pathology very unworthy of the author. But this recommendation of corrosive sublimate ought to subject the author to the severest censure; as an inexperienced person, when he reads that half a drachm of this drug had been given by an experienced surgeon, might be induced to prescribe it in a smaller but still a fatal dose.

tainty, requiring in all cases to be very cautiously managed. I have found an adult, from constant tendency to deliquium, pain in the temples, and depressing pain at the pit of the stomach, unable to bear thirty drops a-day of the same preparation (the saturated tincture) of which I was giving daily to a child, four years old, 120 drops. We cannot, before trial, say what quantity of this medicine a patient can bear. The effects of it have little analogy with those of most narcotics. An under-dose of opium will produce, in an inferior degree, a similar effect to that which is produced by an over-dose. Ten drops of laudanum will, in most constitutions, induce languor; fifty drops, profound sleep. But of tincture of digitalis, although fifty or sixty drops would, in most constitutions, occasion vertigo, sickness, great prostration, in some, for aught I know, death; yet ten drops in the same persons would not produce the slighest effect; therefore an under-dose of this medicine will go for nothing. Again, digitalis does not act with that uniformity which we observe in the operation of other medicines: before trial we cannot say what part of the system will be affected by it. Moreover we cannot, by gradually augmenting the dose, give, without danger, what, in the first instance would be an overdose, as we can of opium; for instance, beginning with forty drops of laudanum, we may bring the dose to four hundred, to what, in short, were the system not gradually inured to it, would be a fatal dose. But when we give the tincture of digitalis so as to affect the heart, brain or stomach, we must stop short. We cannot, without danger, further increase the dose; indeed we cannot always continue it: if we were to push the medicine beyond this point, we might destroy our patient. The system is often brought under the influence of the fox-glove, by continuing a dose, which at first appeared to produce no effect. Yet this will not avail a patient in Hydrocephalus; for in a disease so acute, the patient must speedily be placed under the influ-

ence of medicine. Lastly, the effects of digitalis are more permanent than those of many other active medicines derived from the vegetable kingdom;—the effect of digitalis has been discovered in the pulse several days after the patient had discontinued taking it. However, what I have said of the danger attending the administration of this medicine is derived from the observations of others, or from my own experience of its effects in the adult constitution, and in other diseases. There appears to me something, either in the nature of the system while under the influence of Hydrocephalus, or in the infantine constitution, independent of disease, which resists the powers of digitalis.

The method which I have followed in using digitalis is the most obvious: it accords with the view which I have given of its powers, and does not appear ill adapted to the attainment of a safe and quick effect. I begin with a moderate dose, ten or twelve drops of the saturated tincture; and to every succeeding dose, which is generally given after an interval of four hours, I add two or three drops; so that in a day or two, generally some part of the system is affected. I proceed with great caution, ascertaining, while augmenting it, the effect of the medicine after every increased dose.

In prescribing digitalis, there is a circumstance peculiar to Hydrocephalus which is productive of considerable embarrassment. The effect of digitalis resembles the change which takes place in the system on the approach of the stage of torpor; and thus, when it is most desirable to give the medicine in a full dose, we are induced to suspend it altogether, from a fear lest it be acting too powerfully. Digitalis renders the pulse slow and irregular, and induces great languor. But with the slow irregular pulse from digitalis there is smallness and sharpness; with that of Hydrocephalus there is softness and inequality,—and more of fullness. The languor from digitalis is attended with vertigo, some-

times momentary blindness; that from Hydrocephalus has more of coma in its character.

In the cure of some forms of Hydrocephalus, digitalis appears a medicine of great promise; and when the manner of administering it is better understood, it seems probable that our hopes will be realized. But the value of this medicine has yet to be determined by future trials.

Blisters are to be employed with the view of producing irritation in the neighbourhood of the diseased organ. After the first stage, large blisters round the head, to the forehead, occiput, and sides of the head, should be applied in succession, and the surfaces drest with strong mercurial ointment. In the course of one illness I have ordered nine or ten blisters to be applied.

Of the utility of blisters, in many diseases, physicians differ more than might be expected in a point which is to be decided, not by reasoning, but by experience. In several cases of Hydrocephalus I have witnessed a remarkable mitigation of symptoms after the application of a blister. When the local irritation has been such as to call the general circulation into sympathetic action, as soon as a sufficient impression on the circulation has been made by blood-letting a blister ought to be applied to the nape of the neck, or between the shoulders. The head itself ought to be reserved for the second stage of the disease. Bleeding, independently of its importance in reducing the strength of the circulation, so as to deprive it of the power of supporting the diseased action, is of great relative value; for it renders the system more sensible to every impression, it prepares the way for other agents, and in particular for blisters; and blisters, although singly they may not cure the disease, are very powerful auxiliaries.

To allay the pain of Hydrocephalus, when not attended with stupor, opium has been recommended. Joined with an aromatic, opium sometimes corrects bilious vomiting and purging, and this remedy is the more certain in its effects

if used after bloodletting. Cold applications to the forehead and temples generally moderate the pain in Hydrocephalus, and ought always to be employed. A blister to the nape of the neck will often remove the intense headach which sometimes accompanies the attack of continued fever; in Hydrocephalus it may be applied for the same purpose, more especially after venesection.

Much has been written on the best method of restoring the strength after disease. On thus subject I have little to offer which is not generally known. When a great cause of irritation is removed a very liberal supply of nourishment is less necessary than is generally supposed, the principle in such cases is well understood, namely, to adapt the food to the weakened powers of digestion, and the exercise to the reduced muscular strength of the patient; on the one hand excess must be avoided, and on the other fatigue.

When the first stage of the disease is over, it will be of importance to support the strength of the child by suitable nourishment. This must be done by broths and gellies, by asses milk, or breast milk. There are times when the patient will take nourishment greedily : it is plain that these are to be taken advantage of, since the disease is sometimes fatal from mere debility after the diseased action appears to be subdued. Should there be any critical discharge, of course this indication will merit the more attention : the discharge must be encouraged, while, at the same time, the strength is carefully sustained.

Of the method of preventing Hydrocephalus, what I have to say, although short, is not unimportant. The mother must be taught to attend to, and understand every irregularity in the state of her child's bowels. It is not merely costiveness which is to indicate the necessity of a course of purgatives : costiveness is not to be neglected, but constitutional slowness of the bowels may perhaps exist without danger. Attention must be paid to every

deviation from a natural appearance of the evacuation from the intestines; and when the child is attacked with pyrexia, irritability of the stomach, fullness of the hypochondria, and when purgatives produce mucous rather than fœculent stools, the case does not admit of delay. Were I to explain further what I conceive necessary when Hydrocephalus is a family complaint, I should be led into a wide field of discussion, nothing short of the application to this subject of every part of the Hygieine; and the cases which are subjoined have rendered this Essay much longer than I originally intended. One observation, however, I may be allowed to add, that the alliance between scrofula and Hydrocephalus is never to be forgotten; that when scrofulous affections have been changing their form, or shifting their ground, they are very apt at last to lead to Hydrocephalus, and that the remedies which are of most use in scrofula, namely, occasional mild purgatives, as rhubarb, magnesia and lemon juice, the tepid salt bath, alkalies and bitters, a light and nourishing diet, change of air, and a good deal of moderate regular exercise, always appear to have a salutary influence on those who might be expected to fall into Hydrocephalus.

ON

HYDROCEPHALUS ACUTUS.

ESSAY II.

IN a great proportion of the cases of Acute Hydrocephalus, which have fallen under my care, before any affection of the brain could be perceived, there were various symptoms of disorder either of the secerning part of the liver, or of the mucous surface of the stomach and intestines; and, in many of these cases, the Hypochondria, in the early part of the disease, were tumid, the liver was enlarged, sometimes it was the seat of pain, at other times great uneasiness was occasioned when moderate pressure was applied to it, through the integuments of the abdomen.

In many dissections made after Hydrocephalus, the liver has been found with the stamp of inflammation:—enlarged, tied to the peritoneum by preternatural adhesions, studded with tubercles, and otherwise differing from its sound state; vivid remains of inflammation in the intestinal canal have also appeared, and sometimes those constrictions and volvuli which are the effect of irritation and spasm in the primæ

viæ; lastly, there has been observed considerable enlargement of many of the mesenteric glands.

Hydrocephalus often follows febrile eruptive diseases, which observation was remarkably exemplified in 1808. The most fatal Epidemic, for the time it lasted, which had visited Scotland in the memory of man, was the measles of 1807 and 1808. In April, May, and June, 1808, I attended five cases of Hydrocephalus, all of which appeared within eight weeks after measles. The Exanthemata, every Physician knows, often leave the bowels in a very disordered state: in Scotland, even the common people universally employ cathartics to carry away the *dregs* of the measles. Primary affections of the abdominal viscera, such as infantine remittent fever, are apt to wear the mask of Hydrocephalus, nay, have frequently degenerated into that disease; and scrofula, which is generally attended with a disordered state of the bowels, often ends in Hydrocephalus.

In many instances, a combination of symptoms which might be fairly imputed to the formation of Hydrocephalus, has yielded to a timely exhibition of cholagogues, which, while they improved the character of the fœcal discharge, reduced the volume of the liver, and restored the functions of the stomach.

Such were some of the considerations which led me to conjecture that the affection of the brain, in Hydrocephalus, is often secondary: that, in many cases, it is owing to irritation in the abdominal viscera, and especially in the liver. This doctrine forms one of the principal features of my first essay on Hydrocephalus, published in 1808.

I have now the satisfaction of knowing that several professional gentlemen of eminence, both in London and Dublin, have long entertained nearly the same opinion. It is twelve years since Dr. Curry, of Guy's Hospital, in his lectures on the practice of physic, began to announce an ingenious pathological theory, with respect to the influence exerted by certain diseased states of the liver on

the whole constitution, or on some individual organ. From a general view of Hydrocephalus, and a comparison of it with other diseases of the brain, he was led to the conclusion, supported by the most effectual means of cure, that the affection of the brain, though the immediate cause of death, when the case ends fatally, is, in general, only a consequence of inflammatory irritation, with diminished or altered function of the liver. Mr. Thompson, of Sloane-street, found that evident marks of inflammatory action existed in the liver, in nine dissections of Hydrocephalus out of eleven which he had made. In one of the remaining dissections, there was intus-susception of the jejunum, in the other, marks of inflammation through the greater part of the colon. And he asserts, that in a majority of the cases of that disease, the organs of digestion are in fault before the head appears in any degree affected, and he adds, that in every opportunity which he has had of observing the earliest approaches of Hydrocephalus, the bowels have become first irregular, the stomach acescent, and the stools, whether procured by medicine or not, have been fœtid or clay coloured, displaying defective action of the liver, and an imperfect formation of bile. To these observations he has added a faithful account of the manner in which the disorder is transferred from the abdomen to the brain, in those who are predisposed to Hydrocephalus. Lastly, many years ago, Dr. Boyton, the learned professor of the institutes of medicine in the school of physic of Dublin, was also led to think that Hydrocephalus originated in the abdominal viscera, from finding that cathartics were the only means of relief. In the course of a long practice, he has noted fifteen or sixteen cases of Hydrocephalus, nascent or confirmed, which were relieved by purgative medicines, namely, mercurials combined with antimonials and the common purgatives.

For some time after the publication of my first essay, I

received no encouragement, even from my professional friends, to pursue an investigation, whose object was to establish the secondary nature of the affection of the brain, in many cases of Hydrocephalus. But, at last, finding that I was not singular in that view of the disease, I was led to resume the inquiry, and again to court every opportunity of improving my acquaintance with the disease and its anatomy, in hopes of arriving at information of a more satisfactory and conclusive nature. Of late, my opportunities have not been so favourable as they were formerly. For the last five or six years, I have not had the same opportunity of selecting cases which I formerly possessed, nor indeed do I think Hydrocephalus quite so prevalent in Ireland as it is in Scotland. However, losses and apprehensions in my own family, and the distress of one or two of my friends, occasioned by this disease, have made it a subject of frequent consideration with me, and have induced me to try new modes of practice, some of which I now proceed to submit to the reader.

A medical writer of considerable erudition, the late Dr. Parr of Exeter, has declared that he can see no means of accounting for the symptoms of Hydrocephalus, but "from supposing an original defect in the organization "of some part of the brain itself." He rests with great complacency on this opinion, because he thinks it explains, and ought to reconcile us to, "the want of success which "has attended every plan of treatment;" and in concluding that the disease is incurable, he more than insinuates that those practitioners who imagine they have succeeded in subduing Hydrocephalus, have mistaken some other disease for it.

Dr. Parr does not allege that his idea of the cause of Hydrocephalus is supported by dissection, but he tells us that anatomists have examined the brain in a very superficial way; for, when "the vessels are found peculiarly "turgid, or the ventricles preternaturally filled, they have "been contented with the success of their researches." I cannot allow this charge to pass without comment. The turgescence or emptiness of the vessels, and the quantity and quality of fluid in the ventricles, are, it is true, objects of attention, but surely every experienced dissector looks a little further. He examines the size and form of the cranium; the state of the membranes, with a view to an increase of minute vessels, to thickening, opacity, adhesion, or to effusion of lymph. He examines the substance of the brain, to detect depositions of new matter, collections of pus, or extravasations of blood, or to detect changes of structure, such as unusual solidity, hardness, enlargement, softness, or pulpiness of the brain; and, in particular, he is attentive to every appearance of diseased action of the vessels of the brain, or any of its parts. He examines the ventricles, to discover dilatation partial or general, or increased vascularity. In the base of the brain, he looks for disease in the larger vessels, for wasting or transparency of the nerves or for tumours pressing on their origin. Finally, he raises the tentorium, and subjects the cerebellum to a scrutiny equally rigorous. So that if there were any original defect of organization, it could scarcely escape the observation of any man who has the least pretension to be called an anatomist.

If we consider that the brain may perform all its functions for many years before it becomes a prey to Hydrocephalus, and even that the formation of the disease may be owing to accident or mismanagement, Dr. Parr's assertion will appear as improbable as it is unfounded. But I feel more anxious to protest against another of his opinions, although casually introduced, namely, that Hy-

drocephalus is incurable under any plan of treatment; because, while it must obstruct the progress of inquiry and improvement, it is calculated for pretty general reception, as it will probably be adopted, as an apology for indifference, by all who are without inclination for the study of their profession.

Every disease whose tendency is to destroy a vital organ, becomes, in unskilful hands, an incurable disease. Thus, for example, Croup may be considered incurable: there are large districts on the eastern and northern coasts of Ireland, in which, I understand, every child perishes who is severely attacked with Croup. When we dally with that disease in the first stage, not one in twenty will recover; whereas, if the treatment in the first stage be judicious, there will not be one death in twenty, nor perhaps in a hundred. It is not long since Physicians were more ignorant of the nature of Croup than they are now of Hydrocephalus; the day is perhaps not distant, when, better understanding the nature and import of its early symptoms, Hydrocephalus also may lose much of danger. In this inquiry some progress has already been made.

It is well known that Hydrocephalus prevails in particular families, so that many or most of the children perish thereby, and hence a defect of organization has been inferred, and the disease has been accounted hopeless when it appears under such circumstances; but, in truth, it is not so. In families thus predisposed, the early symptoms of Hydrocephalus are very often relieved. It is certain also, that, with a view to prevention, much may be done by correcting every disorder in the natural functions, by carefully selecting a nurse of a temperament as much unlike the mother's as possible, by relieving morbid determinations, or, in alarming circumstances, by inducing new actions in the system. The following is an illustration of what

may sometimes be done, in counteracting the effects of a family tendency to Hydrocephalus.

In ———, ten children of the same parents died of Water in the Brain; in the eleventh and last, by the advice of an eminent Surgeon, lately deceased, an issue was established. This child grew up, and became the mother of fifteen children. Seven of these children, in whom issues were not made, died, with all the symptoms of Hydrocephalus; the other eight children were alive in 1814; in six of these issues were made at an early age; and in another, at the time I received my information, an issue was resolved upon being made, in consequence of a threatening of Hydrocephalus.

Some of the viscera are so placed, that we have no means of proving the existence of their diseases, during the patient's life, but by their functional disorder. This is more especially true of diseases of the brain. If a plethoric man, about the fiftieth year of his age, of a full habit of body, and accustomed to the luxuries of the table, should fall down in a fit; if he should afterwards continue insensible, breathe with stertor, and lie with a full slow pulse and flushed countenance, and then recover upon being let blood, there would be no hesitation in saying that he had recovered from a stroke of Apoplexy. It may be safely affirmed, that the diagnostics of Hydrocephalus are as certain as those of Apoplexy; and, if there be any reliance on the testimony of physicians, there is not a symptom, or combination of symptoms, belonging to Hydrocephalus, from which children have not occasionally recovered. The evidence of recovery from the one disease, is quite as good as from the other. In Hydrocephalus, so long as the pulse continues steady and the breathing natural, we are not to be prevented by the most alarming symptoms,—by strabismus, blindness, or even convulsions, from an employment of active remedies. If we succeed in restoring one patient out of an hundred, it ought to be con-

sidered a sufficient compensation for uniform, and patient attention to the treatment of the advanced stages of the disease.

At present I am considering the treatment of Hydrocephalus, chiefly after its symptoms are unequivocally established. I have some satisfaction in thinking that I have already contributed towards fixing the practice in the early part of the disease. From a conversation which I had with my respected friend Dr. Hamilton, of Edinburgh, in 1805, it appeared that he, as well as myself, had used cathartics with advantage, for the removal of the precursory symptoms. The confidence which I was then gaining in that practice, was strengthened by a discovery of the following passage in the works of the late Dr. Macbride: "A very eminent and experienced physician of this kingdom, (Dr. Halliday, of Belfast, in a letter to the author, January, 1772,) having occasion to mention the Hydrocephalus internus, puts the query, "Is this disease ever removed?" and adds, "certain it is, that no child could have more "evident symptoms of it, than a little one of Mr. ———, "whom I visited about a month ago; vomiting in the "beginning, perpetual stupor afterwards, with a slow "pulse and respiration, pupils astonishingly dilated, and a "total loss of vision; yet he emerged. His head was "blistered, acrid cataplasms were afterwards laid to his "feet, and he was largely purged with jalap and calomel; "he is now perfectly well." "This," continues Dr. Macbride, "appears to be the rational scheme of treatment, and, if there be a possibility of resorption of the serum, may perhaps sometimes succeed. The author himself," he adds, "once had the care of a boy, about four years old, where the symptoms were nearly similar, and who escaped, after very violent purging by means of calomel and resin of jalap. The bowels had been so insensible to every thing before tried, that it was deemed proper to venture upon this drastic purge."

This passage shews the desperate circumstances from which patients, labouring under Hydrocephalus, will sometimes recover; and when I was searching for authorities, it was of great value to me, as it contained a distinct notice, probably the first, of the advantage sometimes obtained from cathartic medicines. Notwithstanding these obvious inferences, it does not appear that Dr. Macbride, or his contemporaries, employed cathartics in any other case. It is true, Dr. Quin, in his treatise on Dropsy of the Brain, perhaps the most valuable work which has been published on the subject, recommends cathartics in such doses as are found sufficient to keep up regular discharges. Calomel is the cathartic he has fixed upon, all additions to it being avoided lest they should produce nausea. But in prescribing calomel in this way, his only end is to remove plethora. Nor does he think it necessary to have recourse to cathartics when the bowels are free.

Dr. Quin's work did not produce that change in the practice which might have been expected. For a good many years after it was published, physicians, conceiving Hydrocephalus incurable, were willing to believe that the early symptoms were the effects of dentition, fever, worms, or some other disorder of the stomach and bowels; they temporized as long as they could, and at last when all doubts of the nature of the illness, and all hopes of saving the patient were removed, by the appearance of the symptoms of the second stage, conforming to a common routine, they blistered the head, and, often without any precise object, they began a course of mercury; some applied leeches to the temples, and others prescribed diuretics, such as digitalis and squill along with mercury. When a physician begins to despair of success, his loss of confidence is very soon communicated to his patient's friends, and his directions, perhaps not too late to be availing, are neglected, or imperfectly obeyed. Yet, notwithstanding all the defects of the curative process, a few recoveries from Hydro-

cephalus took place, but when they were recorded, instead of causing more attention to the examination of symptoms, and greater vigour of practice, they appeared so improbable, that the reporter was supposed to have mistaken the nature of the attack.

The following is the treatment which ought to be employed when there is reason to apprehend the formation of Hydrocephalus.

The state of the hypochondria, the nature of the stools, and the other excretions, the appearance of the tongue, and the smell of the breath, ought to be examined with care. If the patient wince when the right hypochondrium is pressed, leeches ought to be applied to it, or the margin of the ribs may be cupped and scarified; if there be much pyrexia with head-ach, blood must be drawn from a vein or from the temporal artery. Then cathartics are to be given to promote, and, if necessary, to alter the secretions: generally calomel, with small doses of some common purgative of an active kind, as rhubarb, jalap, or scammony, with aloes; if there be a sickly smell of the breath, and fullness and uneasiness at the pit of the stomach, an irritation of the mucous membrane of the intestines is denoted, which is sometimes relieved by mild antimonials; these consequently are to be added to the cathartics; squill may also he exhibited with the same view, more especially when the urine is deficient. If the stools be dark green and glairy, most probably the common cathartics will have little effect; indeed we cannot expect that they will change the nature or appearance of the secretion, which issues from an organ over which they have little controul.

Even calomel, the medicine from which most might be expected, is sometimes inert as a purgative, and has no influence over the system as a mercurial, and this seems to arise from want of suitable preparation. In the cases in which Hydrocephalus seems most remarkably to have its source in a disorder of the abdominal viscera, and in

which the cure is to be effected by exciting these organs to free secretion, we are generally unable, after the first day or two, to effect that purpose by direct means.

It is a well known law in pathology, that if a gland be excited beyond a certain point, it is no longer able to perform its secerning function, and when so circumstanced, a stimulus applied to it, instead of restoring secretion, often encreases the vascular excitement upon which its interruption depends. In Hydrocepalus, the biliary secretion is generally languid as well as vitiated; and the presumption is strong, that this condition of the bile depends upon the general vascular excitement of the liver. If the viscera of the abdomen, and particularly the liver, are in a state of high irritation, this irritation ought to be allayed before the stimulus which increases their secretions can be employed with advantage, or even with safety. The true practice is, in the first place to reduce arterial action by venesection, or by topical bleeding and blistering, and then to restore the secerning function of the viscera by means of calomel and other cathartics.

