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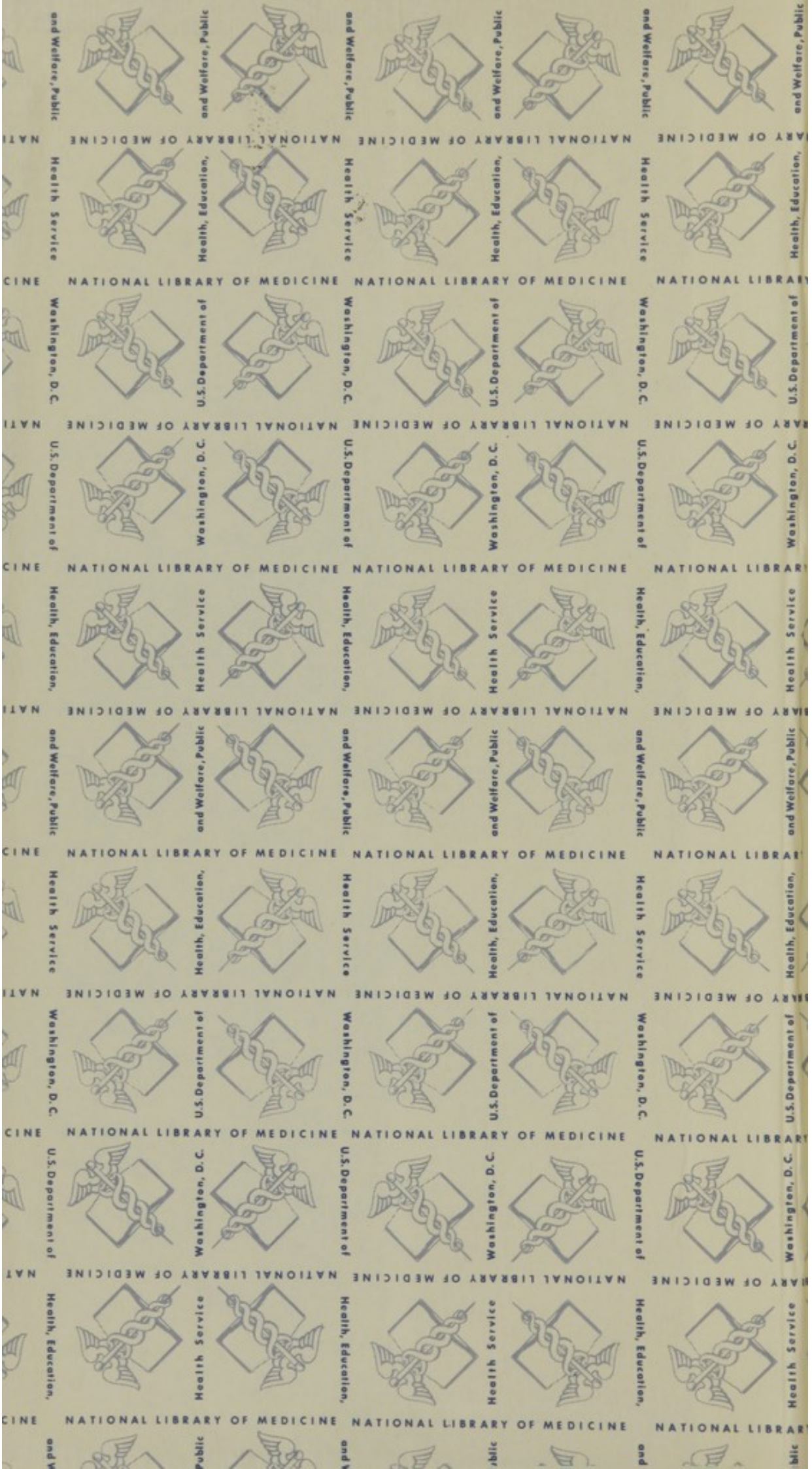
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PRINCIPLES OF PATHOLOGY

AND

PRACTICE OF MEDICINE.

PRINCIPLES

OF

PATHOLOGY

AND

PRACTICE OF MEDICINE.

BY

JOHN MACKINTOSH, M.D.,

LECTURER ON THE PRACTICE OF PHYSIC IN EDINBURGH, &c. &c. &c.

FOURTH AMERICAN,

FROM THE LAST LONDON EDITION.

WITH NOTES AND ADDITIONS,

BY SAMUEL GEORGE MORTON, M.D.,

FORMERLY PHYSICIAN TO THE PHILADELPHIA HOSPITAL; AUTHOR OF ILLUSTRATIONS OF PULMONARY CONSUMPTION, &c. &c.

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TO

HENRY WARBURTON, Esq., M.P.

&c. &c. &c.

THIS WORK IS INSCRIBED,

AS AN HUMBLE TRIBUTE OF RESPECT AND GRATITUDE

FOR THE GREAT BOON CONFERRED ON THE

MEDICAL PROFESSION

BY THE

ANATOMY BILL,

OBTAINED THROUGH HIS INDEFATIGABLE EXERTIONS;

AND FOR THE

IMPARTIALITY, TALENT AND ASSIDUITY WITH WHICH HE,

AS CHAIRMAN OF THE SELECT COMMITTEE OF THE HOUSE OF COMMONS,

HAS CONDUCTED THE ARDUOUS INVESTIGATION INTO THE

STATE OF MEDICAL EDUCATION,

AND WHICH HAS EXCITED THE ADMIRATION OF

PERSONS OF ALL PARTIES,

BY

THE AUTHOR.

TO

SIR JOHN WEBB, K.C.H.

DIRECTOR-GENERAL OF THE ORDNANCE MEDICAL DEPARTMENT,

&c. &c. &c.

My Dear Sir,

In presenting you with two of the preceding editions of this work, I can say, with truth, that I was actuated solely by a desire of perpetuating a record of my esteem for your public and private worth, and of my gratitude for the many acts of kindness received from you in the course of more than twenty-five years, during which period I have had the pleasure and honour of enjoying your friendship.

It is with no small degree of satisfaction that I take this opportunity of again dedicating the Fourth Edition to you, in conjunction with Mr. Warburton, believing that it will not be the less acceptable on that account.

I am,

My Dear Sir,

Your faithful and obliged Servant,

JOHN MACKINTOSH.

PREFACE TO FOURTH EDITION.

The original object of this work was to provide those gentlemen who did the author the honour of attending his lectures, with a Text-Book, in the hope that it might be found useful to them in prosecuting their studies. For some time the sale was confined to his own pupils, and the work was entitled "*Heads of Lectures.*" But the author was subsequently advised to launch the result of his labours before the professional public with the title changed to that of "*Principles of Pathology and Practice of Physic,*" — "trusting, that with all its faults and imperfections, it would be indulgently received as an humble attempt to establish a pathological system of medicine." (*Preface to First Edition.*)

The success of this work has far surpassed the author's sanguine expectations; three large editions having been disposed of in the course of six years.

In offering a fourth edition to the profession, the author, very sensible of the respect due to its members, and of the flattering manner in which the work has been received, has taken every precaution to render it worthy of a continuance of their patronage. It is considerably enlarged—the import of every paragraph has been well considered, many errors have been corrected, and the size of the type and the quality of the paper have been materially improved. He was so well aware of the imperfections of the work, that he courted the remarks of several friends, well qualified by their learning, experience and ability, to undertake such a task; he has availed himself of their written and oral criticisms, and endeavoured to turn them to the best advantage. The author stands particularly indebted in this respect to Mr. Marshall, deputy inspector-general of hospitals, famed for a correct acquaintance with the literary, as well as the practical part of medicine—for being an accurate observer, an inductive reasoner and an admirable critic. If all his suggestions have not been adopted, more particularly as to pursuing an abstract style of writing, it has not arisen from any want of respect for his opinions, but merely because the author entertains rather different sentiments.

The author wishes his work to be regarded merely as a book of facts, carefully collected and examined—he lays no claim to be considered more wise, learned or original than any other professional man in the enjoyment of similar advantages, and who has pursued the same patient method of investigating diseases. He has been very sparing in the introduction of hypothetical discussions, and when he has attempted to explain or establish any point by reasoning, he trusts it will be found for the most part to be strictly inductive.