In high degrees of vascular excitement of the liver, as for instance in hepatitis, mercury, which is the specific remedy, is beneficial or injurious, according to the condition of the liver when it is administered. It is injurious till, as Dr. Johnson says, "the inflammatory congestion in the liver is relieved by free blood-letting."* I formerly quoted a passage of a similar import from Dr. Macgregor's Medical Sketches. The power of blood-letting in forwarding the operation of mercury, might be shewn by a number of cases and observations. In the endemic hepatitis, described by Mr. Chisholme,† the practice pursued, with remarkable benefit, was to let blood freely in the first instance: "after the third blooding," he remarks, "we gave from two to seven grains of calomel, with from one

* Influence of Tropical Climates, &c. p. 282.

† 1st Volume, 2d Decade, Duncan's Medical Commentaries.

fourth of a grian to a whole grain of opium, three times a day. This practice, continued for two days, brought on a copious salivation; when this was effected, we considered the patient out of all danger, and it was astonishing how readily cases of the most dangerous tendency were cured by this method in a few days." I need scarcely observe, that the salivation could not have forwarded the cure. The *tone* of the vessels of the whole system, and consequently of the liver, having been previously reduced by the venesection, the glands were again in a condition to obey the stimulus of mercury, and the bile was restored. The salivation was merely a collateral effect, and by no means necessary to the relief of the patient. If I recollect right, some satisfactory illustrations of this pathological view might be derived from the writings of the late Dr. Rush of Philadelphia; for example, he says, "to enable mercu- "cury to produce its effect upon the system, it is necessa- "ry to reduce the febrile action by bleeding," &c. But it unnecessary to accumulate quotations.

When Hydrocephalus appears to be a secondary disease, we begin the cure by attempting to relieve the irritation of the abdominal viscera, which is never fully accomplished until their healthy secretions are restored by cathartics. Perhaps it may not be out of place to observe, though the observation is not new, that there is something very defective in the usual divisions of purgative medicine into the mitiora and fortiora, into the stimulating, refrigerating, astringent, or emollient purgatives; nor is the division of the antients into cholagogues, hydragogues, &c. more satisfactory. A more accurate way of considering cathartics was suggested, I believe, by Dr. Fordyce; namely, according to the part of the alimentary canal or its dependencies upon which they act, and according to their mode of action, whether by promoting the secretions, or simply by quickening the peristaltic movements. There are however some important considerations which cannot be com-

prehended in this arrangement, namely, the effects of cathartics according to the diathesis of the patient: the same medicine in one patient produces an increase of secretion, while in another it only increases the peristaltic movements; and their effects, according to the state of the organs at the time of their administration: thus, the first dose of a cathartic may produce but little effect, while the most copious discharges may be produced by its continuance, and vice versa. The cathartics applicable to Hydrocephalus are those which increase the secretions. We may remove fœces from the alimentary canal, by quickening the peristaltic movements, with but little benefit to the patient. Our object is to change the action of the secerning vessels, and more especially to encourage and improve the biliary secretion, but in so doing we must avoid irritating the mucous membrane of the intestines. Hence we ought to be cautious in the use of rougher cathartics, as for instance gamboge and jalap; if these, in very moderate doses, do not succeed, other means of evacuation ought to be substituted.

It must be admitted that there are many cases of Hydrocephalus in which blood-letting, although necessary in order to moderate the increased action of the vessels of the brain, and to prepare the abdominal viscera for mercurials, is contraindicated by the diathesis of the patient, and by many of the symptoms of the disease, so that, although we are constrained to begin with blood-letting, general or topical, we ought not to forget that blood-letting alone, even when employed early, is not to be relied upon for the cure of Hydrocephalus. I do not mean to impugn the accuracy of Rush, who has affirmed that Hydrocephalus may be cured by the lancet. Early venesec-

tion may perhaps succeed in the cases in which the affection of the brain is primary; diseases are modified by climate: in Philadelphia, venesection may succeed better than in Edinburgh or Dublin; in the latter city, I have heard of a case in which blood-letting was successful, but I believe it has generally failed with others as well as with me.

Hence a question naturally arises: Is there any remedy which, while it reduces vascular action, has a tendency to promote the secretions of the stomach and liver? In looking over the Materia Medica, we naturally pause at the class of emetics, during whose operation the bile is poured out, while the action of the heart and arteries is controlled; of these, the antimonial emetics are the most efficacious. We must not forget, however, that, from the state of the circulation in the brain, vomiting is contraindicated in Hydrocephalus. It is the milder antimonials, then, which we must have recourse to, by which the secretions of the stomach and liver are often increased, even when nausea is not produced. To encourage a trial of antimony in Hydrocephalus, I shall give an account of a practice, peculiar to this city, which, though originally empirical, admits of explanation upon the principles which I am endeavouring to illustrate, and seems susceptible of considerable improvement.

A respectable clergyman, who resides within a few miles of Dublin, had been so unfortunate as to lose three or four of his children by water in the brain. He observed that the physicians endeavoured to bring on a perspiration, but always without effect, and he determined, should the complaint seize any other of his children, to take the management of the case into his own hands. The opportunity was soon afforded by the illness of one of his daughters, and the remedy he used was James's powder. This medicine had a great effect upon the child, who, though she had all the symptoms which attended the attack of the disease in the fatal cases, recovered. He gave the child a

large dose of James's powder at bedtime ; this was repeated every night, and, on alternate nights, as much rhubarb was added as was sufficient to move her bowels. This remedy, it is alleged, has been successful in a number of cases of Hydrocephalus which have occurred since.

This gentleman, although willing to give every explanation in his power, was not so explicit in his account of the effects of the antimonial as I could have wished. He attributed its beneficial influence entirely to its operation on the skin. He had not attended to its effects upon the other secerning organs, and he could not give me any account of the discharges from the bowels or kindneys: whether these were interrupted or disordered, before the use of the remedy, or increased, or in any way changed in consequence of it, he could not specify. He thought the vomiting, which was sometimes brought on, beneficial. Indeed information, complete in all respects, was not to be expected from a person who had not made medicine his study.

In favour of popular remedies, we know how little public report is to be trusted, however confident its tone. In several cases of Hydrocephalus, I have known James's powder given, both as this gentleman recommended, and also in much larger quantities, and in a quicker succession of doses, without relief. But making every allowance for the misconceptions of the ignorant, James's powder may prove a valuable auxiliary. Antimonials in combination with cathartics, and more especially calomel, have appeared to me very useful in those cases of infantine remittent fever, in which the sensorial functions are much oppressed, as also in the commencement of febrile attacks of a less definite nature, which are liable to degenerate into Hydrocephalus. In such cases, adopting with the out-patients of the Meath Hospital, a practice which I believe is not uncommon in this city, I prescribe a pill of calomel and antimonial powder, three times a day, interposing,

between every two pills, a moderate dose of the common purgative mixture of the hospital, and I think with much advantage.

Antimony and mercury owe their wonderful powers of relieving the febrile complaints of children to their influence over the stomach and liver, in reducing increased action and restoring secretion. In combination they are often more efficacious than when given separately. That antimony owes its febrifuge virtue to its effects upon the skin, is as improbable, as that the virtues of mercury depend on its action upon the salivary glands. Profuse sweating often takes place in fever without relief, and hence it is a rule of practice, not to persist in the use of antimony, when, although it may have produced sweating, it has no tendency to render the tongue moist or clean, or to relax the hypochondria; such effects being indications of restored secretion. So, also, when we apprehend a tympanitic fullness of the abdomen, which is the most alarming symptom of bilious or gastrick fever, calomel and antimony are to be given with great caution; it is dangerous to push them far; they will increase the evil if they fail of removing it; and hence the practice, after they have had a short trial, of substituting some other stimulus, generally a common purgative draught warmed by tincture of senna or electuary of scammony.

In many febrile diseases, the greatest relief is derived from antimony, even when it fails of producing perspiration: a striking proof of which has been afforded by a mode of practice, in unfavourable cases of fever, which, I believe, was introduced by an accomplished physician of Dublin, the late Dr. Purcell. In fever, when extended beyond the usual time, and accompanied with a dry tongue, uneasiness and oppression at the epigastrium; or in reduplications of fever with similar symptoms, James's powder is given in moderate doses, generally combined with some of the common purgatives, and is repeated or increased

in quantity until a sensible effect is produced, which is generally a black and fœtid discharge from the bowels, and relief is then obtained often without the occurrence of diaphoresis.

If, after due preparation by means of venesection, or topical bleeding and blistering, calomel and James's powder, in combination, or alternated with common purgatives, should fail of producing a change in the appearance of the stools, or of giving relief to the head, new measures ought to be tried. Stools of the same nature with those which are generally passed in Hydrocephalus, are seldom seen in any other disease. They resemble boiled laver, forming a dark green gelatinous mass, with an oily looking surface, and are of a sickly but not fœtid smell; they consist of flakes of inspissated bile, which gives them their colour, and of the mucus of the intestines. Diffused in water, they do not render it turbid, and scarcely change its colour; it seems as if the vitiated bile, by irritating the surface of the intestines, occasioned the copious discharge of mucus to which the stools owe their consistence. When such stools once appear, they in general continue, till the disease is terminated by the death of the patient; and though I have known them made more copious, yet their character is seldom changed by a perseverence in the the use of drastic purgatives. Unless the irritation in the bowels is allayed, the biliary secretion increased, and its nature changed, our efforts will be unavailing. Common cathartics increase the irritation of the bowels, which it is one of our great objects to diminish, and also carry the mercury out of the system before it has had time to make a sufficient impression upon it.

Accident led me to what appears a considerable practical improvement. I was attending a boy of seven or eight

years of age in Hydrocephalus, whose disease might be considered as near the end of the second stage; as he was in great pain, his father, despairing of his recovery, requested that he might have a gentle opiate, which was accordingly given. I had previously remarked to some one of the attendants, who thought him dying, that from the character of the disease, from its stage, and the state of the pulse, he might still live a week; he however lived ten days. The opiate was the compound powder of ipecacuan, which was mixed with an equal quantity of Hydrargyrum cum creta:—I think he took five grains of each. In an hour or two after taking this medicine, the character of his pulse was improved, it became equal and regular, he enjoyed a respite from pain; the stools became more feculent. The patient appeared in a tranquil sleep for the next ten or twelve hours, after which period the same medicine was repeated. He passed through the third stage without suffering, by keeping him under the influence of opium, and his life seemed prolonged rather than shortened by it.

I shall add a series of cases in which opium was given; in which, after depletion, and in combination with mercurials, or mercurials and antimonials, that medicine appeared to considerable advantage. For a particular account of the way in which these remedies seemed to me to operate, the reader is referred to the remarks upon the cases.

In order to produce an anodyne effect in diseases of the brain attended with increased activity of the circulation, a very moderate dose of opium will be found sufficient. I lately observed, in a case of Hemiplegia, in which nearly all the medullary matter of the brain was found of the consistence of thick cream, that the narcotic effect of a moderate dose of opium, given to allay pain, was not quite over on the third day after its administration. Nor does it appear that the dose requires to be large, in order to allay the irritation of the bowels. In excess, opium would

probably interfere too much with their peristaltic movements.

It has been said that opium in combination with mercurials relaxes spasm, emulges the biliary ducts, &c. Which way soever it may operate, it is certain that, in the very irritable state of the stomach which often attends hepatic inflammation, mercurials are scarcely admissible, even after venesection, unless when combined with opium.

If it be wished suddenly to place the constitution under the influence of mercury, I know but of two means, apparently opposite, namely, blood-letting and opium. In desperate circumstances it often becomes necessary to employ both, with what effect is best known to practitioners in countries in which the most dangerous hepatic diseases are endemial.

The opinion which I had long entertained of the nature of the primary affection in most cases of Hydrocephalus, naturally enough might have suggested the use of all these remedies; the reader, however, may be assured that it was no preconceived theory, but mere accident, and a knowledge of the practice of some of my intelligent brethren of this city in similar diseases, which led me to the mode of practice which I am now recommending for further trial.

One important consideration yet remains, namely, the means of relieving distress and of palliating symptoms.

In a consultation upon a case of Hydrocephalus (the particulars of which were afterwards related to me) when the question of blood-letting was under discussion, one of the physicians observed, "we had better have the child blooded, by so doing his life will not be saved, but he will die easier." This was the remark of a man of shrewd observation. I have long been convinced that patients who die of organic diseases of the brain, struggle and suffer much more when they are not blooded, than they would do

otherwise. Nor have I any reason to think that moderate bleeding shortens their lives, but the contrary.*

When venesection or arteriotomy is contraindicated, leeches will sometimes greatly relieve pain, as will ice, tied up in a thin bladder, and applied to the vertex. I by no means would undervalue blisters, yet ice, in the early part of the disease, is often the more appropriate remedy. The head ought always to be shaved on the first suspicion of Hydrocephalus, that it may be kept cool, and be frequently sponged with cold water and vinegar.

The convulsions which attend Hydrocephalus may be removed by affusion, or rather aspersion of the face and neck, with cold water. The warm bath, which is usually employed, is more operose, and is by no means so generally efficacious. If, however, the warm bath be preferred, cold water may also be dashed upon the head and upper part of the body, while the patient is in the bath, by which means I have seen a fit of convulsions instantaneously removed.†

I have to recommend the injection of a large glyster made by dissolving phosphate of soda or sulphate of magnesia in broth, from having observed that children, in Hydrocephalus, lie easy for a couple of hours after getting a glyster. When not violently opposed by the patient, a glyster ought to be given every five or six hours, or even oftener: I believe much of the general nervous distress which occurs in this disease, arises from the irritating nature of the feces in the large intestines.

If I am right in thinking that opium, after due depletion, is a powerful instrument in facilitating the operation of the other remedies, it will be found of inestimable value in Hydrocephalus. If any practitioner of medicine will

* In cases of the yellow fever which have ended fatally, it has been observed, that blood-letting restored or preserved the use of reason, rendered death easy, and retarded the putrefaction of the body after death.

† I have been told that by burning a tobacco leaf, or smoking a pipe near the patient, the fit may be stopt.

take the trouble of examining the cases which I am about to relate, he will then be able to appreciate the value of the means I have recommended for diminishing the sufferings of the patient.

It is, however, necessary to say, that while opium relieves distress, its tendency is to promote the efficacy of the other remedies. Parents become reconciled to their child's death by his screams and struggles, his imploring or vacant look; but still, in all the sickness of heart which they suffer, a hope of his recovery lingers behind, that would make them shudder at the mention of a drug which, while it lulled pain, brought dissolution one hour nearer, or deprived their child of a chance of recovery, even though that chance were but one in ten thousand.

EXPLANATORY REMARKS ON THE CASES.

CASE I, although short, is of considerable importance. The tendency of this disease was suspected, not merely from the symptoms, but from one of the patient's brothers having died of Hydrocephalus. Almost all the favorable cases of Hydrocepalus included in this volume occurred in families in which the disease had been previously fatal. Such an occurrence, by rendering a case less equivocal, has often determined me to keep notes of it. The subject of Case I, died of a return of Hydrocephalus in December 1806, v. Case X.

Case II. Three of this boy's brothers or sisters died of Hydrocephalus; and their uncle, an experienced physician, had caused issues to be made in two more of the patient's brothers, who had also been threatened with that disease. It is to be observed that in children who have a strong family tendency to Hydrocephalus, that disease may be detected, not so much by headach as by disorder of the stomach and bowels, more particularly by anorexia, nausea and vomiting, fullness and often great uneasiness of the epigastric and hypochondriac regions, sickly breath, and a costive state of the bowels, or by stools, almost entirely mucous; and by sighing, languor, and coma-vigil.

Case I and II. Many children, who were my patients, have, several days successively, come home from play, or school, pale, with pain in the head, which one has compared to the thumping of a hammer within the head; another to a knife running through the head, &c. who, as appeared

upon inquiry, were feverish, sick, drowsy in the day time, restless in the night. I allude to such cases, partly because they have sometimes ended in Hydrocephalus, but principally because by far the greater number recovered under active purgation with jalap, scammony, or aloes, and calomel.

Case III. This boy had also lost a brother, of Hydrocephalus, who, in his last illness, had an incessant retching for five days, and whose illness in most other respects resembled that of D. R. If a slow pulse be a proof that the first stage of Hydrocephalus is over, the disease was in its second stage in Cases II and III, when my attendance commenced.

In the first stage of Hydrocephalus, when the pulse, from being very quick, for instance 130 or 140, falls to 100, it is obvious that the prognosis is more favourable than when it falls to 60 or 70. The former change marks a mitigation of fever, while the latter is generally a symptom of the second stage of Hydrocephalus; and conversely, when the pulse, as at the period of my first visit in Cases II and III, from being at 60 or under 70, rises only to 90 or 100, the prognosis is more favourable than when it rises to 130 or 140, the former change shewing an improved state of the circulation in the brain, the latter being symptomatic of the third stage of Hydrocephalus.

In case III, as well as in the relapse, the gums became affected by the mercurial medicine, almost immediately after a great effusion of blood was caused by leeches. The appearance of the stools in the commencement of this case did not indicate much hepatic disorder; it ought to be stated, however, that the subject of it had an attack of the jaundice in the spring of 1807.

When recovery takes place, it is remarkable that the mental faculties are seldom impaired by Hydrocephalus; in the present instance, notwithstanding the severity of the

relapse, the mind was not in the least impaired. The patient returned to school before the beginning of August.

Case IV. One of the best physicians of modern times has said, C'est ainsi que dans la science de la médecine, comme dans les sciences mathématiques, le même problème peut avoir plusieurs solutions, que diffèrent par leur élégance & leur brievete. In Hydrocephalus recovery may take place under different curative means, and sometimes even although the treatment be unskilful. This remark is suggested by a review of case IV, after ten years additional practical experience. If the patient had been let blood from the arm, to the amount of six or eight ounces, in the beginning of the disease, the other remedies would have acted with more expedition, and the patient would not have continued so long in imminent danger. Many of the viscera, when they run into a state of inflammatory excitement, are relieved by an increase of secretion, but in the brain or heart, in which there is no such provision for relief, inflammatory affections are to be cured by resolution alone; little assistance is to be expected from nature, unless we subdue the force of the circulation without loss of time.

In case IV, several of the symptoms, after the seventh day, were to be attributed to the tincture of digitalis; but I was not quite sure of the disease being checked; and, while it was going on, I apprehended little danger from the remedies. The dimness of sight explained the patient's situation. In this case the mercurials never affected the mouth.

If venesection ought to have been practised in case IV, it was even more clearly indicated in case V. The circumstances which most clearly pointed out the necessity of blood-letting, were the suspension of the secretions, and the violence of the cough. For some days after the last report was made, this boy recovered rapidly, and then his bowels became disordered; the stools for some days were

without bile ; he also had dysury in a very distressing degree ; he again complained of his head and belly ; the sighing, squinting, and starting returned, and his pulse became irregular, and was sometimes not more than sixty. His condition varied much. About the middle of May his complaints assumed an intermittent form, the fever regularly coming on in the forenoon, and about the same time he had a large sty on each eyelid. I tried bark, then laxatives, absorbents and opiates, with but little effect ; at last his stools became more natural, and his health again improved. Two or three years after his illness, when I last heard of him, he was still rather a delicate child. This boy's only brother died of Hydrocephalus.

Cases VI, VII, and IX. These valuable cases of Hydrocephalus were treated with great decision, and are presented as illustrative of the pathology and practice which it is the object of this work to explain.

With respect to case VIII, my first visit was made at the end of the first stage ; but notwithstanding had I attempted to remove the vomiting by venesection instead of by laudanum, or at least had the patient been blooded before he got laudanum, it would have been more hopeful practice. In the second stage of Hydrocephalus, although the pulse is slow when the patient is at rest, yet a trifling exertion will often, as happened in this case, render it very frequent.

I have cancelled two cases which appeared in the first edition, chiefly that I might make room for cases illustrative of the practice recommended in Essay II.

In the first of these cancelled cases, p. 153, Edition 1st, the patient's bowels were in a disordered state for seven weeks ; then a febrile attack commenced, which was probably remittent fever, and this again degenerated into Hydrocephalus. The morning remissions gradually disappeared, and in about four days after, when I first saw her, there was, as in case VII, so much tenderness in the re-

gion of the liver, that she writhed and fretted under very slight pressure. The mercurials which were prescribed did not affect her gums until the pulse had been slow for two days, and the progress of the disease was not retarded. As happens not unfrequently when mercurials are given, the convulsions abated before death. In case VIII, and in some other instances, I have remarked a return of sight, hearing, and understanding also, shortly before death, corresponding with a similar occurrence which sometimes takes place in other acute diseases.

In the second case cancelled, the patient had been subject, for three years, to an enlargement of the abdomen, which arose after scarlatina, or rather a dropsy, consequent upon that disease. Six weeks before her death she had an attack of fever, probably remittent also, with greatly disordered bowels, after which she never regained her wonted cheerfulness, nor the clearness of her complexion. In a majority of the cases of Hydrocephalus there is great irritability of the stomach from the very outset. I wish it were more the practice to bleed children in those febrile attacks which commence with sickness and vomiting, and more especially with fullness of the hypochondria; after blood-letting one half of the cathartic medicines commonly given, would be sufficient to restore the intestinal secretions, the crisis would take place on an earlier day, and I am convinced we should have fewer cases of Hydrocephalus arising from infantine remittent fever; in short, there would be a considerable saving of infant life. I have charge of a fever hospital for children, which contains 32 beds, through which nearly five hundred patients have passed in a year, and I have had ample opportunities of witnessing the effects of early venesection in those cases which are accompanied with irritability of the stomach. In the second of the cancelled cases the patient was blooded freely on the sixth day of my attendance. It can scarce be questioned, that venesection would have been more efficacious on the

first day, but in this instance the parents of the child would not permit me to use the lancet earlier. Blood-letting, though too late to be of permanent benefit, removed the irritability of the stomach, which was most distressing. Under similar circumstances it ought not to be expected that venesection will effect a cure, but it will in general relieve sickness and pain, and, as has already been remarked, it will promote the operation of those other remedies which are given to increase the secretions. While I was sitting beside this child a few days before her death, she had a fit, the particulars of which I noted at the time. Her face, from a state of vacancy, for a second or two, became as it were thoughtful; then it was much disturbed with spasms, in particular about the left eye, which appeared to wink with great quickness from strong and repeated convulsions, The right eye was wide open and staring; the mouth pursed up; the left arm was gradually extended, the fingers hooked in; the limbs were stretched out, and the head thrown back; then the eyes became fixed, or moved quickly and tremulously, which motion was not discovered unless they were narrowly inspected; then there was quick breathing and sighing; and lastly, she appeared to be in a soft sleep. Her pulse, which had been 140, did not exceed 96 during the fit. After such attacks, which were preceded by great restlessness and anxiety, she in general lay quiet for nearly half an hour.

Case X. It would be difficult to find a more striking illustration of the connexion of Hydrocephalus with a disordered state of the abdominal viscera, than this case affords, or of the efficacy of those medicines which improve the condition of the gastro-hepatic system, in relieving the symptoms of Hydrocephalus. The last illness of the child ought to be considered in connexion with the first; *vide* case I. The symptoms of Hydrocephalus which characterized the first illness were relieved, but the disorder of the digestive organs out of which they originally sprung not hav-

ing been subdued, continued to show the injurious influence of this derangement over the constitution in a variety of ways. It was productive of ophthalmia, of swellings of the lymphatic glands, and of a disease in the spine and articulation of the foot. An unfortunate prejudice against purgative medicines, on account of their supposed debilitating effects, prevented the parents of this child from following my directions, and this disorder of the bowels finally reproduced Hydrocephalus.

Cases X, XI, and XII, are introduced to show the relation between Scrofula and Hydrocephalus. In case XI, the lungs had been affected, as it was apprehended, with tubercles, and the bowel complaint was supposed to be a symptom of mesenteric obstruction. The disease of the cellular membrane, case XII, I have never known unless in connexion with a very strong tendency to scrofula. These round tumours of the cellular membrane suppurate slowly and without pain, and at last break, leaving scrofulous sores; although these tumours are not attended with danger, unless they are numerous, yet the patient seldom recovers his health: some new form of scrofula generally appears, and at length he dies tabid, or some conversion of disease takes place, as in the present instance. At p. 187, 1st ed. there is a case from Burserius, attended with tubercles of the lungs, one of which contained lymphatic fluid, and two more contained fetid pus. And at p. 192, there is a case of a child who had been liable to chronic diarrhœa, with tumid abdomen, and œdematous limbs, before any symptoms of Hydrocephalus appeared; but as it is unnecessary to accumulate examples of the same form of disease, I have cancelled these two cases. Dr. Percival relates, "that a girl, aged nine "years, after labouring under symptoms of phthisis pul- "monalis four months, was affected with unusual pains in "her head, which increased rapidly, to such a degree as "to occasion frequent screamings. The cough, that had

" before been extremely violent, and attended with stitches " in her breast, now abated, and in a few days ceased al- " most entirely. The pupils of the eye became dilated; " a strabismus ensued; and, in about a week, death put a " period to her agonies." In the paragraph preceding that which I have quoted, Dr. Percival says, " Practical " writers have related many cases of dropsical metastasis. " I have seen an affection of the brain which appeared to " be hydrocephalic, and probably originated in inflam- " mation, suddenly and completely relieved by the attack " of an acute pain in the side, which terminated in a fatal " abscess and hydrothorax."

I am induced to think that case XIII, rather belongs to a disease which might be entitled cataphora acutum, than to Hydrocephalus.

Case XIV, and XV, are inserted as specimens of Hydrocephalus after remittent fever, which is one of the most frequent varieties of the disease.

Case XVI. According to the report which was made to me by the gentleman who had charge of this patient before I was called into attendance, his illness also began as a remittent fever, accompanied with great disorder of the bowels; on the first attack of fever the stools were dark green and glairy, and procured with difficulty.

This was a case but little favourable to a clinical experiment. I had wished to try the effects of opium in Hydrocephalus, but I was withheld partly by a fear of consequences, partly by doubts of its efficacy, till the patient was in the third stage of the disease; even then the opium was of service. The convulsions were kept off; strabismus was less observable; the pulse, I thought, became fuller, and the operation of the other remedies was not interrupted.

In the cure of Hydrocephalus no time ought to be lost in attempting to remove the irritation of the villous membrane of the intestines, which was not accomplished in this

case, and which is seldom accomplished; in general the stools obstinately continue mucous: I have several times seen blood in the stools, and I have known prolapse of the anus with so much tenderness of the part, that a glyster-pipe could not be introduced.

I examined the stools which this boy passed more than once; they consisted of mucus and flakes of a green substance, which was bile probably vitiated. The great quantity of mucus discharged was a proof that the irritation of the villous coat was extensive. Perhaps this irritation is a part of the disease, or the bile, though unfit to regulate the alimentary canal, may irritate the mucous follicles, and the quantity of mucus may be owing partly to this circumstance, and partly to the action of the cathartics. It has often been remarked, that in order to procure stools in Hydrocephalus, cathartics must be given in doses sufficient powerfully to stimulate the intestines, so as to quicken their peristaltic movements. But, however large and drastic the purgatives may be, commonly they expel nothing more than the bile which had found its way into the alimentary canal, and the intestinal mucus, part of which they create; they seldom re-establish the functions of the vessels which pour out the natural secretions.

Case XVII. The febrile attacks to which this boy had been subject, used to yield to mercurial purgatives,—a mode of treatment not pursued in the illness which began about Christmas: after that illness the abdominal viscera fell into great disorder, which continued two months, and at last the head became permanently affected: the cough, occasional headach, irregular state of the bowels, languor and depression, were all subsequent to the pain in the right side. But it is unnecessary to insist upon the disorder of the abdominal viscera in this case, as few will allege that it was of a secondary nature: in this instance, at least, it is pretty evident that the series of diseased actions began in the abdomen.

Notwithstanding the vigorous practice of the first week, which probably conduced to the mildness of the subsequent part of the disease, there remained on the 18th manifest proofs of inflammation of the liver.

On the 18th the disease of the brain was in an advanced stage, and the patient's strength reduced; general blood-letting was not thought expedient; emptying the vessels in the neighbourhood of the liver gave great relief: we agreed to combine opium with James's powder and calomel, expecting thereby to increase the powers of the latter, but we were without any very sanguine hope of removing the disease. On the 17th the stools were mucous; after the 18th they were feculent, and there was no irritation in the bowels; there was neither screaming nor convulsions. The animal functions, especially on the 23d and 24th, were scarcely disturbed. In short, the medicines completely fulfilled the expectations with which we had prescribed them: while the liver yielded more healthy bile, the perspiration from the head and neck was copious beyond what I had ever witnessed; and the urine began to flow soon after the first dose of the foxglove. The constitution made a surprising rally; indeed it did every thing short of throwing off the disease: for two days the excretions bore a strong resemblance to those which generally attend a favourable and complete crisis.

With respect to the dissection, there was nothing remarkable in the brain. The brain is often firm, even when that part of it which forms the parietes of the ventricles is pulpy; and it is not uncommon to find coagulable lymph about the base of the brain. The liver was connected with the peritoneum by one of the most extensive bands of coagulable lymph I ever saw formed by inflammation, yet there was little appearance of disease in the substance of the liver; seemingly it had recovered from the inflammation, which certainly did exist in the early part of the complaint. This, I believe, is often the case;

the liver is relieved, while the organs which it draws into diseased action are destroyed. So, also, the brain has been relieved without complete relief of the liver. I lately heard of an attack of Hydrocephalus being cut short by opening the temporal arteries and removing eight ounces of blood, but, for at least two months after, the child was costive, and all the common purgatives were ineffectual unless in large doses. It has been asserted that the organ originally and principally affected in fevers has recovered, even when the fever proved fatal. "I may be permitted to remark, with regard to dissections," says Dr. Irvine, in his account of the diseases of Sicily, "that the tolerably sound appearance of a viscus after death from a fever, which has continued for a number of days or weeks, does not by any means prove that no disease existed in it in the commencement of the attack. It is possible that the brain may be affected in many cases at first, so as to influence the progress of the disorder; but from the subsidence of that affection in the later periods, no mark of its existence may be discernible after death."

These remarks are applied only to the cases of Hydrocephalus, in which the abdominal viscera are manifestly disordered before the brain becomes affected.

Case XVIII. The strength of this child was much reduced by weaning-brash and hooping cough. From the delicacy which they had left behind, it was not easy to ascertain the date of the disease of the brain.

This also was one of those cases in which the abdominal viscera were disordered long before the brain became affected. There was probably some peculiarity in the child's constitution, which exposed him to an attack of Hydrocephalus; two of his cousins, by the father's side, died of that disease.

On the 20th of October the disease was between the first and second stage; in the beginning of the second rather than the end of the first. Somnolency, imperfect vision,

and strabismus, sometimes occur several days before the pulse becomes slow.

This was a case in which neither the diathesis of the patient, the nature of the attack, nor yet the stage of the disease, encouraged us to expect much advantage from general blood-letting; local bleeding seemed indicated, and the gums were scarified. Indeed, although the gums were neither inflamed nor tender, the operation was probablyof some use, as one of the molares penetrated the gum soon after.

The state of the abdominal viscera was our first and principal care. The liver could be felt enlarged and tender; it seemed probable that the mesenteric glands were also enlarged, as the mouths of the absorbents, which pass through them, had long been acting upon an imperfectly concocted mass. Our objects were to promote and improve the secretions of the liver, and to counteract the irritation produced by a morbid state of the bile upon the alimentary canal, and the system of the lacteal absorbents.

We began with but a small quantity of opium, lest it should interfere too much with the peristaltic movement of of the bowels. The discharge from the bowels not being checked, but, on the contrary, becoming more free, and the general irritability of the system being great, the quantity of opium was increased to two grains in twenty-four hours; after which the quality of the discharge from the bowels was improved, and the child became calm, though the disease was unsubdued.

Nothing is more encouraging in Hydrocephalus than to find an increase of the excretions: the state of the urine on the 25th afforded a dawning of hope; on that night the restlessness returned, and the quantity of opium was further increased. On the 26th the pupils of the eyes were contracted, and the next day it struck us that this state of the pupils was owing to the opium; it was therefore gra-

dually diminished, and we began to perceive we were gaining ground. The secerning function of the liver being restored, its swelling subsided, the symptoms of diseased brain and pyrexia gradually disappeared: and on the 31st we considered the specific disease of the brain terminated.

The rapid decrease of an enlarged liver may frequently be observed in the diseases of children; I have more than once seen it in Hydrocephalus, or at least in cases which threatened to end in that disease; on the other hand, when Hydrocephalus was about to terminate unfavourably, the liver has rapidly increased in bulk, of which the following is a proof, related by a gentleman who attended the patient. "In Mr. ——'s child an enlargement of the liver took place, which was not observed until four days previous to the death of the patient. The progress of the enlargement was such, that, in the course of these four days, the edge of the right lobe nearly touched the spine of the ilium, and the left could be felt about an inch above the umbilicus. The child was only ten days ill, and from the commencement, the abdomen was examined daily, particularly the region of the liver, but until the period of the disease, above mentioned, no enlargement of that viscus could be perceived."

We are directed by a late writer on Hydrocephalus, Dr. Smyth of London, to apply caustic to the bregma. In the present instance, however, such an application was not admissible, as the ossification was incomplete.

On former occasions I had remarked that, even when the morbid action of the vessels of the brain was subdued, a considerable time elapsed before health became established. A perfect co-operation of the different organs, in which health may be said to consist, is not soon restored after a disease of the brain; this, I believe, is the true cause of various interruptions to convalescence, which I used to attribute to mismanagement.

From the degree of debility we observed on the 1st of

November, we again began to entertain doubts of the child's recovery: we apprehended aphthæ, or some return of visceral obstruction; a change of diet was therefore attempted, giving wine instead of opium; but as his attendants thought the change injurious, we returned to the opium with chicken broth. Various means were used with temporary benefit, until the 9th, when, fearful of hectic from obstruction in some of the abdominal viscera, medicine was laid aside, and after this second change his recovery was attributed to the use of asses milk.

Case XIX. The stools, from being mucous, seldom become feculent, (a change which shews the efficacious operation of calomel and opium upon the abdominal viscera,) until that combination has been given for 48 hours, or even longer. In the present instance opium, calomel, and James's powder, had been given for upwards of three days before the desirable change took place. In general the skin and kidneys give way as well as the bowels. Sometimes indeed the excretions from the skin and kidneys take place as soon as the morbid action of the bowels is altered, even before feculent stools are discharged. I may here observe, that I have seen cause to regret the interposition of common purgatives, until the combination of calomel and opium had been given for some days.

Case XX. This is an extreme case of the second variety of Hydrocephalus, in which, however, the disease resembled phrenitis more than fever. Six or seven pounds of blood were taken before the headach was subdued. The patient, more than once, called upon us to have him blooded; and he was twice blooded by his father's direction, who sent for the apothecary in the night time, without any reference either to Mr. Crampton or me. But even in this case, although the efficacy of venesection was obvious to the most inexperienced, it was chiefly useful as giving more certainty to the other remedies.

I have already frequently referred to an irritation of the mucous membrane of the intestines in Hydrocephalus, which, in connexion with an excited and non-secerning liver, opposes difficulties generally insurmountable to the curative process; and I have been led to conjecture, that this state of the abdominal viscera not only prevents the operation of remedies, but, in some constitutions, causes and maintains the diseased action of the brain.

This irritation of the abdominal viscera may be considered as a variety of the disorder, which has been called, by foreign writers, a surcharge of the bile, a bilious or gastrick saburra, *embarras gastrique*, &c. It seems a dangerous disorder when there is any thing in the diathesis which renders a child liable to disease of the brain. The symptoms of this disorder, in addition to the general symptoms of fever, are, furred, white, or grey tongue; with a bitter or unpleasant taste in the mouth, and very sickly smell of the breath; complete anorexia; sometimes instant vomiting of food or drink; tension of the Hypochondria; defect of the excretions; hot dry skin; scanty high coloured urine; inactive bowels or colourless or mucous stools. When these symptoms are abating, or soon after, the stools are bilious, and gradually they become healthy. This disorder may be illustrated by the following example.

On Sunday the 2d of April, a child four years of age, who had an issue in his arm, struck the issue against the corner of a table; next day the part inflamed, and threatened to slough; on Tuesday the slough was formed, in the evening it was partly detached, and the glands of the axilla were swelled. On Tuesday forenoon he was pale, retched frequently, had a burning skin and white tongue, nothing lay on his stomach, and his breath was of a sickly smell. Two grains of calomel were given him. As the day advanced he became more and more flushed; towards evening his face was suffused, and, upon waking from an unrefreshing slumber, he was observed extending his arm in the way

children do when they are about to take a fit; at the same time he was incoherent, and his eyelids were convulsively affected. He went to sleep again, and awoke in convulsions. In less than half an hour he was let blood to the amount of four ounces. The effects of the loss of blood, together with a dose of James's powder and calomel, which he took after the first threatening of convulsions, made him faint, and produced a loose stool. In three hours after blood-letting no tendency to convulsions could be observed; twice in the course of the night one grain of calomel was given, with two of James's powder, and glysters: his stomach retained weak beef tea with acetate of soda. He had stools on Wednesday morning, one of which I examined; it consisted of mucus with dark green flakes, and was precisely like the stools so often passed in Hydrocephalus. His stomach was irritable all that day; his tongue white, and the febrile distress considerable: in the evening he had a small dose of calomel, which was rejected almost immediately. In the course of Thursday he took two drachms of magnesia in lemon juice. In the evening he passed bilious stools. On Friday he was well. It is perhaps worthy of remark, that the sickly smell belongs to the whole of the mucous membrane of the intestines. One of the glysters of weak broth, after having been retained for some time, was rejected without any of the contents of the bowels, and it had acquired the sickly smell of the breath.

The disorder of the bowels is frequently the consequence of an injury of some distant organ; in which case it has been conjectured, that the gastro-hepatic system becomes affected through the medium of the brain. But it may be observed, that although the brain is probably disordered while it is thus transmitting disease, yet that the symptoms of an affection of the brain, when such are induced, seldom appear until the irritation of the abdominal viscera has been established. The affection of the brain would seem chiefly to depend upon the reflex impression.

It has been alleged that the disorder of the abdominal viscera, which occurs in so great a majority of the cases of Hydrocephalus, although it may seem to take the lead, is in fact subordinate—is but a symptom of a disease of the brain which has not yet displayed itself. I shall not call this opinion in question, provided it be admitted, that the most effectual way of preventing the developement of Hydrocephalus is, by correcting this subordinate affection of the abdominal viscera. If, in Hydrocephalus, the first of the series of diseased actions which takes place is in the liver, we may hope, by early subduing the increased vascular action of that organ, and by improving the biliary secretion, to relieve the patient, provided the disease in the brain has not gone too far. Unless the brain admits of being relieved through the medium of the abdominal viscera, Hydrocephalus, I apprehend, will still continue a reproach to medicine, as it was in the days of Whytt and Fothergil.

It has lately been asserted by Dr. Blackall, in his work on dropsies, that Hydrocephalus is a "common result of large doses of calomel given in infantine diseases and scrofulous habits." He is of opinion that the very free use of calomel produces an aggravated hydropic diathesis, which, in children, is disposed to fix in the brain.

The indiscriminate use of calomel, or the use of calomel as a domestic medicine, I have always reprobated as very dangerous. Mercury ought never to be given unless by the special direction of a medical practitioner; and I believe no regular practitioner of medicine would prescribe mercurials in a case where, mere evacuation of the alimentary canal being the object, a common purgative would be sufficient. Mercurial courses often bring latent diseases into activity, such, for instance, as struma, consumption,

insanity, and perhaps Hydrocephalus also, although I have no recollection of the latter occurrence. It is but right, however, to add, that I recollect many cases in which I was of opinion that the patient would have been saved, had mercurials been administered during the state of indisposition which ended in Hydrocephalus. I already mentioned that five children, my patients in 1808, were victims to Hydrocephalus after measles; with these a mercurial course was not in question as a cause of Hydrocephalus ; as at that time, unfortunately, I was unacquainted with the efficacy of small doses of ipecacuan and calomel, in the peripneumony, as well as in the dysentery which attends or follows measles ; and I cannot help thinking, that of about one hundred of my patients who died of measles in 1807 and 1808, many might have been saved had I been more skilful in the use of this valuable medicine.

Case XVI, was that of a boy, not in the habit of taking any medicine, who had come from the country shortly before his last illness. In Case XVII, Dr. Crampton attributed the illness to a want of those mercurial purgatives which had relieved the patient in former attacks of the same disease, which he had about Christmas. With respect to Case XVIII, the complaint occurred after hepatic obstruction consequent upon weaning, which, when severe, I have seldom been able to remove speedily and effectually without a course of mild mercurials.

Case XIX, was that of a child in the lower ranks of life, who had not been in the habit of taking medicine of any kind; and Case XX, was that of a school boy who, as far as I know, had not taken any mercurials for years before his illness commenced. These cases, I need scarcely observe, are not inserted to invalidate Dr. Blackall's assertions.

REMARKS ON THE DISSECTIONS.

I HAVE no object in presenting the reader with these dissections but to display fair specimens of the state of the brain and abdominal viscera. Dissection I, II, III, IV, may be considered as part of the materials of which I have constructed my account of the anatomy of Hydrocephalus.

Dissection V, would lead us to call in question a commonly received opinion, namely, that the symptoms of Hydrocephalus are the necessary consequence of effusion into the ventricles, even if we had no other grounds for doing so. We have no fact nor analogy to support the probability of six ounces of fluid being poured into the ventricles in the space of four hours; yet, four hours before the patient died, he was without a symptom of Hydrocephalus, or as far as I could learn of any disease whatever; —in appearance he was delicate.

It has been alleged, that I have been so much occupied with the disorder of the abdominal viscera, which so often precedes any symptom of Hydrocephalus, that I have lost sight of the affection of the brain itself. The reader will acquit me of such a charge. I admit I may have been more anxious to illustrate the condition of the abdominal

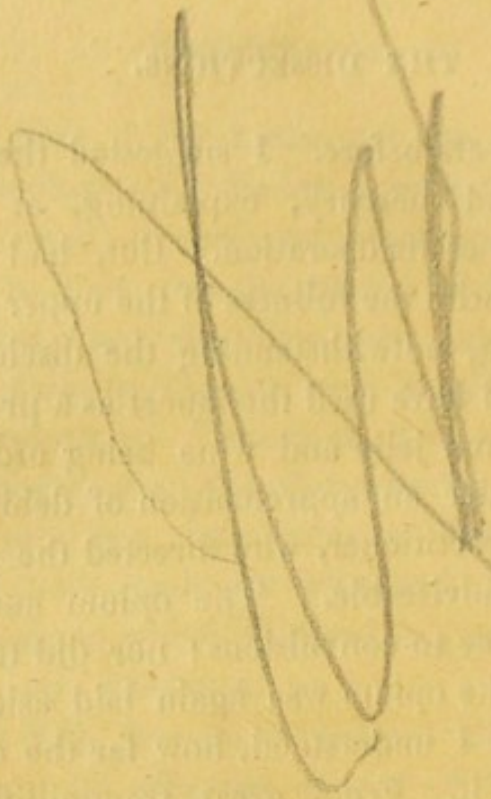
viscera than that of the brain, for the former had been entirely overlooked, while the latter was very fully explained at the time I began to apply myself to the subject; but I never meant to deny that the brain may be the organ primarily affected, nor are dissections wanting, in which we are not able to discover any remains of disease in the liver or intestines. Dissections VI, and VII, are introduced to shew, that the abdominal viscera are sometimes free from any appearance of disease. Of all the dissections I have made or witnessed, there have been only five or six in which diseased appearances were not discovered in the intestines.

Dissection VII, has an additional claim to attention, from the paralytic affection of one of the legs. I have heard of four or five cases of Hydrocephalus in which an affection of this kind appeared as one of the first symptoms of the last illness of the patient.

Dissection VIII, was made almost in the twilight, consequently to great disadvantage. There appeared to me about a couple of drachms of fluid in the ventricles: two gentlemen present thought the quantity too small to be considered as the effect of diesase. Had they been acquainted with Dr. Marshall's observations on the brain, there would have been less difference of opinion. As to the increased vascurity of the medullary matter, together with the effusion on the surface of the brain, there could be no dispute. I saw this child only twice during the whole disease, namely, on the 16th and 24th. The intermediate portion of the case I have extracted from a statement which I received from the child's uncle, who is a professional gentleman. On the 16th, I remarked "that "the disease had more the appearance of a remittent "fever than of Hydrocephalus, but that it appeared to "be one of those cases which would be apt to degenerate "into Hydrocephalus;" this opinion was the less improbable by one of the child's brothers having died of Hy-

drocephalus two years before. I suggested the combination of opium and mercury, explaining, at the same time, the principle of its operation. But, had I seen the child on the 17th, with the fullness of the upper part of the abdomen increasing, notwithstanding the discharge from the bowels, I would have used the lancet as a preparative; this, as appears from jelly and wine being ordered next day (doubtless under an apprehension of debility) by a very experienced practitioner, who directed the treatment, was not thought adviseable. The opium and calomel checked the tendency to convulsions; nor did the convulsions return until the opium was again laid aside, in order to ascertain, as I understood, how far the drowsiness was imputable to it. From great tranquillity the utmost restlessness took place, which ended in convulsions.