Whatever feeling may exist as to the manner in which he has treated the opinions of others, the author knows that his efforts are perfectly sincere and well intended. In teaching the principles of a profession of such unbounded importance to mankind, he has ever felt himself called upon, by the combined influence of reason and humanity, to treat professional statements, theories and practices in the most unreserved manner. No duty is more incumbent on a medical writer, on whose labours the lives and happiness of thousands may depend. The author is not aware that he has ever been guilty of indulging in any expression which he would be afraid to repeat in the presence of the persons whose opinions he has impugned; neither can he be justly accused of bestowing praise from personal friendship, nor of condemning from personal animosity. He will never be ashamed or backward to confess an error, and he will feel no reluctance to give up every opinion he has formed, however long and arduous his investigations may have been, for others which may hereafter be proved to be more correct. He has given the best proof of the candour which actuates his conduct in the article on cholera, in which he has felt himself obliged to repudiate all the opinions he entertained, when writing the former editions.

The author most heartily deplores the morbid sensibility and irritability which exist among medical men—no parallel to which can be found in the history of any other liberal profession. Few medical men can bear to know that the soundness of their opinions has been questioned; they regard any such attempt as a signal of deadly personal hatred, and view it in the same light as if their moral character were maliciously assailed. On what circumstances does this frame of mind depend? The author has always attributed it to an overweening conceit, selfishness and pusillanimity. Some may object to these statements, however true, being put in print, because they may think them calculated to injure the dignity of the profession and to produce bad feeling. But the author cannot believe the existence of real dignity and good feeling, where there is such a deplorable want of high-mindedness and moral courage:—besides which, these pages are written exclusively for the professional, and not for the public eye. It cannot be denied that practitioners in medicine stand too low in the scale of public estimation, and that "something is rotten in the state of Denmark." But the author trusts soon to see an important change in the profession, the first steps towards which must be *a considerable modification of corporation privileges*, and a greater degree of care and discrimination on the part of those who teach the different branches of medicine, in exciting industry and zeal among their pupils, and inducing them, by precept and example, to regard the profession of medicine more as a science, and the blessed means of doing good, than as a corrupt jobbing trade. Much substantial good might also be effected by examinators for medical diplomas, were they to feel that their own personal honour depended more on the high moral and professional qualifications of the gentlemen admitted into the profession, than on the amount of fees received.

The facility of granting medical degrees in all the universities of

Scotland, has been quite disgraceful. It would not be difficult to point out many persons who would be puzzled to conjugate a verb or decline a noun in any of the dead or living languages, and who could not, if their lives depended on the result, write or even speak their mother-tongue correctly, who, nevertheless, have had the credit of writing a long and elaborate Latin essay, and have successfully gone through a hocus-pocus examination before learned professors! This trade of granting degrees in physic on the part of the University of Edinburgh, attracted the attention of the members of the Royal Commission appointed by his majesty to inquire into the state of the Universities in Scotland, who were astonished at the small increase of students, compared with the large increase of graduates during the course of twenty years, from 1806 to 1826. At page 167 of the Appendix to the General Report, the Commissioners state, "that the increase from 1806 is very great, and cannot be accounted for by an increase of medical students; for, in 1806, the number was 764, and in 1826, only 896, that is, there was an addition of 132 students, but this bears no kind of proportion to the *multiplication of degrees* from 37 (in 1806) to 118 (in 1826)." But with all due submission to the honourable commissioners, the result can be easily explained. The first principles of *natural* philosophy, which slumbered in other places, advanced rapidly in the University of Edinburgh after the year 1806;—a strong desire had prevailed to discover the philosopher's stone—this, it is well known, failed; but the Edinburgh professors soon arrived at that supreme degree of mental perfection, to find out the value of the precious metals, which they afterwards manufactured in a wholesale manner, by converting pieces of parchment into gold. It was not every professsor that was considered sufficiently skilled in philosophy to entitle him to participate in the handsome pecuniary dividend—no! no! Here, again, there was a monopoly confined to six professors, who would not permit the others to share the spoil. But as this transaction may not be credited, the author will quote another passage from the same Report: "It does appear quite unreasonable, that when there are belonging to the university a number of professors, who must be supposed equally skilled in medical science, there should be a monopoly of examinations to a particular part of them, *apparently for no other purpose than that the persons so favoured may receive the addition to their emoluments arising from the fees paid to the examiners.*" (Page 167.)