The liver was large and pale, as if secretion had not been going on with activity.—This dissection had a great resemblance to another of the dissections, in which the case also had its origin in fever. In both there was adhesion of the membranes, as well as under the tunica arachnoides; vascularity of the substance of the brain, and but a small portion of fluid in the ventricles.



CASES

OF

HYDROCEPHALUS ACUTUS.

" Quodcunque videris scribe et describe, memoriæ ne fide."

CASE I.

J. M. 12th May, 1804.—The subject of this case, a fair and delicate girl, of a scrofulous family, after gradually losing her appetite, complained, about ten days ago, of pain in her belly; two days thereafter she became fretful and dull; then she was often flushed, particularly in her sleep; she also complained of an acute pain in her head.

For three days she had complained very often of a pain in her head, and of pains in her belly and legs. She was not to be amused, never lifting her head from her mother's breast. During last night she frequently started from her sleep, screaming with pain in her head. She often yawned and sighed; when free from pain she wished to be unnoticed. Her pulse was quick, her tongue white, and her breath heavy. She had slight spasms in the eyelids, and subsultus in the wrist. She was also costive. Her complaints much resembled those of her brother, who died some years ago of Hydrocephalus.

16th May. By means of strong mercurial purgatives her bowels were emptied of a great quantity of dark green slimy feculence; the stools became healthy, and she soon appeared nearly well.

CASE II.

R. S. four years of age; a boy of florid complexion, and very dark eyes.

15th May, 1805.—About ten days ago this child became languid and drowsy, and he frequently fell asleep in his chair. On the morning of the 12th he vomited his breakfast, the drowsiness continuing, or rather increasing; between the 12th and 13th he retched all night, and complained of pain in his head. The retching continued during the 13th, and his food was immediately vomited. On the 13th he had a better night, but sighed often. On the 14th he sighed heavily: the sickness was constant. Before the retching came on he often changed colour, from pale to a deep purple.

He slept, and breathed softly; his pulse was 60, and very irregular. When I had him roused he was much inclined to doze again; he was quite distinct. He continued to sigh. ℞. *P. Rad. Jalapæ gr.* xii. *Submuriatis Hydrargyri gr.* vi. *m. f. Pulv.* ii. *Sumat unum octavis horis.*

16th May. In the night he had two large stools, green and gelatinous. His stomach was still unsettled; pulse 90; tongue cleaner; sighing somewhat abated. *Contr. Pulv.*

17th. His bowels were loose, the stools frequent and more healthy, without any admixture of glairy matter. The vomiting had ceased. His look was much less dull; p. 100, and quite regular. His skin was cool; his tongue clean. *Contr. Pulv.*

18. His bowels were loose; his stools healthy. No vomiting or sighing. His appetite was tolerably good. No mercurial fetor from his breath.

CASE III.

D. R. aged 8, with dark eyes and complexion, and coarse skin; a fine intelligent boy.

12th May, 1805.—His complaints were of six days standing, during which time he was extremely dull, and frequently complained of severe pain in his head; he slept more than usual, and his bowels were costive. Two or three evenings ago he retched frequently. Some years ago his brother died of Hydrocephalus. His pulse was 56, and very irregular. He had not much heat of skin. His tongue was white. While I remained in the chamber he sighed often, and complained indistinctly: when roused he said he had a pain in his head. ℞. *Submuriatis Hydrargyri gr.* xxiv. *Pulv. Aromatici drachmam m. f. Pulv.* xii. *Sumat unum quartis horis.*

13th. Two free, dark, and slimy stools; p. 70, and irregular. He sighed much, but said that his head was less painful.

14th. P. 104; irregular. Tongue clean; he still continued to sigh. He was more lively. His urine was limpid and copious. His stools were free and nearly healthy.

15th. This boy complained much of his head, had a very alarming look, and sighed constantly. He had slight convulsive twitches. His tongue was clean; his skin of a natural warmth; his stools healthy. He awoke from his sleep suddenly, complaining of lancinating pain through his head. He had taken the calomel regularly. *App. Hirudines sex Temporibus.*

16th. Five large leeches were applied to the temples. The blood continued to ooze from some of the orifices all night. His breath had a mercurial fœtor. He said he was better. His eye was evidently clearer. P. 92, and irregular. He sighed less. His urine high coloured and scanty.

17th. P. 100; tongue clean; considerable salivation and fœtor of breath. The gums slightly ulcerated. The pain in the head and the sighing had ceased.

21st. He had no symptom of disease. His gums were recovering.

RELAPSE.

25th May. I was again requested to visit this boy, which, for several days, I had left off doing. Yesterday, in the afternoon, he had an attack of vomiting, which continued all night. I found him not vomiting; but there was still a frequent inversion of the œsophagus, without straining. With little intermission he had complained of severe pain in the back part of his head; and he had had a purging for two days. He sighed; his pulse was 76, and irregular; his tongue clean.

26th. During the night he had several doses of a purgative medicine. The vomiting had abated, and the purging was less troublesome; but he sighed very frequently, and was exceedingly dull. I observed him faintly moaning, and expressing much uneasiness in his head. His pulse was remarkably irregular; at one time slow, and for two or three beats intermitting. *Repetantur Pulveres e Submuriat. Hydrargyri. App. Hirudines sex temporibus.*

27th. The application of the leeches was again followed by a great discharge of blood. His tongue was white; p. 96, full, irregularly intermitting. He was extremely dull. He felt the light painful to his eyes. The pupil contracted readily. For some hours during the night he had double vision. He still sighed, and complained of the pain in his head. He had retchings after breakfast. In the morning he had five dark green glairy stools, not incorporating with the fluid in the vessel. He slept during the night, but several times started up incoherently; and upon recovering himself, he complained of headach. Sometimes, when his attention was attracted by what was passing in the chamber, suddenly the pain would strike through his head, and force him to cry wildly.

28th. Six leeches were again applied last night; and he has taken the calomel regularly. His pulse was 120; not quite so full, but much more regular. His skin cool. His mouth, particularly the gums, much affected with the mercury. Stools free, more natural, but still rather green; urine limpid. He slept calmly and did not start. He awoke vomiting; and he often retched during the forenoon. He continued very dull, and several times cried with pain. Sighed less. By candle light he had double vision.

29th. Yesterday, from half past two until he went to sleep, the retching was incessant. The retching returned at five o'clock this morning, and continued very troublesome. He had also been troubled with hiccup. After the retching came on, he ceased to complain of headach. He mentioned the double vision, but he neither squinted nor sighed. No stool. Great salivation. *Intermr. Calomelas, &c.*

30th. He lay in a state of constant salivation; the inside of his cheeks and gums were extensively ulcerated. He had no complaint but of his mouth. He had ceased to sigh, and had neither double vision nor squinting; but he was dull; p. 108; no retching.

8th July. His gums were spongy. The salivation had ceased, and his appetite had returned. He no longer complained of his head.

CASE IV.

D. M. aged four; a fine looking boy, fair with blue eyes.

26th December, 1806. This boy was sitting with his head leaning on a pillow, asleep, his face flushed, his eyebrows contracted, breathing softly, now and then sighing. His p. 132, and skin warm. He expressed great aversion

to light, was peevish, displeased when made a subject of observation, unwilling to be roused, yet perfectly distinct. He frequently complained of severe pain in his head, pointing, as the seat of it, to the left temple; and he complained of pain in his belly, and sometimes in his limbs. In the night his sleep had been short and disturbed, awaking from it starting and incoherent. During the day he had been reserved and silent, unless when in pain. His tongue was furred in the middle, and his breath sickly. He had no appetite, but considerable thirst. His bowels, from the use of laxative medicines, were open. Yesterday he vomited once or twice.

He had been confined several weeks with catarrhal complaints; in addition to which, for these twelve days, he has had febrile symptoms, with headach. On the 19th he was relieved; on the 23d his complaints returned; and ever since he has been in a situation such as I have described, the headach daily increasing. Two nights ago leeches were applied to his temple. *App. Hirudines quatuor tempori. Sumat Hydragryri submuriatis grana duo, ter quotidie.*

26th December. Four leeches were applied to the temple, and the discharge of blood was considerable. The dullness increased. He started in his sleep, and never awoke without being agitated, and complaining of his head. He had great thirst; the right cheek was much flushed; he sighed constantly; p. 132. *Sumat gutt. octo tincturæ digitalis ter quotidie. Contr. Hydrar. Submurias.*

27th. I found him amusing himself blowing soap bubbles; cooler; p. still 132. His tongue was moister; he had sighed less frequently, and he complained less of his head. *Appr. Hirudines. Contr. Alia.*

28th. The bleeding was free. He slept tolerably well. He complained of his bowels. He was sighing more, and his look was more anxious. He always awoke troubled. He had had many stools, which were more natural. In

the night his urine, which had been scanty, exceeded two pounds. P. 140 ; tongue cleaner. *Cont. Medicamenta.*

29th. A very restless night. Towards morning he complained much of his head. Pulse, tongue, and heat of skin as yesterday. He sighed, and was again flushed. He had a short troublesome cough. His breath was untainted. *Ung. Hydrargyri. fort.* ʒss. *Infricenda femoribus internis ter quotidie.*

30th. In the night, which passed quietly, he often sighed ; in the morning he complained much of his head, and was very dull ; p. 108 ; stools natural ; urine scanty. *Sumat Tincturæ Digitalis gutt.* x. *et Hydrargyri Submur. grana duo, quater de die.*

31st. He has not complained either of his head or bowels, nor has he sighed ; he had one fit of cataleptic lowness, which lasted about an hour, but after it he played with his brothers. The light was less offensive to him ; his look was more cheerful. There was no mercurial fœtor in his breath, which was pure. The night passed calmly, without starting. There was no fullness in the pulse ; it was unequal but regular. It differed from the pulse which is found in the change from the first to the second stage of Hydrocephalus, when the beat is full, but soft, and generally irregular and unequal. *Cont. Medicamenta.*

1st January. Although he awoke several times during the night complaining of pain in his belly, yet, on the whole, he slept tolerably well. He sighed two or three times ; his look was more anxious ; pulse 96, and regular ; stools green. *App. Hirudines. Tincturæ Digitalis gutt.* xii. *pro dosi. Cont. Hydr. Submur.*

2d. His look was less favourable. His pupils were much dilated ; his tongue white ; p. 104. These two days he has again complained of his head as well as of his belly. Urine copious ; stools slimy and green.

3d. He was again dull, and complained much of his head, and sighed; p. 100, irregular and unequal; stools darker; urine scanty. *Tinct. Digitalis gutt.* xv, *pro dosi. Hydrarg. Submur. gr.* ii.

Eight o'clock Evening. He had taken the increased dose of the tincture twice; p. 92, regular, and compressible. He sighed often and complained much of his head. For some days he had taken very little nourishment. His tongue was loaded; his stools were dark green; his head hanging on his breast: he was duller, his hand was cool, his breath still untainted. *Cont. medicam.*

4th. His pulse was fuller, and more irregular, 92; he was duller; his pupil dilated; tongue loaded; heat of skin not great. He has vomited every thing since last night. The stools were dark green and very fetid. The calomel and fox-glove have been vomited. *Intr. Hydr. Submur. Cont. Ung. Hydrarg. Sum. Tinct. Digit. gut.* xviii *pro dosi. App. Vesicatorium amplum.*

5th. His tongue was loaded; his breath untainted; his stools were dark and scanty; his urine natural and more abundant; the vomiting had ceased. In the night he started and sighed, and complained of his head, probably of the blister; he was pale, but his eye was more expressive; p 96, and irregular. ℞. *Infusi Sennæ uncias duas, Tincturæ Jalapæ, Syrup. Simplicis, utriusque drachmam. f. Haustus quamprimum sumendus. S. Tincturæ Digitalis gutt.* xxi. *pro dosi, 6tis horis.*

6th. In three hours after taking the purgative draught he had two free and natural stools; within the last twelve hours he has voided nearly two pounds of urine. Since noon yesterday he has not sighed; he slept from one o'clock to eight without once awaking; when he awoke he called for bread. He looked relieved; p. 92, with one intermission; tongue moist, not loaded. His nose, which for the most part had been dry, was running; and he had a slight de-

gree of salivation. His head, as usual, was dressed with mercurial ointment. *Sumat Tincturæ Digitalis gutt.* xxiv. *6tis horis. Rep. Haust. purgans.*

7th. Three free stools; urine copious. The night was undisturbed by any complaint; no sighing; tongue clean; p. 84, sharp and irregular. His eye was expressive; no salivation.

8th. Urine three pounds; two stools; no headach; p. 100, now and then intermitting: there was some return of the sighing, and he was once or twice sick.

9th. He slept softly, but during the night was once or twice disturbed by sickness; he sighed this morning and was pale; he did not become sick after his last dose, twenty-five drops of the tincture; but he vomited the dose taken in the night; p. 92, and irregular; in every respect a pulse such as we are accustomed to in Hydrocephalus, unless in the sharpness or jar of the beat; tongue clean. *Sumat Pilulæ Hydrargyri grana quinque cum sing. dos. Tinct. Digit.*

10th. With the exception of some muttering, he passed the night well, not complaining of his head, but much of his belly, and sighing. Stools free; rather light or clayey: he was sick, and duller, with the same pulse as yesterday. *Vesicatorum capiti.*

11th. The blister disturbed him during the night; he sighed often. He looked dull. He had again lost all appetite. He had no thirst. His tongue moist, with a grey furring. Slightly salivating, perhaps from nausea, as his gums were not affected. Urine more scanty; stools fetid, and clay-coloured. He complained of pain in his right arm; p. 120, regular. *Sumat Tinct. Digit. gutt.* xxx. *et Pil. Hydr. gr.* v. *sextis horis.*

12th. His bowels were slow, now and then in pain; urine scanty. His pupil was more contracted. He had no complaint of pain in his head. His tongue was white and moist; gums not affected; urine rather scanty. He

was languid and pale; and during the night had been much disturbed by sickness; he had six or seven times complained, for a minute at a time, that he could not see; p. irregular and indistinct, as small as in the wrist of an infant; not more than 52; no sighing. Give a little wine and soup. *Intr. Tinct. Digit.*

Evening.—The pulse confirmed again, jarring, exceedingly irregular. He had two natural stools; frequent returns of sickness. *Contr. Pilulæ & Ungt. Hydrarg.*

13th. Slept well. His bowels were regular. His urine again more copious; tongue moist and clean; pupil contracted; eye lively. He had only one attack of dimness of sight since the digitalis was left off; p. 80, still irregular; no pain in the head nor sighing.

16th. He had no complaint, nor sighing. His tongue was clean; his appetite good; urine free, with much sediment: stools natural. He never frets nor cries without shortly after complaining of pain in his head; but does not complain of it at any other time.

CASE V.

A. S. Aged three years and six months, with a fair complexion, of a delicate constitution, and habitually loose in his bowels.

April 15th, 1807. About six weeks ago he had a severe attack of diarrhœa, to which he is subject; and along with it he had fever. Of late he has had slight catarrh. Last night, about eleven, he became very restless and feverish, started, and had some delirium. To day he has had rigors, followed by flushing. His eyes were heavy. He had some cough. His pulse was 120; breathing 32; tongue rather white; complexion high; the lips and inside of the

nostrils of a bright vermillion. Brows contracted. He started in his sleep. He was costive; his urine scanty. ℞. *Pulveris Jalapæ grana sex, Submuriat. Hydrargyri grana quatuor. m. f. Pulvis quamprimum sumendus.* ℞. *Infusi sennæ uncias tres. Subcarbonatis potassæ grana decem. Tincturæ jalapæ drachmas duas, Syrupi simplicis drachmas sex. m. Sumat cochleare amplum tertiis horis.*

16th. During the night he had five or six stools, of a deep yellow colour, apparently containing much bile; he was feverish and thirsty, but not delirious. He could not support his head. His look was anxious; p. 140; tongue cleaner. His breath sickly. Frequent starting. *Cont. Mist. Cathartica. App. Hirudines sex Tempori.*

17th. Yesterday, in the afternoon, he sighed often; in the evening had some remission of fever; during the night was restless and feverish. His stools were of a dirty brown colour. His pulse was 132, with a deep hectic on his cheek. The bleeding from the leeches was considerable. *Rep. pulv. jalapæ, &c. Cont. Mistura Cathartica.*

18th. He had a restless but not so feverish a night. He often complained of his head and belly. When the belly was pressed the hepatic region chiefly was complained of; his eye was clouded; his brow knit; p. 128; his bowels free. *Intermr. Mistura. Sumat Hydrargyri submuriatis grana duo, octavis horis. App. Hirudines.*

19th. He has had no remission of fever. Passed a restless night, was thirsty, and had some oppression of breathing, and cough. He has had two healthy stools. His expression was unpromising. His eyes were dull; brows knit. Now and then he sighed deeply. He was without any pain. Still considerable tenderness of the abdomen. Pulse 132; tongue clean. *Cont. Hydrarg. Submur. Sumat Tinct. digitalis gut.* xii. *octavis horis, et augeatur dosis gutta singulis vicibus.*

20th. A miserable night; insensible; tossing; feverish and very thirsty, without any remission of fever. Complained much of pain in his head; pulse 120, and regular; one stool of the colour of mud. *Cont. Medicamenta.*

21st. He has had another restless night; insensible; flushed; no remission of fever; he has not had a stool. His urine, which had been scanty, was rather more copious; p. 112, regular. He had still a troublesome cough. He frequently sighed; was pale, and dull; his eyelids heavy, and his pupils dilated. His tongue was loaded. His breath very sickly. *App. Hirudines. Cont. Calom. et Tinctura.*

22d. The discharge of blood after the leeches less considerable than on the 17th. Yesterday afternoon he sighed incessantly. His cough was troublesome, yet last night he slept four hours without interruption; towards morning he often moaned; p. 120, not full. Considerable mucous discharge from the nostril. His eye was dull, the pupil dilated; he slept with his eyes open. His stools were dark green. His urine scanty. Since his illness began he has taken scarcely any nourishment. He had not exceeded fourteen drops of the tincture for a dose. *Cont. Medicamenta.*

23d. Had a restless night. Vomited his breakfast; the milk was curdled. He was asleep, breathing calmly, his eyes open, and his face expressive of discontent; he had frequent spasms about the eyes. To-day he has not sighed oftener than three or four times. Breath was sickly, p. 84; one dark stool. Urine did not exceed two ounces in 24 hours. He was taking twenty drops of the Tincture. *Cont. Med.*

24th. The frequency of the cough prevented him from passing a good night. He had passed three unhealthy stools; urine three ounces, p. 100, and regular, but rather small; skin cool; tongue clean. His pupil was more contracted. His expression was less unfavourable, yet he

could not support his head. Yesterday afternoon he again sighed without ceasing. Twenty-two drops of tincture of digitalis were given with each dose of calomel.

25th. All yesterday, after I saw him, he slept so profoundly that there was no rousing him. His breathing was irregular and suspirious. He was grinding his teeth. In the night he complained of his head. His cough was less troublesome. He had had no stool for thirty-six hours, and passed scarcely any urine. His skin was dry; p. 100. There was no mercurial fœtor from his breath. *Sumat statim pulveris jalapæ, gra.* x. *Cont. alia.*

26th. Had a calm night. Passed two free stools, dark green. Had not sighed. Constantly asleep. p. 100.—*Evening.* Pulse exceedingly irregular, did not exceed 60. He was profoundly comatose; not in the least roused by being rudely lifted out of his bed. He sighed. His eyes were spasmodically affected; stools deep green. In the course of the day he once or twice opened his eyes, and then complained more than ever of his head. *App. Hirudines sex tempori. Vesicatorum amplum fronti.*

27th. In the night the comatose state was several times interrupted by severe shoots of pain in the head, and by urgent thirst; at one time he sighed incessantly. The bleeding after the leeches continued for the greater part of the night. The blistered part was dressed with unguent Hydrarg. fort. There was considerable subsultus of his hands and legs; and his eyes and eye-lids were agitated with constant spasms. When his eye-lids were forcibly kept open, the pupil appeared much contracted. His nose was dry. The coma continued till morning. *Cont. Medicamenta.*

28th. No drowsiness since yesterday forenoon. Most uneasy during the night;—sleepless, with great thirst, vomiting, and looseness of his bowels; the stools green and fetid. His eyes continued spasmodically affected. There had been

no sighing. About seven this morning he sneezed incessantly for more than five minutes, since which he had again complained more of his head. His pulse was 100, and regular. He was taking twenty-four drops of the tincture of digitalis every sixth hour. *Cont. Med.*

29th. He had an easy night. About six in the morning the sneezing returned, lasting about ten minutes. After which came on great thirst, vomiting, and spasmodic affection of his lips and mouth, with headach. He was pale; he had acquired a squint; and was again sighing. Stools were dark green; urine scanty. *App. Vesicatoria duo ampla temporibus.*

30th. He had a bad night. The sighing was constant, the squinting and sickness continuing. Urine greatly increased, two pounds since yesterday afternoon. Stools plentiful and natural; p. 120, and small. Apply mercurial dressings to the blistered parts; and as the skin has been uniformly hard and dry, use the tepid bath. The calomel had been given with the utmost punctuality, and he was taking twenty-five drops of tincture of digitalis four times a-day. No mercurial fœtor from the breath.

1st May. The fomentations were followed by some moisture of the skin. His eyes were a good deal affected during the night. He had no headach; no sighing; the squint was very perceptible; several loose dark stools; urine more scanty; nose running. Repeat the bath. Give thirty drops of the tincture of digitalis.

2d. He had an attack of sneezing in the morning; p. 72, irregular and jarring. The pupil of the left eye (that which was turned from the axis) was much dilated. He sighed, was fretful, and pale. Stools copious, and clay-coloured; urine plentiful. *Sumat tinct. digitalis, gut.* xxxiii. *quater de die. Cont. Hydrarg. submurias. App. vesicatorium vertici.*

3d. He had a restless night, probably from the blister. The squint less perceptible; p. 100, and regular.

Stools large, apparently containing but little bile. Urine free. After taking thirty-three drops of tincture of digitalis, he generally complains of sickness. Dress the blisters with Ung. Hydr. fort.

4th. He slept well, his appetite considerable, and he was able to stand alone. After the morning dose of the tincture he had a severe attack of vomiting. Urine two pounds daily. Stools colourless, as in jaundice. The only symptoms of Hydrocephalus which remained, were occasional sighing, and slight strabismus. He amused himself with some other children. *Intr. Med.*

CASE VI.

Communicated by Dr. Kellie.