There is, likewise, a curious circumstance in the history of the Scotch universities. It is well known, that of these, St. Andrew's and Aberdeen had been in the habit of granting medical degrees upon certificates from qualified persons in the profession, without the personal appearance of the candidate, and consequently without the safeguard to the public of an examination. This was done for ages, and no public remonstrance was made from any quarter. The University of Edinburgh went on with her monopoly and disreputable practices, and she quietly allowed the sister institutions to do as they pleased. But in the year 1833, the University of St. Andrew's, (simultaneously with the Universities of Oxford and Cambridge),

remodeled her laws, reduced the graduation fees to the same standard as Edinburgh, improved the course of study and *appointed competent examiners*, which satisfied the public that none but well qualified persons could obtain a degree at that university. But it did not satisfy the professors of the University of Edinburgh that it would not destroy their monopoly and rob them of their "loaves and fishes." It cannot be too extensively known, that the University of Edinburgh allowed a system, injurious to the public and derogatory to medical science, to continue for ages without uttering one word of complaint; yet no sooner was an excellent system established, a system avowedly better than her own, then she commenced a war of agitation, by which she intended to shake the very walls of Windsor Castle, if his majesty would not put an extinguisher upon the St. Andrew's examiners. Memorials were drawn up, petitions were presented, the highest law authorities were retained; other universities and colleges were enlisted in the unholy cause; by an intrigue, the College of Surgeons of Edinburgh was induced to join hands in the crusade, and petition the king in council *to do an illegal act.* But the triumph of justice has been complete. Many persons of considerable eminence and of high moral worth repaired to St. Andrew's in the mean time, and having undergone strict examinations, received their degrees. The result has been, that a plan nearly similar to that of St. Andrew's has, it is believed, been adopted in London by the king and council, who by charter established a central board of examiners, to grant medical degrees to all candidates who may be found well qualified, whether they have acquired their medical education within or without the walls of a university, that is, under professors or lecturers.

Thus, aided by accidental circumstances, has the author, by devising and planning the improvements adopted by the University of St. Andrew's, succeeded in destroying the most odious monopoly that ever disgraced British legislation. The author feels that he is justified in applying the term "*odious monopoly*," to any system that retards the progress of that science upon which the health and happiness of every one depend.

The author trusts to the wisdom of Parliament for the speedy enactment of more liberal and equable laws respecting medical education; the adoption of a uniform system for all the schools; and a more rational mode of granting degrees in universities. It is to be hoped that the new institutions, which must, as a matter of course, follow the recently chartered establishment in London for the granting of degrees, will be formed upon similar principles.

EDINBURGH, 31 ALBANY STREET.

PREFACE TO THE FOURTH AMERICAN EDITION.

The high estimation in which Dr. Mackintosh's Practice of Medicine is held both in this country and in Europe, is sufficiently attested by the fact that it is now published for the eighth time, four editions having appeared in England and four in the United States.

In presenting it again to the medical profession, I have inserted various materials which, but for the untimely and lamented death of the author, would have been far more ably supplied by his own hands; and, in the prosecution of this task, my object has been to express myself with brevity, rather than to embarrass the work with unnecessary details. All the added parts are enclosed in brackets; and I have been careful to preserve the original text entire, excepting a part of the cases illustrative of the treatment of intermittent fevers by bleeding in the cold stage: but as the author's own judgment led him to omit these cases in his early editions, and, as they were finally inserted merely to sustain a controversy on a point of practice which has few or no advocates in this country, I have regarded them as superfluous, and have therefore omitted them.

The section on the "Physiological Doctrines" has been retained, with slight alterations, as originally prepared by my friend Dr. Joseph Carson, and published in the former American editions. For, although these views and the practice which was based upon them are fast becoming obsolete in this country, their popularity is of so recent a date as to form an important feature in the medical history of our own times, while it still exerts its influence on the minds of many practitioners.

It gives me pleasure to add, that, in the last letter I received from Dr. Mackintosh, written a short time previous to his death, he expressed his entire approbation of the manner in which I had edited

his work, and his gratification at the flattering reception it had met with by the medical public of this country.

I much regret that Prof. Chapman's "Lectures on the more important Diseases of the Thoracic and Abdominal Viscera," did not come to hand until the corresponding parts of the present volume were already prepared for the press; or I should more frequently have availed myself of a work which embraces forty years' experience of a gentleman who, by common consent, stands at the head of his profession in the United States.

S. G. M.

PHILADELPHIA, *August* 26, 1844.

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PART I.

GENERAL HISTORY OF INFLAMMATION AND FEVERS.— WITH THE PATHOLOGY AND TREATMENT OF INDIVIDUAL FEVERS.

CHAPTER I.

ON INFLAMMATION.

HISTORY OF THE GENERAL DOCTRINES, CAUSES, PHENOMENA, AND EFFECTS OF INFLAMMATION.

In the history of Medical Science, we find no subject has attracted more attention than that of inflammation; the minds of the most distinguished pathologists having been turned to the investigation with an ardour which has never been surpassed. This is to be attributed to the importance of the subject—to the frequent occurrence of inflammation—and to the wide range of diseases which owe their origin to this morbid action. According to many authors, inflammation and fever are thought to be mere modifications of the same pathological state of the system, while others speak of them even as synonymous terms; hence, a successful elucidation of the former was expected to prove a triumph over the difficulties of the latter.

This interesting subject still continues to command the attention of every new inquirer—doubtless owing to the mystery in which he finds it involved; for it must be confessed, that notwithstanding the indefatigable labours of John Hunter and others, it does not appear that any very strong light has been thrown on the true pathology of inflammation; while it could easily be proved that much obscurity has been produced, by confounding cause and effect, and by regarding some of the phenomena as principal parts of the essence of inflammation. A great mistake has also been committed by medical inquirers following out an erroneous method of investigating diseases, forming false analogies, and attributing to inflammation of internal organs, all the phenomena and characters of those situated on the surface of the body—thus drawing too largely from surgical pathology. But it may be stated, that the most deadly inflammation of important organs may proceed to a fatal termination, some with few, others with none of the symptoms hitherto universally attributed to inflammation.

In giving a history of the doctrines which have prevailed, it would be a waste of time to quote the opinions maintained previous to the time of Boerhaave, because they were inconsistent with the knowledge we now possess of the circulation of the blood. Boerhaave insisted that inflammation is produced by an obstruction to the free circulation in the capillary vessels. Obstruction, he conceived, might be occasioned by too profuse a flow of any of the excretions, and by

heat, or the application of any other cause which dissipated the thinner parts of the blood, thereby producing viscidity. When this thickened state of the blood did not exist before the production of inflammation, he imagined that the larger globules of the blood found their way by some accident into the capillaries, and produced obstruction. But when the perspiration, the flow of urine, or any of the other excretions were suppressed, then he supposed the capillaries became so much distended as to allow the thicker parts of the blood to enter, creating a more permanent obstruction ; and this state he termed an *error loci.* Thus, it will be seen that Boerhaave had two causes of inflammation—viscidity of the blood, and an *error loci*, either of which he supposed capable of producing an obstruction in the circulation of a part, giving rise to increased action in the heart and other vessels, and exciting a flow of blood in the direction where the obstruction existed. He, however, felt the necessity of having the assistance of some other cause to enable him to account more satisfactorily for the morbid terminations which occasionally happen, and therefore brought into play the humoral pathology, by stating that there is sometimes an acrimonious state of the fluids, which tends to produce gangrene.