30th June, 1806.—I was desired to visit Forrest Fair, a boy between seven and eight years of age, who had occasionally been my patieut for psorophthalmia. He is of a scrofulous family, of a slender form, and tall for his age. He has been ill for two days, complaining, as he does now, of constant severe headach, and pain of the belly; moaning in his sleep, picking his nose, and grinding his teeth. He vomited this morning a quantity of watery green-coloured fluid, which has deposited, at the bottom of the vessel, a slimy viscid sediment. The face is much flushed; the eye dull and heavy, the adnata being suffused, and slightly inflamed; skin hot; belly tumid; bowels costive; pulse 130. ℞. *Pulv. Convolv. Jalap. gr.* xii. *Submuriat. Hydrarg. gr.* ii. *m. Sumat mox, et repetatur vespere si opus sit.*

1st July.—Is much disposed to slumber, moaning much, and keeping his hand on the forehead. He is easily roused, and then he complains violently of his head. When taken from bed, and brought to the light, he grew faint, and vomited. Has passed three large stools, of a deep green-coloured, consistent, tremulous, gelatinous substance, having a very peculiar smell of what is called faint or heavy, but not at all feculent. The face highly flushed; the eye suffused; tongue clean and florid; skin hot; p. 120. He is also very thirsty; his drink has been milk and water, which he has repeatedly thrown up again.

Four ounces of blood were taken from the foot. Two grains of calomel to be given every three hours.

2d.—The calomel powders have been regularly given. He has passed five stools, of the same appearance as those described yesterday. The stomach retains drink better; he vomits only when taken out of bed, or raised to the erect posture. Seems less torpid than yesterday. When asked how he is, the invariable answer is, My head! My head! p. 120; skin still hot; face flushed; and eye suffused

Eight ounces of blood were taken from the arm. The calomel to be continued.

3d.—He seemed greatly relieved yesterday, for some time after the bleeding; complained less of his head; and said it was better. The face, at my evening visit, was less flushed, and the skin not so hot; the pulse was 112. He has since, however, passed a most restless night; screaming at times with great violence, and crying to his mother to hold his head. Towards morning he became quieter. He is now in a listless torpid state; but not asleep. He answers questions slowly and unwillingly. When asked how he feels his head, he says better. But, when otherwise disturbed, as when I was feeling his belly with my hand, he cries out plaintively, Oh my head! He has not vomited since yesterday morning. Two tremulous gelatinous stools, not

quite so green; skin not so hot; face less flushed; the adnata of the eye less suffused, but the pupil is large and dilated, though sensible to the impression of a stronger light; p. 100.—*Sumat Sulphat. Sodæ* ʒii. *ex Infus. Sennæ* ℥iv.

Evening Report.—Vomited the laxative soon after it was taken. No stool. He is still more comatose; p. 120. *Injiciatur Enema Purgans. Applicetur Vesicatorium Capiti.*

4th.—A quiet night. He is now moaning heavily, and tossing his head from side to side. He is easily roused; answers always that his head is very ill. Pupil large. Blister well risen. Injection brought off one stool of no better appearance than the former; p. 120. *Sumat. Submuriatis Hydr. gr.* ii. *3a. q. q. hora.*

5th.—A restless uneasy night, crying out the pain of his head, and tossing with his hands. He is now more torpid than he was yesterday. Belly tumid and hard; three stools, green and slimy; p. 100, and intermittent. *Vesicator: Abdomini. Cont. Submur. Hydrarg.*

6th.—Has passed a quieter night. He is still lethargic. When roused, he says his head is better. Four stools of the same unnatural appearance; p. 112. *Omitt. Submurias Hydrargyri. Sumat. Infus. Sennæ.* ℥ iv.

7th.—Two green gelatinous stools; complains more of his head. Other symptoms as yesterday; pulse intermitting. *Vesicator. capiti.*

8th and 9th.—The symptoms continue much the same; at times he has been restless and screaming; at others, he appears torpid and comatose.

10th.—He is more insensible. The eyelids remain half opened; the pupils are still more dilated, and the left eye is turned away from the nose. He drinks a great deal, and swallows with avidity. He takes beef tea, and milk with water. Three slimy stools; p. 120, regular.

Two drachms of common mercurial ointment to be rubbed in on the thighs and belly night and morning.

To be supported with beef tea or chicken broth. All other remedies to be omitted.

17th.—From the 10th to this day, the symptoms have varied but little. The lethargic state occasionally interrupted by irritable and restless fits. The pulse has varied from 100 to 120. He has passed daily two green gelatinous stools; and has made a considerable quantity of urine. Every day ℥ss. of mercurial ointment has been consumed in friction. This day he is sensibly better. The eyes are more fully opened; and he answers questions with less difficulty. His fingers are constantly in his mouth, of which he complains. The gums are evidently affected by the mercury; there is slight fœtor of the breath, and the flow of saliva is increased. He cried for a breakfast of porridge, and ate several spoonfuls; p. 100. No stools since yesterday. The belly is less tumid, and feels soft and easy. *Omitt. Ung. Hydr.*

18th.—A restless night. Complains much of his mouth; he is constantly pulling the two molares of the right side with his fingers. They appear a little loose, and probably are giving him pain. He is quite sensible; and sees distinctly; says his head is still painful. No stools; p. 112.

19th.—Slept better. Salivation continues. Complains much of pain in the two right molares, the gum round which appears swelled and spongy. He is very fretful; skin hot; p. 120. No stool. *Sumat Infus. Sennæ* ℥iv.

20th.—Symptoms as yesterday. One gelatinous stool. *Sumat mane et vespere Calomel. gr.* ii.

21st.—Three slimy watery stools, with very slight feculent smell. *Omitt. Calomel.*

22d.—Salivation continues, with pain and swelling of the right jaw; in other respects better. Takes porridge and milk for breakfast; broth and potatoes for dinner; small beer for drink; p. 112. No stool since yesterday.

24th.—Continues to convalesce; he requested to have

his clothes this morning, and is now lying in bed dressed, amusing himself with toys. No stool since the 21st. His mouth is still sore. The molares loose; the tongue white and furred; p. 100. *Sumat Infus. Sennæ* ℥ii. *cum Tinct. Jalap.* ʒi.

25th.—Four feculent lumpy stools, of natural colour, and odour; appears greatly relieved; is sitting dressed in his mother's arms; p. 112. Salivation continues; and he complains much of the loosened molares.

28th.—Convalescent. No stool since the 24th. *Rep: Haust. Infus. Sennæ.*

29th.—Three fæculent stools. Matter is discharged between the gum and the loose bicuspides of the right side. Saliva still flows abundantly.

1st August.—Convalescent; functions natural. The two bicuspides, which have given him so much distress, came away incased in their alveolar process, which has been separated from the jaw.

5th.—Recovered.

CASE VII.

Communicated by Dr. Edward Percival.

M. G. aged 17, of slender form and healthy habits, has been subject to severe and protracted headachs at various intervals during the two last years. She has been relieved by copious bleeding with leeches, and purgative medicines. On the 15th of July, 1815, she experienced an attack of very severe pains in her head; with great intolerance of light, and motion. She took active purgative medicines during three days without relief. On the

19th I saw her; she could not in any way account for the origin of this fit of headach. She lay in a dark room, with her head and shoulders raised almost perpendicularly in bed; her hands were warm and moist, her feet cold; her pulse 86, and rather hard; her face was pale, with some irregular patches of red; her eyes natural, and the pupils readily contractible, her tongue slightly coated with white mucus. The pains occupied chiefly the left temple, occasionally darting acutely to the right temple. The crown of her head felt cold to her own sensations, and she complained of a cold fluid fluctuating there. Her bowels had been actively purged, yet seemed, on external examination, to contain much feculent matter. She had lived for several days on whey, and occasionally vomited a sharply acid fluid. *Mittatur Sanguis ex Arteria Temporali sinistra ad uncias sedecim. Bibat subinde cyathum Aquæ Calcis, R. Pulv. Jacobi veri scrupulum, Calomelanos gr.* x, *Ext. Colocynth. C. scrupulum, Mucil. gum Arab. q. s. ut f. pil.* x. *Sumat* j. *omni hora. Foveantur pedes subinde.*

20. The temporal artery had bled freely, and the bowels had been frequently evacuated. No relief had been obtained. Pulse as frequent, and somewhat harder; no sleep; no intermission of severe pain.

The temporal arteries were again opened, and eighteen ounces of blood withdrawn, when the patient fainted. Her hair was removed; and her head diligently sponged with cold vinegar; a blister was applied to the nape of her neck. In the afternoon some amendment had taken place. At night a further slight amendment.

21. Pain of the head continues somewhat abated; still occupies the left temple chiefly, darting acutely to the right side. No sleep, great intolerance of light; pupils of the eyes natural, in a dim light; but the contraction would probably have been greater than natural in an ordinary light. Tongue still coated with white mucus; bowels frequently moved; evacuations reported to be dark, slimy,

and party-coloured. Belly natural. On examining the hepatic region by gentle pressure of the hand, great tenderness, and even acute pain, was experienced by the patient; her breath had a slight mercurial taint; pulse weak, about 80; Cardialgia. *Admov. Hirudines viginti regioni hepatis. R. Infusi Sennæ* ʒviij, *Elect. Scammonii* ʒi, *Tinct. Sennæ* ʒiv, *Sp. Ammon. aromat.* ʒiss. *m. Sumat.* ʒi *4tis horis.* —Soda water and lime water, for the distressing sourness and sickness of her stomaeh.

In the evening some marked improvement was observable in all the symptoms; the leeches had bled copiously.

22. She has had three hours sleep: awoke with diminished pain; pulse low, natural in frequency; tongue nearly clean; bowels copiously evacuated. (By mistake, the evacuations were again removed, on account of their bad odour.)

She continued in an amended state through the day. Has taken some beef tea.

23. Has slept six hours; but complains much of the pains of the head, which, she says, are worse to day than yesterday. Hepatic and epigastric region very tender; no stools for the last eighteen hours. *Rep. Mist. cathartica. Admov. Emplast. Canthar. amplum regioni hepatis.*

24. Much amendment has taken place, and occasional sleep. Her vomiting and heart-burn have ceased; the shooting pains of her head have subsided, but the fixed pain in the left temple continues, though abated; her tongue and pulse are very natural: but she cannot bear either light or motion, nor can she lie in any other posture than that at first described.

25. Bowels have been copiously evacuated of bilious fetid fluid; has had much sleep; appears to be *oppressed* with *drowsiness;* pain only occasional in the head. Pulse and tongue natural; cannot bear light and motion; lies rather less perpendicularly; hepatic region very ten-

der, but less painful.—Let her head be *frequently* sponged with cold vinegar ; let her have ripe raspberries and soda water.

Evening.—Has had much refreshing sleep ; drowsiness has disappeared.

26. Much amended, nearly free from pain, but intolerant of light.

27. Convalescent.

30. Still averse from light and noise ; sitting in a darkened chamber ; free from pain ; sleeps well ; appetite returning : pulse and tongue natural.

Aug. 4. She is now perfectly reconciled to the natural light of the various rooms of the house ; is recovering her appetite and strength, but still complains of pains shooting from the left temple to the right.

CASE VIII.

6th July, 1805. D. C. aged eight, was observed unusually dull about a fortnight ago. He continued so for a week, but this would have been unnoticed, had he not several times come from school complaining of a headach. Once, about eight days since, he returned from play complaining heavily of his head ; his complaints afterwards attracted more attention, and he was taken from school. He would willingly have passed the whole day in bed, but his friends often urged him to rouse himself. He had no spirit for exercise ; and when he was not allowed to lie down he would sit, and in a few minutes fall asleep on his chair. In the night, though upon the whole he slept a great deal, yet he was feverish, and he often awoke alarmed or screaming wildly from the pain of his head. When he was sitting on his chair, sighing and yawning, and making some faint and indistinct complaint, if he were asked what ailed him, it was his

head, or a pain darting through his head. He has vomited frequently, particularly in the morning upon leaving his bed. Since the beginning of his illness he has been without appetite, and his bowels have been slow.

I found him considerably emaciated, with a sallow complexion. As he sat on his chair his head seemed heavy, ready to fall to one side, as if he felt difficulty in supporting it. He could hardly keep his eyelids open. There was great dejection in his look; his eye was languid, and there was a degree of encreased vascularity in the tunica albuginea. His breath was sickly. P. about 100, but so irregular that it would beat five times in five seconds, and in the next five seconds, it rose to ten. It was raised twenty strokes in the minute by walking across the room. He respired only fifteen times in the minute. Urine high coloured. Stools dark and fetid.

7th. Last night four leeches were applied to his temples, and several cathartic powders (*P. Jalapæ gr.* vi. *Calomel. gr.* iii.) were given. He had passed two large glairy dark green stools. The leeches were large, and the bleeding continued four or five hours from all the orifices. His urine deposited a considerable sediment; tongue clean. There was no change in his expression; he sat with heavy eyelids, sighing, yawning, and much subdued; p. 72, irregular. He has complained less of his head. Continue the calomel without jalap.

8th. About noon he was attacked with retching and vomiting, which continued until evening was far advanced; it was checked by a few drops of laudanum, after which he had a very restless night, and complained much of his head. He has had three or four of the glairy stools. There was little change in his look; he was, however, making some effort to amuse himself; p. still irregular, about 100. Breath sickly.

Evening. He has just had four large leeches to his

temple, as in the afternoon he complained much of his head. P. 60, and quite regular.

9th. A large blister was applied to his head after the bleeding had ceased. He complained of his head all night, slept but little, and started much. His look was even more oppressed and anxious; pain in the forehead; he was very averse to light. He had a slight cough. Tongue whiter. He was confined to bed. Pulse, when lifted and placed in a chair, 80, and very irregular; in bed about 54. Respiration 15. Stools dark and fetid.

10th. All night he complained much of pain in his belly; when examined there appeared most tenderness under the margin of the ribs of the right side. Weaker than he had been; his vision, hearing, and judgment were perfect; still his chief complaint was of his head. At whatever time I entered the chamber in which he lay, he was moaning in the same hopeless manner. P. in bed 100; when lifted, 136. Breath influenced by the mercury. His head was dressed with the strongest mercurial ointment.

11th. He had a restless night, caused by frequent returns of pain; he was sleeping softly, but had been troubled with tenesmus; his stools formed a dark bottle-green glairy mass; his gums were tumid. I had him taken out of bed, but was glad to replace him without delay, as he retched violently, and complained of headach. He was less ready in his answers; his p. had again fallen to 74. The skin of his neck and breast was covered with small pellucid pustules (hydroa).

12th. One ounce of the Ung. Hydrarg. Fort. had been rubbed in; and since the 6th he had taken upwards of a drachm of calomel. His mouth was so much affected from mercury, that he complained more of it than of his head, and refused even liquid nourishment, of which he had previously taken a sufficiency. Bowels costive. Omit the calomel; give 12 gr. of powder of jalap.

13th. Last night very uneasy. Three stools. He called for food, but was unable to sit up to take it; p. 120, and weak. When roused, his vision and understanding were perfect.

14th. He was in convulsions. The convulsions began at seven in the morning.

15th. The convulsions continuing, he became blind and insensible.

17th. I did not visit him on the 16th. This morning he was without convulsions; his pupils contracted; he was able to distinguish objects, and he took food. Pulse 120. His stools were more natural; his tongue was swelled from the mercury.

19th. He died on the evening of the 18th. When I visited him a few hours before he died, he was extremely weak; his breathing quick. No return of convulsions until shortly before death.

Dissection.—In the membranes on the surface of the brain and lining the ventricles, there was rather more venous congestion than usual. There were about four ounces of fluid in the ventricles.

Upon opening the abdomen, there escaped an unusual quantity of fetid air, which had been confined within the peritoneum. The omentum was wasted to a thin membrane. The great intestines were filled with air, and the small intestines, in many places, appeared solid, from spasmodic contraction; and at two different points there were volvuli. The veins of the concave arch of the stomach were unusually turgid.

The whole of the convex arch of the liver was connected, by strong adhesions, to the peritoneum. Those surfaces, were both highly inflamed, abounding in minute and florid vessels.

CASE IX.

Communicated by Dr. Kellie.

J. M. aged seven years eight months.

The parents of this child are healthy, and apparently free from any constitutional predisposition. Of their other children, two died of Hydrocephalus; the one under the usual acute form, the other sunk under the chronic form of the disease, the head being much enlarged. A third child of the family has lost one half the jaw-bone from scrofulous necrosis; and the bones of one of the thumbs are now exfoliating, from the same disease. The boy, the subject of the present case, has been hitherto very healthy, and was, in every respect, as fine a child as I ever saw.

When called to see him on the 6th July, 1807, he complained much of his head, which he seemed quite unable to hold up. Though dressed, he was lying on two chairs, and was seized with inclination to vomit, when made to rise. The pain, which he describes as very severe, is in the forehead and temples; the eyes have a languid, heavy, suffused appearance, and his eyebrows are kept strongly knit. He picks his nose. The tongue is white and furred; skin hot; pulse 120; belly costive; urine turbid, depositing a chalky-coloured sediment.

For three days past his mother has observed him looking ill, refusing his food, declining his usual exercises, and expressing a desire to go to bed earlier than usual. Yesterday he complained of his head, for the first time. He has had a dose of senna, which operated twice the day before yesterday; and last night his mother gave him an emetic of ipecacuanha. *Sumat, quam primum, Submuriat. Hydrarg. gr.* ij. *et cras mane, Pulv. Jalap. gr.* xv. *cum Submur. Hydrarg. gr.* ij.

7th.—Four highly feculent stools, of natural colour and consistence, with a prodigious number of ascarides. He appears, however, no way relieved. When raised from his bed, he vomited, and complained grievously of his head. *Sumat statim Submuriat. Hydr. gr.* ij. *et repetatur vespere.*

8th.—Complains more of his head. He lies constantly on the left side, with the head very low, and dislikes much to be disturbed; has vomited twice this morning; no stool; face flushed; eyes suffused. He dislikes the light, and complains of the slightest noise. Skin very hot; p. 120; not hard. *Six leeches to be applied to the temples. Two grains of calomel every third hour.*

9th.—The leeches bled well. He seemed for a while somewhat relieved, and said his head was better; but towards evening he became worse,—screaming dreadfully, and crying to his mother to hold his head. In this restless manner he passed the night, and slept none till towards morning. He is now quieter, and says his head is easier. Two stools, with ascarides. Has not vomited since yesterday; p. 112. The leeches to be again applied. ℞ *Pulv. Jalap. Comp.* 3i. *Calomelanos, gr.* vi. *m. & divide in doses* iv. *Sumat* 1*m*, 3tia. *quaque hora.*

10th.—Exacerbation of pain and fever, with return of restlessness last night. Is again easier this morning; but complains much of his head, and now also of his arms. The pupils appear larger, but by no means fully dilated. He inclines still to lie on the left side, i. e. from the light. Four large offensive stools, brown-coloured, and not very watery; no ascarides. Drinks much, but refuses food of every kind. Face flushed. Skin hot; p. 100. *Repetr. Pulveres Purg. ut heri.*

Evening Report.—He is much worse since seven o'clock. He screams constantly, oh my head! my head!—*Eight o'clock*, he is quite delirious and unmanageable; talks incoherently, and tosses his head about from side to side.

Pupil more dilated; pulse 80; face extremely flushed. No stool. To bleed him in the neck or arm was impracticable, on account of the frantic and restless delirium. With some difficulty I opened a vein in the foot, and obtained about four ounces of blood. He soon afterwards became quieter. Two leeches were then applied to his forehead. *Omittantur Pulv. Purg. Sumat Submuriatis Hydragr. gr.* ii. 2da, *q.q. hora.*

11th.—The screaming continued till near four this morning, when he fell asleep, and remained quiet till seven. Says his head is easier, but he complains grievously of his arms, which he has desired his mother to rub, and bind up with ribbons. He seems now quite sensible. The face less flushed; pupil very large, but perfectly irritable on approaching the candle; he sees distinctly; knows every body, and every thing; pulse 80, and intermits three or four times in a minute. Has eaten largely of jelly and bread, which he asked for breakfast. No stool yet. *Contr. calomelas, u. a.*

Evening Report.—Has been very quiet since morning, till about eight this evening, when the exacerbation returned. He now screams, and calls out, oh my head! oh my arms! hold my head, rub my arms! The calomel has been regularly given. One spare stool; p. 100; intermittent. Calomel to be continued. Two drachms of mercurial ointment to be rubbed on the thighs; the head shaved, and a large blister applied.

12th.—A very restless night. He complained constantly of his head and arms, and tossed about, but did not appear otherwise delirious. From three to seven he slept pretty softly. He is now, at nine, lying on his back devouring, with surprising voracity, a second slice of bread with currant jelly, and asking for more. All his actions, indeed, are precipitate and passionate. He complains of head and arms; pulse 112, quite regular; the beats being full and firm, rather hard; tongue clean; pupils dilated;

face flushed; no stool; little urine passed. *Sumat. statim Pulv Jalap. scrup.* i, *Calomel. gr.* ii.

Six leeches ordered to the temples. The mercurial friction to be continued.

Evening Report.—The leeches have bled profusely. He has been quieter and easier. Three copious, highly offensive, brown-coloured, feculent stools. No ascarides observed in them. He has taken a great deal of beef tea and jelly with bread. At this time, nine of the evening, he is in a slumbering state, complaining at times only, or when asked how he is, of his head and arms. He shuts his eyes, and complains so much on the approach of the candle, that I cannot ascertain the state of the pupils. The face is rather pale; the skin less hot; p. 120, smaller and softer. Another blister to be applied to the head. The calomel to be continued every two hours; and the mercurial friction to be repeated.

13th.—Slept quietly till this morning; has been since more restless, turning from side to side, and complaining of the head and arms. At other times he remains quiet, corrugates his lips, opens his mouth, and then grinds the teeth forcibly, and in a maner most painfully audible. Has had one slice of bread with jelly, which he ate quickly, but with less voracity than he did yesterday. In general, he takes willingly what is offered him, and he answers questions pretty distinctly. He says he is better, and complains less of the head than of the arms. In a moderate light, the pupils appear much dilated. He sees, however, distinctly, and names several objects which have been presented. Blister has risen, and discharged well. One stool, brown, fetid, and offensive. Urined once, in small quantity, yet pale and watery. Tongue slightly white; pulse 130, regular. The blistered part to be dressed with Ung. Hydrarg. The calomel and mercurial frictions to be continued.

Evening Report.—During the day he has been quiet,

sensible, and collected; at times only, moaning, and sighing profoundly. He has repeatedly asked for various kinds of food; for beef-steaks, and dried fish. He has had beef-tea and bread, and a few prunes. In this way, he continued till about seven in the evening, when, after repeated fits of screaming and restlessness, he was attacked with strong general convulsions, of the spastic or tetanic kind. One of these fits I have just witnessed. The neck, the arms, and fingers, were chiefly affected; and the convulsions seemed confined to the extensor muscles. The fit over, he appears quite insensible; he grinds the teeth with dreadful force, and, between whiles, mutters indistinctly, like one in the low delirium of typhus. Pulse 140.

At Midnight.—Low muttering delirium. Eyelids half raised. Pupils completely dilated. He turns himself occasionally from one side to the other with a kind of precipitate leap. Only one convulsion since that I witnessed at nine o'clock. Nothing can be got within his mouth, the teeth are kept so forcibly together. Pulse 160.

14th.—Several convulsions since last report; and, in general, he has been in the same low, insensible state, muttering and grinding his teeth with a most horrible stridor. About three this morning he passed, in bed, a large, offensive, feculent, watery stool. Has swallowed, at intervals, a small quantity of wine and water. At seven this morning, he appears less insensible than he was last night. He grinds his teeth as before; he moans heavily, and cries out at times, "Oh my arms!" He stretches them frequently out; he picks his skin, and tugs his shirt sleeve. He swallowed easily a spoonful of jelly which I gave him, and then cried out for drink. He refused the wine and water which was offered; he refused also beef-tea. He cried out again for water—"Water, water, I want *cold* water!" Of some cold gruel, he now drank very greedily.

At Ten o'Clock A. M.—A most violent general convulsion, which continued with little mitigation for twenty minutes. Pulse, during the fit, 100; before and after the fit, 140. Continue the mercurial friotions; and let him have wine, to the extent of four glasses, with water.

Evening Report.—Several convulsions from eleven till two o'clock, from which time he has been quiet and insensible. At nine this evening, he still slumbers softly. Has taken about three glasses of wine. No stool nor urine passed since morning. Pulse 100.

15th.—Has passed the night in the same slumbering state, occasionally moving his arms, and sighing deeply. Towards morning he turned himself, and passed his urine in bed. He looked up, and drank some wine and water freely. He knew his mother, and spoke to her.

At Nine this Morning.—He is awake; the eye is clear; the pupil is much dilated; and, though he rolls his eyes much, and seems to direct and fix them with difficulty, he sees and distinguishes objects distinctly, several of which he named. When asked to shew his tongue, he pushed it out very readily: it is very black, foul, and swelled, but moist. He takes the wine and water willingly, but has some difficulty in swallowing. The countenance is pale; the features sharp; the alæ narium drawn close; p. 100, soft and equal. Has taken, since yesterday, about six ounces of port wine.

The wine to be continued. To have calf-feet jelly, and beef-tea, *ad libitum*. The head, which is still sore, to be dressed with Ung. Hydrargyr.

Evening Report.—Has continued in the same quiet state, though more awake. Has taken four glasses of wine and two glasses of jelly. He answers distinctly; says his head is bad, and arms easier. He picks much at his eyes and nose, but has not ground his teeth. The pupil is nearly natural. He has urined three times very plentifully. No stool. Pulse 130. Continue.

16th—A tolerably quiet night; sleeping generally; and at intervals moaning, sighing, and picking the bed-clothes, eyes, and nose. Has passed urine twice. No stool. Has taken, during the night, three glasses of wine, and one of calf-feet jelly. He answers distinctly; says he is better; but complains of his head. He swallows more easily, and more naturally. Tongue less swelled. Gums look a little red and full; no mercurial fœtor, however, nor salivation. Pulse 140. Skin hot. Belly swelled and hard. To have four grains of calomel; to be repeated, if no stool has been procured, at six in the evening. Urine, &c. as before.

Evening Report.—Became uneasy, and evidently worse, about five o'clock. He moaned heavily; ground his teeth most dreadfully; and was soon afterwards seized with a general convulsion. At ten this evening, he is still convulsed over the whole body. As before, the spasm seems confined to the extensor muscles; the legs and arms are forcibly stretched out; and the neck and trunk are quite rigid. There is very little interval between the convulsions.

17th.—The convulsions continued with very short intermissions. He died this morning at seven o'clock.

No dissection.

CASE X.

J. M. (vide Case I.) again became my patient, in Dec. 1806. Indeed, as she had not regained her health after her illness in May 1804, I had very often in the meantime been consulted about her complaints. She had had frequent attacks of scrofulous ophthalmia; the lymphatic glands in

her neck were swelled; there was a protrusion of the 10th dorsal vertebra; her instep was enlarged, from a swelling of the bones of the foot. She had frequently been troubled with a disordered state of the abdominal viscera; at those times, her abdomen was tumid, the stools dark and fetid, her breath heavy, and she was not without fever. When these symptoms were relieved, by aloetic purgatives, she generally enjoyed tolerable health for some weeks or months. When the swelling in the spine was first observed, her bowels were, and for some time had been, in a very disordered state; and it appeared that as her stools became more natural, in consequence of the aloetic pill, the protuberance in the back was less conspicuous. In the latter end of November this girl had several fits of sickness, and was for some days costive; I ordered her pills with aloes and gamboge. On the 1st of December she was still costive, and, in addition to her other complaints, she complained of pain in her head and belly, with which she had been occasionally affected for two days. I advised the pills to be given regularly until the stools showed that the state of her bowels was improved; but I found an unwillingness in her friends to give her medicine.

4th December. She had had only one dose of the pills. She was screaming with pain in her head and belly. She was drowsy, fretful, and feverish. ℞ *Tincturæ Jalapæ Unciam, Syrupi Simplicis semunciam. Aquæ Uncias tres, m. Sumat cochleare amplum, 3a. q. q. hora.*

6th. She had taken all the mixture, which produced only one scanty stool. She was extremely dull. Whenever she leant her head on her mother's knee, she instantly fell asleep, and awoke confused. The pain, chiefly in her forehead, was more intense and constant. ℞ *Pulv. Jalapæ grana* xx. *Submuriatis Hydrargyri, Sacchari, a. a. gr.* xij. *m. f. Pulv.* iv.

7th. She had taken three of the powders, but had only one stool. She was asleep; pale; and altered in appearance;

her eyes were slowly rolling under her eyelids; headach excruciating during the night; p. 60. Upon awaking she sighed heavily; was for some time incoherent, and her pupils were much dilated; considerable strabismus. Her tongue was loaded. As it was impossible to get her to swallow medicine, I advised laxative glysters, two of which were given, and were followed by the discharge of a quantity of dark feces, of a colour between red and brown, mixed with dark ropy slime.

8th. She was sleeping calmly; in her sleep now and then she sighed. Her pulse was under 60. The heat of her skin moderate. She had a fixed squint; her mother thought her blind. No more stools.

9th. Her left side was motionless; her right affected with convulsions. For some days she had refused all nourishment. During the last twenty-four hours has been comatose and insensible; she lay grinding her teeth, breathing for the most part softly, but sometimes stertorously; her eyes inflamed, and generally flushed. Her stools, of which she had several during the night, were firm and clayey; pulse 100, and full; her breath very sickly; her mouth drawn to one side; her tongue white and dry. She had had slight convulsions, which generally disappeared after a long sigh.

10th. P. 140; was sleeping calmly. During the night she had three fits of violent convulsions Her stools were dark.

11th. P. about 200. Respiration quick; countenance pale; eyes fixed. In the night she recovered her sight, and was also sensible Her urine and stools were scanty. —She died in the evening.

Dissection. There was nothing unusual in the first view which presented of the intestinal canal; but, upon a closer examination, I discovered, in the small intestines, evident traces of increased vascular action; in several places, the blood vessels had that florid and injected ap-

pearance which is only found after inflammation. In children, when there has previously been any irritation in the bowels, we seldom fail, upon dissection, to find constriction and intus-susception of the small intestines; accordingly, about a foot of the ilium was found thus involved; at this part, however, I could not discover any remains of inflammation.

The gall bladder was much distended with dark green bile.

The surface of the liver was quite irregular, from a multitude of tubercles of various sizes. When the substance of the liver was cut into, we found its structure universally tubercular; and except on the convex surface, it was unusually colourless. The appearance of increased vascularity on the surface was striking; and it adhered by numerous bands of unequal strength, some of them as firm as the broad ligament, to the peritoneal coat of the diaphragm, which also had been much inflamed.

Many of the mesenteric glands were enlarged. Some of those which appeared unusually firm I cut into, and found containing a quantity of caseous matter. There was nothing unusual in the appearance of the spleen, pancreas, kidney, or great intestines.

We were not allowed to make a dissection of the brain.

CASE XI.

June, 1801.—C. D. aged fourteen, of a family very liable to scrofulous affections, complained about the beginning of spring of rheumatic pains and want of appetite; and her constitution was so much impaired that her friends thought her in a consumption.

Towards the end of May, her chief complaint was pain in the head. In the beginning of June, the pain was seldom absent, and her bowels were much disturbed; she had severe and continued diarrhœa, and at the same time was sick, and vomited bile: her pulse denoted much fever.—The slightest quantity of calomel, even half a grain, increased the purging. Purgatives, opiates, and cretaceous medicines were alike unavailing; the sickness, diarrhœa and fever continued; at length, she complained less of her head; but this was from her having become lethargic. She showed considerable displeasure when roused, and invariably turned from the light; her pupils did not dilate; she had every symptom of Hydrocephalus, except the slow pulse; but that this disease existed, was not suspected sooner than about ten days before her death.

CASE XII.

June 1805. R. A. aged six.

This boy, for more than a year, had not enjoyed good health. In July 1804, he had the hooping cough, after which the utmost delicacy of constitution remained; he was long without appetite. After the cold winter weather set in, he was affected all over the body with circumscribed tumours, about the size and shape of a nutmeg, apparently formed in the cellular membrane, which slowly suppurated, leaving scrofulous sores. When the tumours first appeared he was low and weak, and his appetite and digestion were impaired, so that he was confined to bed. As the spring advanced he recovered strength. I called upon him occasionally to see the progress of the scrofulous affection of the cel-

lular membrane. One day, upon remarking that there was something peculiar in his look, his mother said, she was afraid he was losing his sight. I examined him, and found that the pupils did not contract; one side was paralytic. He did not complain of any pain in his head; but in ten days he was dead, during which interval most of the symptoms of Hydrocephalus were manifested.

CASE XIII.

A. S. two years and a half old, a fair child, of a phlegmatic temperament.

9th December.—About eight o'clock last night this boy was seized with a fit of convulsions. When I saw him, which was about ten minutes after the seizure, he was recovering. He had passed, during the fit, a loose clayey stool, marked with dark mucous streaks, exceedingly fetid. A glyster of gruel with salt was immediately injected; then he was put into a tepid bath, and a potion, containing carbonate of magnesia and powder of jalap, was given every two hours during the night. About four in the morning he had a second fit. I was sent for; but, before I arrived, the violence of the convulsion was again over. However, his body was still contracted; his limbs, particularly of the left side (which was the side most affected with the convulsions), were extended; his pupils dilated; his countenance was pale. From 10 a. m. to 12, he was never altogether free from convulsions—often violently affected. The convulsion is described as sometimes a complete opisthotonos. In the interval between the fits his understanding is perfect. In the evening he was pale; he had frequent convulsive twitches. His pulse was extremely quick and hard; his skin was warm. He had taken about two drachms of

magnesia and one of jalap, and his bowels were loose. The stools were dark and viscid, and of a very pungent fœtor.

About the 2d of December, this boy's gums and tongue were affected with those circular painful ulcers, attended with salivation, which by some are supposed always symptomatic of difficult dentition; he was feverish and lost his appetite. On the 5th and 6th he appeared in a state of convalescence. On the 6th he ran through the house in good spirits, and his mouth was easier. On the morning of the 8th he made frequent complaints of pain in his belly; he was dull in the afternoon, and lay with his head on his mother's breast. He never had complained either of sickness or headach. Some of the ulcerations, more superficial than at first, were still to be seen in his gums.

10th.—This boy had another fit of convulsions last night at midnight. He was insensible. His pulse extremely hard and vibrating. His pupils remarkably contracted. His skin hot; his tongue loaded. The subsultus still continued. His stools were large, green, and slimy. His head has been shaved, and linen dipt in cold water and vinegar frequently applied.

11th. Four leeches were applied to his temples, and a blister to the scalp. His pulse was less frequent, about 130. The adnata was suffused, the iris appeared pale. His pupils were less contracted. One cheek was flushed. He was frowning, sighing, restless, insensible. The twitches, particularly of the left side, continued. He had frequent dark stools; his urine was scanty.

12th. Yesterday he began to take digitalis and calomel. The cornea was covered with a viscid secretion, which concealed the shape of the pupil in the right eye. The pupils were but moderably dilated; they contracted upon the approach of a candle to the eye; yet he appeared blind. Pulse about 200; respiration 50; he sometimes sighed. His breath was very sickly. He had con-

vulsive twitches about the eyes; and his left hand and fingers were irregularly, sometimes spasmodically, moved. At one time he was quite sensible of his mother's attentions. He had passed three green and slimy stools. He died about midnight.

CASE XIV.

Two children and their mother had fever, with morning remissions. One of the children, about the seventh or eighth day of fever, had symptoms of oppressed brain, apparently from Hydrocephalus having taken place of the fever. She was briskly purged, blistered, and took digitalis in large doses, and calomel. In four days from the change in her disease, she had no symptoms either of fever or Hydrocephalus. She was indeed very weak. About the time (30th September) that the fever left the mother of these children, a third girl, about four years of age, sickened. The fever which this last child had was ardent, with a morning remission, not very complete; she never complained of her head, nor was sick at stomach. On the 9th day of October the fever, it appeared, had left her; and immediately a severe vomiting and purging of bile ensued. She became exceedingly dull, and scarce ever spoke afterwards. The purging continuing, on the 10th an opiate was administered, after which the purging ceased: the dullness and insensibility increased, and she was, on the night of the 10th, quite insensible, and rolled incessantly from side to side. The feverish heat of her skin returned.

11th October. She was extremely restless; her pulse nearly 200. Her pupil was dilated, but it contracted upon the approach of a strong light. Although insensible to

every thing which passed in the chamber, yet she was able to express her displeasure upon being lifted out of bed. She sighed frequently.

12th. She passed a miserable night, in a state of continued restlessness, tossing about the bed, and grinding her teeth. Her eyes were often fixed. Her pulse was 180 or 190, and small. She was blind; her breathing was irregular; her breath sickly: such restlessness I never witnessed.

13th. She had had no stool for two days. The last was a quieter night. She was restless, apparently insensible, and deeply flushed. There appeared in her agitation great impatience.

14th. She died in the evening; her left side was in constant motion during the greater part of the day.

Dissection.—15th Oct. There occurred unusual difficulty in separating the skull-cap from the dura mater. This arose from an indissoluble adhesion, at the upper part of the lambdoidal suture, of a part of the membrane to the bone. The adhesion was circular, and about an inch in diameter. It was evidently the effect of inflammation, but probably not of a recent date. The dura mater did not at any other part exhibit any great mark of disease.

The longitudinal sinus was but scantily filled with blood. On lifting the dura mater there appeared, on the brain, the most incontestible remains of arterial action. All over its surface the florid blood-vessels were very abundant; and in the spaces between them, there were suffusions of vermilion-coloured extravasation, in pretty extensive masses. Under the tunica arachnoidea there was a considerable quantity of serous effusion extending over all the surface of the brain, but lodged chiefly in the interstices between the convolutions. The veins were not empty, but by no means turgid. The substance of the brain was of a natural

degree of firmness; and, on dividing it, numerous red spots of blood studded the cut surfaces.

The ventricles were but little dilated, they contained a quantity of serous effusion, not exceeding an ounce; the hole of communication between the ventricles was somewhat enlarged. The plexus choroides was coloured deeply with arterial blood; and the velum interpositum was beset with little red blood-vessels in great abundance; it resembled the appearance of the surface of the brain when the dura mater is removed.

The substance of the fornix was perfectly firm. All around the base of the brain, the surface exhibited the same marks of inflammation which were observed on the upper part of the brain. Yet there was no such appearance on the surface of the cerebellum; on the contrary, there was not to be discerned a single red blood-vessel upon it.

CASE XV.

September 1806.—A few days ago, a girl about seven years of age, who had been labouring under a continued fever, with morning remissions, with which three children in the same lane were affected, appeared to me to have got a crisis. She became cool on the 15th day of her fever; her tongue was clean. On the 18th day, I called again and discovered my mistake. Her pulse was about 80, and it was greatly accelerated by lifting her up on the pillow, or turning her in bed. The pupils were dilated, the iris paralytic. She was blind, and insensible. She breathed irregularly, and frequently sighed. She had every symptom of Hydrocephalus, with the exception of

the stools, which were fetid, and of a dark reddish brown. In this state she lay three days, and died, after being in convulsions.

CASE XVI.

January 20th, 1814. —— —— Ætat. 6½, a remarkably intelligent, pale, fair, and rather delicate boy. This was said to be the 8th day of a fever, during which his bowels were irregular, his stools dark green. Last night he complained of his head; in the beginning of the febrile attack he complained of headach, but it was transient.

Slight strabismus; averse to light; he dozed much, awoke collected, but often complained of pain in his head, over the eye brows, with some giddiness; pulse unequal, about 96; he frequently sighed; tongue moist and perfectly clean; breath of a sickly smell. *Abradantur Capilli. Applicentur hirudines sex Tempori.* ℞ *Pulveris Jacobi veri grana tria, Pulveris Scammonii grana quatuor. f. Pulvis, tertiis horis sumendus.*

Evening.—The effusion of blood after the leeches was profuse. No abatement of the symptoms; he awoke wild and squinting. *Mittatur Sanguis ex Arteria Temporali.*

21st.—Strabismus; p. 108; his skin had not become soft. Five stools in the course of the night—chiefly a greenish slime; not more than two ounces of blood obtained, but he seemed easier after. *Mittatur Sanguis e brachio ad uncias Sex.* ℞ *Pulveris Jacobi grana quatuor, Pulveris Rhei grana duo, m. f. Pulvis quartis horis sumendus. Vesicatorium inter scapulas.*

Evening.—Much Strabismus, stupor, constant sighing, increase of restlessness; pulse weaker. *Intermit. Pulveres*

Jacobi, &c. ℞ *Submuriatis Hydrargyri, Sacchari, utriusque grana duo. m. Sumat tertiis horis.* ℞ *Tincturæ Digitalis guttas decem, Spiritus Ætheris Nitrosi, Syrupi Simplicis, utriusque drachmam, Aquæ semunciam m. f. Haustus, sextis horis sumendus.*

22d.—Light offensive; sound also. He continued to sigh. He was reported to have a habit of sighing; but he has sighed much more than usual. He was restless the greater part of the night; pulse 116; had been grinding his teeth; had voided no urine for 24 hours. *Statim Injiciatur Enema Terebinthinatum. Perstet in usu Medicamentorum. Augr. dosis Tincturæ Digitalis, tribus guttis, singulis vicibus.*

Evening.—He had an easy day. He did not complain of his head more than once or twice. He was quite collected, at the same time I observed that he was fast asleep in not more than ten or twenty seconds after he had answered a question. He had frequently complained of some pain in his belly, which was soft. The glyster brought away but a scanty discharge of feces. He afterwards passed seven or eight ounces of urine. ℞ *Infusi Sennæ Unciam, Tincturæ Sennæ, Syrupi Simplicis, utriusque drachmam, Electuarii Scammonii grana quindecim. Sum. cras mane.*

23d.—Dilated pupils, less strabismus, pulse 130; four stools of the darkest green. *Applicetur Vesicatorium vertici.* ℞ *Pulveris Jacobi, Submuriatis Hydrargyri āā grana duo. m. tertiis horis sum. Sumat Haustum cum Tincturæ Digitalis guttis viginti.*

24th.—Very enlarged pupils. No headach. Pulse 134. Urine very deficient. Scanty stool. Blister succeeded well.

Evening.—A convulsion was threatened, but was instantly checked by aspersion of the face and neck with cold water. *Continuentur Medicamenta.*

25th.—Dilated pupil; Coma; glairy stools; p. 140-50. Slight subsultus. Convulsion was again threatened, but

was prevented by aspersion, after which half a grain of opium was given. *Continuentur Medicamenta. Vesicatorium Occipiti.*

26th.——He lay quiet. Convulsion last night again checked by aspersion and opium. He was rubbed with Mercurial ointment. *Continuentur Medicamenta.*

27th.—The vessels of the albuginea were varicose, and there was a gummy discharge from the eye. More dilatation of the left than the right pupil. P. 130. The gums appeared tumid. He had a perfectly calm night.

Evening.——Incoherent when roused; tongue clean; glairy stools; straw coloured urine.

On the 28th of January he died. No dissection.

CASE XVII.

Friday, March 11th, 1814. ——— ———, Ætat. 12, a very promising boy; liable to feverish attacks with disordered bowels. Intense pain and weight of forehead and vertex; leaned on his forehead to ease the weight; face flushed, eyes red; pupils large, sight perfect, noise aud light distressing. Frequent sighs; stings of sharp pain in the right shoulder, nape of the neck, back and loins, alternated with that of the head; skin burning; tongue loaded; thirsty; pulse about 70, increased to 100 on the least motion; vomited both drink and medicines. Costive for some days. Abdomen tense; urine scanty and high coloured; scarce any sleep; constant agitation, changing from the bed to the fire.

Was feverish at Christmas; recovered apparently, but soon drooped; he was chilly and complained of his right

side, sat leaning to his right side, owing to pain, and complained of his head. Bowels were neglected. Cough supervened, which still continues; and lastly, on Sunday the 6th of March, he was attacked with acute pain in the head. *Hirudines duodecim Temporibus. Pil: Colocynthidis cum Calomelane, sumat duas alternis horis. Enema Catharticum.*

March 12th.—A large stool with large balls; head easier; little sleep; vomiting ceased; cough troublesome; agitation still incessant; pulse unsteady. *V. S. ad unc. X. Pulv: Jacobi gr. tria, tertiis horis.*

March 13th—Cough relieved; fever not abated. Blood buffy and cupped; sweat on the head and neck for an hour, succeeded by shivering and recurrence of heat and pain; pain mitigated by glyster and cathartic pills; eyes more vacant, pupils large—they contracted; p. 60, very intermitting; two motions; urine with a white deposite; bilious vomiting after the third powder.

March 14.—℞. *Pulveris Antimonialis, Calomelanos ā ā grana duo. h. s. Sum. Cras, Mist. Purg. e Senna, &c.*

March 15th.—Made less complaint, though his distress evidently was considerable; he sighed, moaned, and cried out, but immediately forgot the painful stings, and relapsed either into a torpid state, or was incessantly agitated, and required his posture to be changed. P. under 60, but very irregular; had some vomiting; had passed glairy stools, and urine with white deposite. Give beef tea. *Mist. Camph. cum Aqua Acetatis Ammoniæ.*

March 16th.—More flushed and feverish; p. 100, unsteady and irregular; stings of pain in his head, shoulders, and back.

March 18th.—Upon which day it was that Dr. Crampton, under whose care the boy was, told me he had a patient in Hydrocephalus, whom, if I had a mind, I might go with him and see. The preceding reports are in Dr.

Crampton's words. The following are transcribed from my case book.

No complaint of the head; he lay with his face turned from the light; he sighed, and complained of a most acute pain of the right acromion scapulæ. This pain had not remitted for several hours; there was considerable tenderness all along the margin of the liver, but especially in the left portion of it in the epigastrium. Pulse irregular, unequal, 76, hurried by turning in bed; stools of a dark muddy green; urine not very deficient. *Applicr. Hirudines sex regioni hepatis.* ℞ *Pulveris Jacobi grana duodecim, Calomelanos grana novem, Opii grana duo, Conservæ q. s. s. f. Pilulæ sex. Sumat unam quartis horis.*

March 20th.—Tranquil, more dull; he sighed three or four times during our visit; he had one sharp sting of pain which he said was in his head and back; pulse 80; Tongue furred, brown and dry. Shortly after the bleeding with leeches, the pain in the shoulder ceased. *Cont.*

March 22d.—With difficulty roused. Pupil dilated; slight strabismus. P. 100, more irregular; tongue moist at the edges; large liquid stool; urine free, with a copious sediment; for the last two days he has had profuse sweats from his neck. Was taking at the rate of a scruple of Calomel in 24 hours. *Continuentur Pilulæ. Hab. Pulveris Fol. Digitalis gr. iss. tertiis horis.*

March 23d.—Great languor; his sight is perfect, as are all the animal functions; he answered slowly, but with a distinct apprehension. Pulse, before he was stirred, not more than 60. Tongue at the edges clean and moist; abdomen soft, no stool. The perspiration from the head continues,—night-cap after night-cap drenched. In an hour or two after the first dose of digitalis, he began to pass urine profusely, and continued to pass it every hour and half. In the night he took a pint of warm jelly. *Cont.*

March 24th.—Tranquil; was taking nourishment in abundance. Excretion of sweat and urine profuse. No stool. *Contr. Sumat Pil. Purg. e Colocynthide*, &c.

March 25th.—In the afternoon of the 24th he became very cold. There was something too eager in the grasp of his hand when his mother laid hold of it: it seemed almost convulsive; then jactitation came on.

Comatose; p. 120;—respiration slow and irregular; very profuse perspiration and urine continue; he took sustenance.

In the evening he died without a struggle.

Dissection, 1 o'clock, March 27th.—On the surface of the brain, there was no increased vascularity nor effusion; it was remarkably dry; nor was the substance of the brain vascular nor moist; it was firm. The roof of the right ventricle, which was uniformly distended, was elevated considerably above its level; the left ventricle was less distended; all the ventricles were full of fluid: they contained about three ounces. All round the ventricles the brain was pulpy, without firmness or consistence. There was a very considerable mass of coagulable lymph lying under the optic nerves, which, at first, looked like a collection of fatty matter. Some fluid escaped upon slitting up the tentorium.

There was a firm and extensive band of adhesion at right angles with the broad ligament of the liver, connecting the whole of the convex surface of the liver, which lies to the right of the broad ligament, with the peritoneum. There were many white tubercles of various sizes, with which the whole of the surface of the spleen was studded; the largest less than a small pea.

There were many recent adhesions between the pleuræ. The serous membrane of the heart was opaque; under it, particularly towards the apex, on the surface of the left ventricle, there was an extensive layer of coagulable lymph.

CASE XVIII.

20th October, 1814. —— ——, 17 months old, was weaned at 13 months, after which his bowels were disordered. This was supposed the 11th day of his illness. My friend Mr. Moore, who attended him for three days, apprehensive of the tendency of his complaint, had given him very brisk purgatives; calomel, scammony, and jalap; he had also given him James's powder. The child was affected with retching, vomiting, and a bound belly, when Mr. Moore first saw him.

He was dozing with his eyelids half shut; black under the eyelids, with a death-like settledness of countenance. He sighed constantly. Lips chappy; tongue white and moist; p. 126-30; stools dark green and slimy; abdomen full, right hypochondrium tender, liver enlarged; the margin was felt about an inch and a half below the margin of the ribs; no exacerbation of fever. As two of the double teeth were about to appear, his gums were scarified. *Hirudines sex Tempori.* ℞ *Submuriatis Hydrargyri, Pulveris Jacobi, āā grana duodecim, Opii granum. m. et divide in partes octo æquales. Detur una tertiis horis.*

21st.—He had been squinting in the night; was still dozing; tongue clean and moist; pulse 116; he had passed a number of loose mucous stools, of a dark green colour.

22st—He had a very restless uneasy night; strabismus; an immense discharge of the same unpromising kind of feces: p. 140-50. ℞ *Submuriatis Hydrargyri grana duodecim, Pulveris Jacobi grana sedecim, Opii grana duo. m. et divide in partes octo. Abradr. Capilli. Vesicatorium amplum Vertici. Cras mane, habeat Haustum ex Infuso Sennæ, &c.*

23d.—Squinting, dozing, sighing; p. 120; feces of the same description. Had taken a sufficiency of nourishment; the broth of two chickens. ℞ *Hydrargyri cum Creta*

semidrachmam, Opii grana duo. in partes octo. d. Sumat unam tertiis horis.

24th.—Discharge from the bowels more scanty. *Sumat statim Infusi Sennæ drachmas quinque cum Tincturæ Jalapæ et Syrupi Scillæ semidrachma. Perstet in usu pulverum.*

25th—Peevish and uneasy, he had a fixed squint; he lay picking his mouth after a disturbed night; p. 120; abdomen subsiding, discharge free; urine reported very copious. *Injiciatur Enema Terebinthinatum.* ℞ *Hydrargyri cum creta drachmam dimidiam, Opii in pulverem triti grana duo cum semisse. m. & div. in chartas octo.*

26th.—Restless night. Pupils greatly contracted; eyes staring; p. 126; tongue clean; respiration frequent: the stools were more of a bilious colour; had more fullness of the abdomen. *Injr. Enema Infusi Colocynthidis. Perstet in usu pulverum.*

27th.—No strabismus; pupil much contracted, and the eye staring; vision lost; the eye did not follow any object which was moved before it. No suffusion of albuginea; pulse 120: respiration less frequent; belly softer; fifteen or twenty stools, some of them nearly natural and large, others mixed with bloody mucus; urine free; the blistered surface was still discharging greatly. Nourishment largely taken. ℞ *Opii grana duo, Hydrargyri cum creta semidrachmam, m. et div. in partes octo.*

28th.—No sighing, nor squinting; eye looked well; vision doubtful; they alleged that the eye followed any thing bright; p. 126; a cough resembling whooping cough; twelve stools; urine copious; some pustules about the face, and a scarlet rash on the arms, probably from the blister, which continued to discharge purulent matter in considerable quantity.

29th.—Fixed squint; restless, peevish, and screaming; p. under 120; five or six small stools; belly more tumid; urine copious. *Repr. Haustus Purgans.* ℞ *Opii, granum*

cum semisse, Hydrargyri cum creta semidrachmam, m. et div. in partes octo.

30th.—Fretful; less strabismus; pupil of a natural size; vision undoubted; no sighing, respiration natural; p. 108; eight or ten stools; urine copious. ℞ *Opii granum, Hydrargyri cum creta grana viginti quatuor, m. et div. in partes octo. Habeat Enema Terebinthinatum.*

31st.—Occasional strabismus; extremely fretful; manner natural; p. 108—12; three or four scanty motions; urine free. *Haustus purgans. Continuentur pulveres.*

November 1st.—Symptoms were as on the 31st. Debility very great. Stools copious; edge of the liver was to be felt about half an inch below the margin of the ribs; pressure upon it no longer gave pain; no mercurial fœtor in the breath. Madeira whey and animal jelly. *Continuentur Pulveres sine opio.*

2d.—He screamed almost all night, exceedingly fretful; only one scanty stool; p. 96; omit the wine whey and jelly; return to chicken broth. ℞ *Infusi sennæ uncias tres, Tincturæ jalapæ drachmas tres, Syrupi simplicis drachmas quinque, Carbonatis sodæ scrupulum, Tincturæ opii guttas duodecim. m. Sumat cochlearia duo ampla tertiis horis ad alvi solutionem. Continuentur pulveres.*

3d.—Extremely restless and agitated. His tongue was red, and generally lolled out inviting drink, of which he had taken an immensity; lips, particularly at the angle, chapped. He had been sick in the night and vomited. Many large discharges from his bowels. ℞ *Boracis semidrachmam, Aquæ ferventis uncias duas cum semisse, Syrupi simplicis semunciam, Tincturæ opii guttas triginta. m. Sumat cochleare amplum pro dosi.*

Evening.—P. 82; tranquillized completely by the first dose of the mixture. Anodyne and purgative mixtures to be given according to circumstances.

5th.—Again intolerably fretful; belly loose and flatulent. ℞ *Magnesiæ scrupulum, Olei carui guttas quatuor,*

Spiritus ammoniæ fœtidi guttas viginti, Aquæ menthæ unciam cum semisse, Syrupi simplicis semunciam, Tincturæ opii guttas viginti m. Sumat cochleare medium subinde.

8th.—The carminative mixture gave great relief; yet he often cried three or four hours without ceasing; pulse was natural and expression also, with the exception of a degree of strabismus; bowels required to be regulated by medicine; entire change of diet, to asses milk.

12th.—Consistent and natural stools, with a due quantity of bile. He took five half pints of asses milk a day with Naples biscuit.

20th.—Began to regain flesh; a very slight squint perceptible.

December 1st.—Strabismus was scarcely observable; nights restless; in other respects in perfect health.

20th.—In much better health than he had been for five or six months.

CASE XIX.

D—— P——, æt. 5.—In his infancy had a severe blow on his forehead, the mark of which still remains.

His illness began on Friday the 12th of May, 1815: he was chilly and hot on Saturday: his complaints daily increased. On Wednesday the 17th, he complained of great pain and tenderness in the hypochondria; his stomach was irritable; he had a quick pulse, furred tongue, great heat of skin, headach, sighing, coma-vigil, and very disordered bowels.

May 18th.—P. 144, respiration 60; was moaning, sighing, and complaining of pain in the hypochondrium and vertex: tenderness in the hypochondria excessive; he was capable of being roused, but he immediately fell asleep

again; tongue white, stomach rather less irritable: a mercurial purgative had procured four or five dark green stools. *Mitt. sang. ad* ℥vi. ℞. *Opii grana duo, Submuriatis Hydrargyri grana decem, Pulveris Jacobi veri grana sedecim, divide in chartas octo. Sumat unam 4tis horis.* ℞. *Solutionis sodæ (*ʒss. *ad* ℥1*)* ℥iv, *Succi limonis, uncias duas, Sacchari pur. drachmas duas. M. sig. cochlearia duo ampla 2dis horis.*

May 19th.—Respiration immediately after venesection not more than 30; p. 124; troublesome cough; complaint of belly and head continued. No stool. *Enema catharticum. Abradantur capilli. Hirudines sex tempori. Vesicatorium inter scapulas. Contin. pulveres.*

May 20th.—P. 124; expression improved; tongue grey and moist; had less tenderness of the abdomen; less headach; large green mucous stools: urine reported very copious. *Cont. Pulveres.*

May 21st.—Respiration perfectly natural; p. 96; tongue rather cleaner and moist; flushed, and in a general warm sweat; the drops standing out on the face; the sheets were drenched: he was not easily roused: urine of a natural colour; passed only twice since yesterday,—a pint at a time: scanty dark discharges from the bowels: hypochondria, though less tender, were rather full. ℞. *Infusi Sennæ uncias duas cum semisse, Syrupi Simplicis semunciam, Tincturæ jalapæ drachmas tres, Subcarbonatis sodæ gr. duodecim. m. Sumat cochleare amplum secundis horis ad alvi solutionem.* ℞. *opii granum cum semisse, Pulv: Jacobi grana sedecim. m. et divide in partes octo. sumat unam 4tis horis.*

May 22d.—Passsed a prodigious quantity of dark green feculence with mucus: p. 96; he was chearful; some tenesmus.

He slowly recovered.

CASE XX.

July 13th, 1815.—Master M. ætatis 13, a boy of a sanguine temperament, who had occasionally been subject to headachs.

On the 6th, when his father went to Worcester, to take him from school, he was apparently in perfect health; it appears, however, that his bowels had been confined for some time before. On the morning of the 9th, in Liverpool, he complained of headach. On the morning of the 10th, in the packet, coming from Liverpool to Dublin, the headach was insufferable; it abated in a degree as the day advanced. The pain increased when he turned his head to a side, and was most severe above, and rather behind the ear of the side upon which he happened to be; when he slept he had frightful dreams. He landed early on the 12th. Mr. Crampton, who saw him at six o'clock in the morning, found him pale, his pulse 80, with a headach fixed and severe; and learned from his father, that he had lost a daughter nearly of the same age, of Hydrocephalus, about eight months before; and he added, that the boy had told him, in the packet, that he knew he had got the complaint of which his sister died. 12 leeches were applied to the temples, after which his pulse was 120. In the course of the day he had pills of calomel and compound extract of colocynth, which produced large discharges from his bowels. In the afternoon he was blooded from the arm to the amount of twelve ounces, which gave temporary relief.

July 13th.—P. between 80 and 90, and rather hard; complexion high; lips vermillion; carotid arteries were strongly pulsating; tongue white with florid edges. Headach intense, especially when he turned in bed. Light did not distress him,—sounds did; spasmodic catchings, especially

of the left side; he lay on the right. Hypochondria full; one inconsiderable stool; urine scanty. *Mitt. Sanguis ex Arteria Temporali. Pulv. Jalapæ cum Calomelane 4tis horis. Vesicatorium inter Scapulas.*

July 14th.—On the 13th he was twice blooded, first from the temporal artery, and secondly from the arm. After the first blood-letting, the action of the carotid and temporal arteries appeared greater; after the second it was less. Between one and three he had ten bilious stools, many of which were consistent. Ice was applied to his head in the evening. He was exempt from pain all night; towards morning he slept. At 11 a. m. he was asleep, and with difficulty roused; p. 76, irregular and unequal; he declared he had no headach, even when he moved his head. Manner absent; unable to command his attention; he spoke with a sigh, as if quite exhaused; hypochondria still rather full; urine scanty. ℞. *Pulveris Jacobi granum cum semisse, Submuriatis Hydrargyri grana duo. f. Pulvis tertiis horis sumendus.*

July 15th.—Had a calm night, and some moisture of the skin. On the pulse rising, he was blooded early in the morning, to the extent of eight ounces. Blood was sizy. In the afternoon he again complained of headach, and ten or twelve leeches were applied.

Evening.—P. 88, irregular, unequal, and easily compressible; said he had confusion and uneasiness in his head, but not pain; pupils were dilated; he was unable to express himself without sighing. Scanty mucous stools, dark green, not in the least feculent. Abdomen less full; gums a little spongy. He likes to have ice at his head. ℞. *Opii, Pulveris Ipecacuanhæ ā. ā. grana duo, Submuriatis Hydrargyri grana duodecim. M. et divide in sex pulveres. Sumat unum quartis horis.*

July 16th. Night tolerably tranquil; had pulsation in his head all the morning. About noon pain was superadded to pulsation. He called to be blooded from a vein.

he said leeches did not afford relief. Eight ounces of blood were drawn, which was sizy. Relief. Vomiting. One scanty, green, mucous stool; belly quite lank. When roused, his intellect was perfect, but he was incapable of continued attention.—*Evening*, p. 100. Stomach less irritable. The pupils were much contracted. ℞. *Opii granum cum semisse, Submuriatis Hydrargyri grana sex. m. et divide in tres pulveres. Sumat unum quartis horis. Applicetur vesicatorium nuchæ.* ℞. *Pulveris Jalapæ grana quinque, sumat h. somni, et repetatur cras mane.*

July 17th. Pulse 84, regular and full; free from pain; slight pulsation; death-like stillness of appearance; answered only in monosyllables in a low whisper; stomach less irritable. Has taken asses milk with lime water, and tea and bread. Hypochondria were filling. Two or three calls, but no discharge from the bowels except a very slight one, in consequence of a turpentine glyster. Omit the ice. *App. Vesicatorium Vertici. Rep. Enema Terebinthinatum. Cont. Calomelas cum opio. 4tis horis.*

July 18th. *Father's report.* "Got an injection a little "before 12. It operated in five minutes. About 12, got "the mercurial powder with opium and a saline draught; "slept till 2, asked for tea and toast; had a large mo- "tion; complained of pain in his head; had a second "motion in about ten minutes after the first. His pulse "up to 100 at 3. Thirst;—asses milk and lime water; "his skin hot and dry. Complained of an increase of "the beating in his head. Bled to eight ounces. After "bleeding, p. 98, and he said he felt his head much re- "lieved. Took a mercurial powder."

The blood cupped and buffed. We found his skin hot and dry, p. between 80 and 90, and compressible. In the course of the day, he had four dark feculent bilious stools. Urine high coloured, in larger quantity. He complained of a disagreeable taste in his mouth. His

gums were spongy. Some pulsation felt in the head. Tongue rather cleaner; pupils dilated; carotids throbbing. He had vomited once; was paler and weaker than on the 17th. ℞. *Pulveris Ipecacuanhæ compositi grana quindecim, Hydrargyri submuriatis grana sex, m. et divide in tres pulveres. Sumat unum 4tis horis. Sumat Haustum succi Limonis, &c.*

July 19th. Slept tranquilly the greater part of the night; vomited a considerable quantity of bile. Three dark feculent stools, with tenesmus; skin soft; about 7 a. m. fever gradually increased, and was very considerable about 10. P. about 80—4, soft. Urine not deficient. Still some pulsation complained of in the head. *Contr. Pulveres, 6tis horis. Sumat Haustum efferv. cum Acido Tartar. et Subcarbonate Sodæ.*

July 20. Slept comfortably; p. 82. Was in a general perspiration. Expression improving. Still very languid; tongue moister but coated with brownish mucus. One rather scanty bilious stool. ℞. *Pulv. Ipec. Comp. gra. v, Hydr. Submuriatis grana duo, s. h. s.* ℞. *Pulveris Jalapæ, Crystallorum Tartari ā.ā. gr. quinque. f. Pulvis quartis horis sumendus, ad alvi sol.*

July 22d. Took two of the purgative powders. Had five or six very large feculent stools in the course of the 21st; was sitting up in bed eating dry toast with good appetite. Tongue clean. He was calling for chicken.

DISSECTIONS.

I.

Dissection of a boy of six years of age, who died of Hydrocephalus.—The disease lasted exactly twenty-one days. There was rather more pain in the head than usual; in other respects, it was a case presenting a fair example of the disease. The boy, before the attack, had been apparently in good health.

The intestinal canal appeared rather paler than usual; the liver darker. There was no fluid in the cavity of the abdomen; indeed the peritoneum was not even lubricated.

The dura mater was found to adhere to the tunica arachnoidea in several places. The veins of the pia mater were full of blood, but not turgid.

On cutting off part of the brain, we found it firm and tough; in the cut surface there were numerous spots of dark, apparently venous, blood. On cutting into the left lateral ventricle, a colourless fluid flowed out, and the ventricle appeared to be considerably dilated. The veins on the walls of the ventricle were filled with blood. The plexus choroides had no redness in its colour. The vena Galeni was full of blood. The edges of the fornix were fringed; the substance of it was peculiarly soft. The other ventricles were in a condition similar to the lateral ventricle; the ventricles contained in all about three ounces of fluid.

II.

Dissection of a fair-complexioned boy, eight years of age, apparently of a scrofulous habit, who died of Hydrocephalus on the 6th May.—Six or seven weeks before his death he became unusually reserved, then thin and pale; yet he took his victuals somewhat greedily. About three weeks after, he was seized with a severe bowel complaint, which continued eight or nine days; when it stopt, he left off taking nourishment almost entirely; what he took he vomited. About this time, (viz. about ten days before he died), there was observed great quickness and brilliancy of the eyes, and he complained almost incessantly of headach; for several days after the vomiting left him he had frequent fits of retching. From the time the purging ceased he had been scarcely out of bed. In the latter part of his illness he dozed much, and always awoke delirious; he sighed, started, was convulsed, complained constantly and impatiently of his head, frequently also of acute pain in his belly, and had great tenderness of the abdomen. The pupil was dilated; and the consent between the eyes was lost. He died after violent convulsions. The symptoms strictly attributable to a diseased state of the brain were of a very short duration—less than fortnight. I saw him only five days before his death, when the case appeared to me hopeless.

Upon laying back the integuments of the abdomen, the intestines appeared generally distended by flatus. The transverse arch of the colon was greatly contorted, and remarkably distended above the rest of the intestines. In diameter, it measured about 2¼ inches. In the whole course of the small intestines were frequent, but not high-coloured marks of inflammation; and, in several places, circular

contractions of their coats. The colon was free from any marks of inflammation.

The surface of the liver was studded with white tubercles, of the size of millet seeds. There were no other morbid appearances in the abdomen.

On removing the skull-cap and the dura mater, there was observed nothing very remarkable on the surface of the brain. The veins on the pia mater were filled, but not distended.

The substance of the brain was firmer than natural. On cutting a pretty thick layer off the superior part of the brain, the lateral ventricle appeared to be much distended; a fluid, by tapping with the fingers, could be distinctly felt; it pushed up the roof of the ventricles. On making a small opening with the point of the knife, water spouted to some distance. The foramen commune, under the fornix, was much enlarged. The substance of the fornix was very soft, being nearly of the consistence of thick cream. The plexus choroides was quite colourless; there were upon it several little papulous eminences. All the ventricles had been much distended. The veins on the walls of the ventricles were full, but not turgid.

The vessels on the base resembled those on the surface of the brain.

The quantity of fluid collected from the brain during the dissection was five ounces.

III.

May 15. Dissection of a boy twelve years of age.—This boy died, after being for two days dreadfully convulsed. I saw him for the first time on the day previous to that on which he died. I found him drenched in sweat, large

drops standing upon his face and forehead; his pupils dilated; his eyes rolling slowly; his pulse quick and thready; asleep; his breathing low. I attempted to rouse him, but could not. I understood that he was quite insensible. He had been subject to scrofulous ophthalmia, and swelling of the glands. During last winter, he did not enjoy a day of health. I recollect that he was brought to me about six weeks ago. He then complained of a constant pain in the back part of his neck. At that time I examined him particularly, and discovered a commencing rising of the spine. I understand that he complained of his head about a fortnight ago. He was then much in bed. On the 8th, he had an attack of sickness; constant vomiting; nothing remained on his stomach. On the 9th, and succeeding nights, he had severe diarrhœa. The vomiting and purging was incessant till the 12th. On the night of the 12th he became delirious; and, with very short intervals, he continued so to the last.

When the skull-cap and dura mater were raised from the upper part of the brain, there appeared to be some effusion on the surface, and lodged in the angles between the convolutions of the cerebrum. On puncturing the membrane under which it lay, the effusion was found to be serous; on the pia mater, towards the back part of the head, were marks of inflammation.

On cutting away part of the brain, the surface presenting was moist. The substance was of a moderate degree of firmness. On puncturing the lateral ventricle of one side, a quantity of watery fluid flowed out, (about three ounces). The ventricle was enlarged; the veins on its sides were conspicuous. The plexus choroides had upon it vesicles filled with serum. When the fornix was raised there appeared, in the middle of the velum interpositum, a vesicle of the size of a large pea, containing serous fluid. The substance of the fornix was quite soft. The hole

between the ventricles was enlarged; and both ventricles, which were emptied by the puncture into the one which was first opened, appeared to have been equally distended. The third ventricle was enlarged, and contained fluid. In examining the base of the brain, the tunica arachnoides, round the infundibulum, was distended with fluid of a light green or yellow colour. On puncturing it, a good deal of serous fluid escaped. Besides the fluid, there was on the pia mater, at this place, a considerable deposition, apparently of coagulable lymph, which lay in distinct clots. The fourth ventricle was enlarged, and contained fluid. The quantity of fluid collected during the dissection was five ounces.

We next proceeded to examine the contents of the abdomen, and found the intestines generally, and very much distended with flatus; at one or two places there were contractions of their coats, and marks of increased vascular action. The glands of the mesentery were enlarged. The gall bladder was completely distended.

The last vertebra of the back, and first of the loins, were found projecting.

IV.

Dissection of a boy nearly three years of age, who died of Hydrocephalus.—First he was observed sallow and dull; the dullness lasted for six weeks, during which time his appetite was much impaired; but he made no complaint. He took to bed eighteen days before he died. On the morning of the fifth day after he was confined to bed, he became sick, and vomited; in the afternoon he had a severe fit of convulsions; he had many such in the latter part of his illness. During the last four days of his life he was insensible and blind.

On raising the skull-cap, there appeared to be on the dura mater an increased number of little red blood vessels. The longitudinal sinus and veins in the pia mater were filled with blood. There was a considerable quantity of serous effusion over the whole surface of the brain, and marks of increased action in the small arteries, with here and there spots of extravasated blood. Towards the back part and right side of the brain, there was a considerable secretion of coagulable lymph.

The substance of the brain was firm. The left lateral ventricle was distended, and on opening it, a limpid and colourless fluid, to the quantity of three or four ounces, escaped. The ventricle was considerably enlarged. The right lateral ventricle corresponded in appearance with the left, the foramen, under the fore part of the fornix, was much enlarged, allowing the fluid, which had been in the right ventricle, at once to escape, by the opening made in the left. The plexus choroides was free of blood, and colourless. The substance and continuations of the fornix were very white and soft. The third and fourth ventricles were enlarged, and had contained a proportion of fluid. On the cerebellum under the tentorium, there was a deposition of coagulated lymph, but not of great extent. On the base of the brain was an effusion of a serous fluid, and at particular parts, of a thicker opaque lymph, similar to what was observed on the upper part.

In the abdomen, the morbid appearances were white spots, not larger than a mustard seed, like minute tubercles all over the surface of the liver,—in distribution like a regular and distinct eruption, and enlargement of many of the glands of the mesentery. They were white and hard: and when cut into, were found to contain a cheesy substance, of a pure yellow colour, as if mixed with purulent matter.

V.

A child of four years was attacked with fever, of which I could ascertain only one symptom, namely, that the stools were such as we almost always observe in Hydrocephalus; by means of mercurial purgatives natural discharges from the bowels were obtained. He was considered convalescent, and the visits of his medical attendant were discontinued; and in ten days after, when every apprehension of danger was over, he was seized with convulsions, and in three or four hours he expired, on the 26th September, 1813.

The dissection was made about fourteen hours after death, by Mr. Hewson, one of the Surgeons to the Meath Hospital. The dura mater was healthy. Coagulable lymph, in considerable quantity, was interposed between the tunica arachnoides and pia mater; it was also found in the base of the brain, and particularly about the optic nerve: and on the sides of the middle lobe of the left hemisphere, two vesicles like hydatids were observed. The ventricles contained nearly six ounces of fluid. The liver was enlarged and pale, or of a clay colour, and studed over with little white bodies like millet sees. The stomach appeared discoloured about the great extremity, and there were some dark spots at the pyloric orifice, which appearances, on opening the cavity, were shewn to arise from a highly vascular state of the muscular coat, and an ecchymosis corresponding with the dark spots. The same appearance extended over all the small intestines. The great intestines were apparently sound.

VI.

On the 19th of March, 1816, a boy of six years of age, very intelligent, but rather delicate, was attacked

with the measles. In the latter end of April he had a severe fall upon his head. About the 1st of May his pulse was slow and irregular. On the 4th of May symptoms occurred which led to a suspicion of Hydrocephalus. I saw him for the first time on the 6th of May. His pulse was then 140; his respiration quick; his pupils were dilated, and without contractility. The albuginea was suffused. There were frequent suffusions of the countenance, more especially upon the slightest movement. The bowels were loose; the stools involuntary, mucous and dark green.

He died on the morning of the 7th.

Dissection on the 8th of March. The scalp was bloodless. The veins of the pia mater turgid, the membranes slightly opake. There was an effusion between the tunica arachnoides and pia mater; and there were minute arteries on the surface of the brain, florid and injected. The brain itself was bloodless and soft. The ventricles contained about four ounces of fluid.

The abdominal viscera were sound, if we except contractions of the small intestines, and an ounce or two of fluid in the cavity of the abdomen.

VII.

Dissection of a robust boy about five years of age, a child of a remarkably fine appearance, whose illness commenced, several weeks before he had any symptoms of Hydrocephalus, with pyrexia, and disordered bowels; then followed a paralytic affection of one of his legs; and lastly, acute Hydrocephalus.

The skull was very thin. The dura mater unusually vascular—the pia mater dry and vascular. There was an effusion under the tunica arachnoides, like whey. The substance of the brain was remarkably firm. The pia mater, which passed in between the convolutions of the internal surface of the left hemisphere, was of a bright redness, and there were many white bodies upon it, not unlike glands of the smallest size. The ventricles were uniformly enlarged, and contained about four ounces of fluid. The plexus choroides was pale, as well as every part of the ventricles. The part of the brain which forms the ventricles was soft.

The abdominal viscera were perfectly sound. There was no diseased appearance in the hip joint.

VIII.

M. C. 4 years of age,—in the beginning of November, 1804, had the measles, and in the beginning of December the chicken pox.

16th December, 1814, (being the 5th day of the illness of which he died,) p. 140. Continued watching, occasional incoherence; flushing in the face; sighing, grinding the teeth; great thirst, loaded tongue; hot and dry skin; fullness of the upper part of the abdomen; green stools mixed with mucus: towards evening he had had an increase of restlessness. He had been taking one grain of calomel and three grains of rhubarb every third hour. *Enema Terebinthinatum. P. Jacobi grana duo, Hydrargyri Submur. gr.* 1, *sing horis, ad tertiam vicem. Cras mane, Mistura Purgans e Senna et Sulph. Magnesiæ.*

17th.—Frequent involuntary stools; great fullness of abdomen; slight convulsions of the mouth and eyes, and contractions of the hands and feet. Picking of the nose; cough; continued sleep, save when interrupted by low muttering, or by starting and screaming; after the latter he generally stared vacantly for a time, and gradually fell into a stupor; pupil contracted. *Hydrargyri Submuriatis gr.* 1 *cum Extracti opii aquosi gr.* ¼, *4tis horis.*

18th. Green and gelatinous stools; less watery; increased fullness and elasticity of the abdomen. No screaming nor convulsions. Chicken broth, gelly and wine, with caution. *Ung. Hydr. fort.* ʒss. *cum ol. Camphor.* ℥ss. *pro embroc. abdominis. Enemata. Cont. Pulveres.*

19th. Belly light and elastic, p. 120. *Cont. Embrocatio & Enemata.* ℞. *Hydrargyri submuriatis gr. iss, Gambogiæ granum, Extracti opii aquosi gr.* ¼. *S. 4tis. horis.*

20th. Pupils more dilated. Continued sleep; large and fetid stools. Belly tense, particularly at the epigastrium. *Cont. Medicamenta.—S. Pulv. sextis horis tantum.*

21st. The same description of stools. Belly diminished in size, and softer. Vomited once. *Cont. med. Vesicatorium epigastrio.*

22d. One dusky green discharge like frogs-spawn, with small portions of natural feces. Continued sleep. When roused, quite collected. p. 128. Undiminished fullness and elasticity of the abdomen. Tongue covered with sordes.

23d. Omit the opium. ℞. *Hydr. subm. Aloes hepaticæ ā ā gr. iss. 4tis horis.*

24. Mouth affected by the mercury. Restlessness; watching; pain and fullness in the belly; spasms and convulsions. *Omit the calmel. Aloes, jalap, scammony, p. æ. opium gr.* ¼ *4tis horis.*

25th. P. 140. Coma; stertorous breathing; great swelling of the neck and face. Difficult deglutition.

—Death, after having been about three minutes in the warm bath.

Dissection performed twenty-three hours after death. Considerable effusion of turbid fluid between the tunica arachnoides and pia mater; adhesion between the hemispheres of the brain. Increased vascularity of the whole of the medullary substance of the cerebrum. Rather more fluid than natural in the lateral ventricles; but with respect to this point there was some difference of opinion. Fluid in the theca vertebrarum. Liver pale and large. Abdominal viscera, in other respects, sound. Thoracic viscera sound.

APPENDIX.

I HAVE adverted, pp. 15, 16 and 17, to several diseases which are sometimes liable to be mistaken for Hydrocephalus.

I. The first of these, namely, the disease of the dura mater and brain, arising from caries of the os petrosum, is described in Burserius *Instit. Med. Pract. vol.* V. § XIX. Bell's *Principles of Surgery*, Vol. II. Part II. title Vomica Hypocranii. Hamilton *on Scrofulous Affections*, p. 56. et seq. A valuable account of this disease, by Dr. O'Brien, will be found in the 2d volume of the Transactions of the Association of the King and Queen's College of Physicians.

II. The species of cataphora, to which I have alluded, p. 16, will be illustrated by the following cases:

CASE I.

This case occurred in a child of eight months, who was observed very fretful on the afternoon and night of the 10th of April. On the 11th, he was dull, oppressed, fretful and feverish. In the afternoon of that day he started and screamed wildly; upon taking a cathartic medicine he passed green, fetid and unconcocted stools. On the morn-

ing of the 12th he was lively and cool. In the afternoon the fever, fretfulness, and starting returned, and he had a very restless night.

13th. His complexion was pale; brows contracted; great heat; p. 180; tongue rather loaded. He often started and sighed; his legs were in constant motion; his hands were frequently drawn in and then extended, and his fingers were spasmodically moved; his eyes, at times, were much affected, fixed, with enlarged pupils; he is reported to have had a fit of convulsions shortly before I called.

14th. Very disturbed night; left hand in constant motion; slight spasms of the eyelids and mouth; pupil dilated; respiration quickened (70), p. 160; great febrile heat, complexion pale; tongue cleaner; stools of a bright yellow colour, with green streaks, acid smell.

15th. Three fits in the night. He often sighed; pulse about 200; pupils much contracted; subsultus; moaning; paleness; loose belly: as the day advanced convulsions became less violent. He died at 3 a. m.

Dissection. On raising the dura mater, we were struck with the appearance of the parts presenting. On a superficial view, there appeared to be, on the brain, a quantity of a green coagulum like jelly, in a layer of considerable thickness, in which the veins of the pia mater lay imbedded: these seemed to be coated with a white opaque deposite.

What at first appeared like jelly, upon examination proved to be serous exudation between the tunica arachnoides and pia mater; it was in far greater quantity on the upper part of the brain than elsewhere, and seemed pretty equally distributed on each hemisphere. It might be compared to a large flat vesication, the margin of which arose from the horizontal line which divides the upper and middle third of the circumference of the brain. Although

beyond this part, the appearance of vesication did not extend, yet the veins on the pia mater, all around the external part of the brain, were nearly coated with what appeared to be coagulable lymph (at some places flakes of it lay distinct); hence the pia mater seemed as if converted into a thick membrane, in fact it was thickened, as appeared on examining that part of it where the exudation on the surface did not exist; and here we found little red vessels and streaks of blood, such as appear on an inflamed membrane. The sinuses in the dura, and the veins in the pia mater, were filled with blood. The substance of the brain was very soft. On cutting it, fluid exuded so as to bedew the cut surface. There was but little fluid in the ventricles, not exceeding half an ounce. The plexus choroides was nearly colourless, as if bleached. The substance of the fornix, as well as the other parts of the brain, was very soft. There was little or no fluid in the third or fourth ventricle. The quantity of fluid collected exceeded three ounces and a half, of which three ounces were collected from the surface of the brain.

CASE II.

Tuesday, Sep. 21, 1812.

Miss —— G———, ætat. two and a half years, dark eyes.

I found this child in convulsions—the fourth fit in quick succession. The right side was more affected than the left, and she was much flushed. I found her in a warm bath, in which she had been for some time. The dashing of cold water over her face and neck instantly removed the fit. When she recovered from the fit, she was comatose; or, if she looked up, she did so languidly, and seemed

scarce to know any one. The pupils contracted freely. Her breath had a sickly smell; her tongue had a brown fur upon it. The hypochondria were lax; no appearance whatever of congestion biliary or fecal. At twelve she hada return of the convulsions.

This child had been averse to every kind of exertion for five or six weeks, but in other respects she was not indisposed; nay, it was remarked by some one on Saturday the 19th, that she was a most beautiful child. In the course of Saturday night, or rather Sunday morning, she was seized with the first fit of convulsions. On Sunday and Monday she was much indisposed; she sighed frequently. On Monday evening she had a second attack of convulsions; then four in the morning of the 21st. Although she had taken much purgative medicine, her bowels had scarcely been acted upon. In the course of the 21st, her gums were scarified; six leeches were applied to her temples; the head was shaved, and ice was applied to it; warm fomentations were applied to the feet; enemata were thrown up. She had one grain of calomel, and one and a half of James's powder every third hour, and about two drachms of magnesia saturated with lemon juice, and in the night several doses of a mixture of infusion of senna and salts.

Sept. 22. She had two fits in the night, which were quickly removed by the cold aspersion. It was known that the fits were approaching by the flushing of the face; they came on with staring eyes. P. remarkably quick, sighing, frequent grinding of the teeth; insensible, unless when lifted or otherwise disturbed. She has not been observed to use her right hand. Four dark stools in the course of the day; hypochondria and belly quite soft; urine scanty.

Leeches were again applied, then blisters to the legs; turpentine glysters. *Hydrarg. cum creta gr.* v. *P. Jacobi veri gr. iss. 3iis horis.*

Sept. 23. Marbled, glazed, œdematous countenance. Eye filmy. Strabismus; restlessness; less sighing or grinding of the teeth. Return of convulsions at midnight. Death about an hour after. Moved the right arm and leg in the evening.

Dissection, 12 hours after death. A thick layer of coagulated puriform matter of a pale green colour between the tunica arachnoides and pia mater, particularly on the anterior and middle lobes of the cerebrum. The hemispheres agglutinated together for about two thirds of their extent, down even to the corpus callosum. The medullary substance of the brain was more than usually vascular. The ventricles wese distended, and contained two ounces of fluid. The choroid plexus was bloodless. The foramen commune anterius enlarged. The iter ad tertium ventriculum capable of receiving a large goose quill. The third ventricle was distended and full of water. There was a considerable effusion of coagulable lymph between the laminæ of the velum interpositum. The pineal gland was softened in its structure, and surrounded with an effusion of puriform matter. The fourth ventricle was greatly enlarged, and distended with fluid. The pia mater investing the cerebellum was sound. There was a great quantity of fluid in the theca vertebrarum, and some purulent matter on the sella turcica and pituitary gland.

The abdominal viscera were sound. The intestines were empty, and remarkably transparent. No unusual enlargement of the mesenteric glands.

These cases appear to be specimens of the same disease; but whether that disease ought to be considered as a variety of Hydrocephalus, or as belonging to some other genus, I am unable to determine. I rather incline to the latter opinion, as the cases were more acute than

Hydrocephalus, and as, although the whole brain participated in disorder, yet its membranes were more affected than its substance.

It is seldom safe confidently to predict the appearances which dissection will present; but having had in my recollection several similar cases, which I considered as analogous to case 1st, I ventured to say, that I thought it probable that dissection would show that case 2d was not to be accounted a pure specimen Hydrocephalus. The unusual mode of attack, the coma which set in so soon after, and the sudden termination of the illness, led me to expect considerable serous effusion on the surface of the brain, and stronger marks of inflammation than usual. So it happened, only that where we expected serum we found a fluid more nearly resembling pus. Let nosologists call the disease what they will, whether a variety of Hydrocephalus, Phrenitis, or Cataphora Acutum, it is equally necessary that it should be known to the reader, who is anxious to arrive at more certainty in the diagnosis of Hydrocephalus.

III. The third disease referred to, v. p. 16—17, will be exemplified in the following cases:

On the 30th June, 1811, I attended the dissection of a child of 13 months, which long had been affected with crowing inspiration, and at last it had convulsions. The child's father died of a consumption, and its mother laboured under hæmoptoë at the time of its death.

Dissection by Dr. Colles.—The substance of the brain was soft.—Above the anterior commissure, lying in the duplicature between the ventricles, there was a firm substance of the size of a small hazel nut, of a yellowish colour, as if tending to suppuration; this tumour had little connexion

with the part of the brain in which it was imbedded. A similar substance, of the size of a small walnut, occupied nearly the whole of the place of the right corpus striatum, which also was easily turned out, having but little connexion with the substance of the brain. Portions of the lungs were tubercular. The liver was much paler than common; on its surface there were several patches remarkably pale, and not unlike the blister occasioned by a burn.

CASE II.

In the month of May, 1815, I saw a large, fine looking infant, the offspring of healthy parents, about 4 months old, in convulsions. Four leeches were applied in the course of the night, the warm bath was used, purgatives were given, and glysters administered, and the fits did not return till the beginning of next year. In the month of January it was again attacked with convulsions. These continued to affect it at uncertain periods till the 2d of March, on which day it died, not much emaciated. The convulsions came on with a crowing inspiration, like that which takes place in the commencement of a paroxysm of the hooping cough; so much did the two diseases resemble, that at one time it was thought by its friends to labour under the hooping cough. The disease was referred to the windpipe, and this view influenced the practice in so much, that leeches and blisters were applied. This crowing inspiration was frequently brought on by vexation, by any little gust of passion, or by muscular exertion. Sometimes it was followed by convulsions, and a livid complexion; during the fit the thumb was clenched within the hand. This child had no sickness at stomach, no sighing, strabismus, nor any paralytic affection; the bowels were sometimes much disordered, but not after the manner generally observable in Hydrocephalus.

Dissection by Mr. Todd.—Scalp bloodless, unusually strict adhesion between the bone and the dura mater. Convolutions of the brain nearly obliterated. Brain uncommonly firm: the pons varolii and medulla oblongata most remarkably so, and in proportion to the rest of the brain these parts were strikingly small. Some fluid in the spinal canal.

The lungs were sound, and there was not the slightest blush of inflammation on the mucous membrane of the larynx.

The abdominal viscera were sound. The gall bladder was full of green bile. The intestines were contracted in various parts as if from spasm before death.

CASE III.

Mr. ——'s child. March 13th 1816. Within the last week, this infant has had several attacks of convulsions; and it has had many attacks of crowing inspiration, which did not always end in convulsions, but generally rendered the complexion livid. Leeches were applied, its gums scarified, various mercurial and other purgatives were given, and its bowels were kept very free. In the last 24 hours it had taken two drachms of rectified oil of turpentine, and half an ounce of castor oil. This afternoon it had the severest fit of any. Last stool pasty. *Vesicatoria pone aures. P. Rhei. & magnesia in aqua Pulegii. Enema Terebinthinatum.*

May 14.—Several large stools from the magnesia mixture. Blisters discharging. This morning, while I was present, it had a fit of convulsive inspiration, during which the hand was clenched on the thumb.

March 16th. It had been resolved to change the nurse,

and send the child out of town; but this morning these intentions were frustrated by its sudden death; after an uneasy night it was seized, about 8 o'clock, with a convulsion which terminated in death.

Dissection by Mr. Crampton.—Profuse flow of blood upon dividing the scalp, very firm connexion between the dura mater and bone. The veins in the surface of the brain turgid. A considerable quantity of fluid between the tunica arachnoides and pia mater. Tunica arachnoides thickened. Upon puncturing the tunica arachnoides several drachms of fluid escaping, shewed that the gelatinous appearance of the surface of the brain was chiefly owing to serum under that membrane. The appearance of the substance of the brain natural. About an ounce of fluid in the ventricles. The velum interpositum turgid with blood.

There was no appearance of inflammation in the windpipe.

The viscera of the abdomen were perfectly sound.

I was not able to obtain any particular account of Case I., as Dr. Colles had not seen the patient before death, and knew little or nothing more than what I have related. The physician under whose care the child was, did not attend the dissection.

The disease of which these cases are specimens, attracted Dr. Underwood's notice, but he was without any precise knowledge of its nature. He termed it chronic croup, which is an unfortunate name, as is shown by the sound state of the membrane of the glottis in these dissections. It is evident that the crowing inspiration arises from spasm, and not from inflammation. Dr. John Clarke, in his commentaries on the diseases of children, has well remarked, that the affection is very different from croup, and

is altogether of a convulsive character ; and that a long and very attentive consideration of this kind of convulsion has led him to conclude that the brain is organically affected either directly or indirectly. Two of these dissections agree in presenting no diseased appearance in the thoracic or abdominal viscera. In a dissection mentioned by Dr. John Clarke, there was fulness in the vessels of the brain, and water, in its ventricles. It is to be regretted that he did not give a circumstantial account of that dissection.

That the brain is the seat of this disease there can be little doubt ; but upon what condition of it such symptoms depend we shall not accurately know until we are assisted by the investigations of future labourers in this department of pathology. The disease cannot be of very rare occurrence, since I have seen at least 20 cases of it, seven or eight of which were fatal. Three of these occurred in one family; two of the children recovered.—The student will do well to consult Dr. Kellie's notes on this subject, in the Edinburgh Medical and Surgical Journal for October 1816.

FINIS.