That part of his doctrine relating to viscidity cannot support the phenomena; the viscidity being more likely to produce a general than a local effect, since the whole mass of blood must be supposed to be in the same state. But there is rather more probability in the *error loci;* for it is a fact, that in inflamed parts, red blood enters into vessels which, in a state of health, circulate only a colourless fluid. But here there is some difficulty in determining whether or not the *error loci* is an effect, and not a cause of inflammation; and the difficulty is increased, when we reflect, that vessels frequently circulate red particles, which usually contain a colourless fluid, and yet inflammation has neither preceded, attended, nor followed this remarkable change.

On looking at the history of medical opinions on this subject, we shall observe that, as the humoral pathology declined Boerhaave's doctrines began also to lose ground, although the phenomena of inflammation were, in many cases, ingeniously explained by their assistance; and it must be confessed that we have abandoned this doctrine, which is far more ancient than the time of Boerhaave, without sufficient consideration.

Stahl and Hoffman attempted to improve Boerhaave's doctrines, by bringing into account the influence of the nervous system on the capillary vessels in inflammation. On this occasion, little need be said respecting the views of these celebrated men, as it will be necessary to resume the subject in a subsequent part of the work. But it may be noticed, that it has always appeared to me a strong proof of the close connection between the state termed fever, and that of inflammation, that almost every individual labourer in this field of investigation has adduced the same, or nearly the same doctrines, to explain the phenomena of both. Hence the pretty general belief as to their identity. But it will soon be my duty to offer many reasons for dissenting from this too sweeping pathology.

This slight notice of the opinions of Boerhaave, Stahl and Hoffman, is sufficient to enable me to connect their views with those of modern date. The doctrines taught by Cullen were founded upon those of the last three physicians. He admitted the obstruction so much insisted on by Boerhaave, but denied that it was produced either by *error loci*, or lentor of the blood. He also took advantage of the hint which had been given by Stahl and Hoffman respecting the influence of the nerves, and insisted that the obstruction was produced by "spasm of the extreme arteries, supporting an increased action in the course of them." Cullen maintained this doctrine even in those cases in which external inflammations are occasioned by the application of boiling water, blisters, and other stimuli.

The only observation it appears necessary to make, after giving this slight sketch, is that all these illustrious physicians have been guilty of confounding cause and effect. When we place a ligature upon a large vessel, we do not find that general inflammation of the limb follows as a matter of course, which, nevertheless, ought to happen if mere obstruction were the cause of inflammation. This obvious objection has not escaped authors; and it has also been remarked by the acute mind of Allan Burns, that the effusion from the capillaries into the cellular membrane, which takes place so frequently as the effect of inflammation, cannot be explained if the doctrine of spasm be admitted. Besides, Cullen has been guilty of a logical blunder, in attributing the proximate cause of inflammation to spasm of the capillaries, when, according to his own showing, the spasm is occasioned by an accumulation of blood in these vessels.

According to John Hunter, inflammation is to be considered only as a distracted state of parts, which requires another mode of action to restore them to a state of health; or, in other words, that inflammation is a healthy action, which follows an injury of some tissue or organ. In another place, he states that active inflammation is to be considered as an increased action of the vessels, which consists simply, in the first instance, in a distension beyond their natural size. This he supposes to depend on the elasticity of the vessel, and a weakness of its muscular power. The whole of this he considers as a law of nature; and he seems to have believed, that the blood-vessels possess within themselves an innate active power of dilatation.

This leads me to state, that two modern opinions on this subject divide the profession. According to the one, inflammation depends upon increased action of the capillaries of the part. According to the other, it is produced by debility or weakened action of the same vessels, and increased action of the trunks. On each side of this intricate and difficult question are ranged the names of very eminent men; but, as will be shown in the sequel, they might have spared themselves a great deal of trouble. Both parties found their opinions upon microscopical experiments performed on the web of the frog's foot. Each observed the same phenomena, but they have drawn different conclusions. Dr. Thomson, for instance, applied salt to a frog's foot; the first effect was to increase the velocity of the circulation, and to make the vessels larger to the naked eye, and of a brighter red colour. After the stimulant had been continued some time longer,

the red globules became "less distinct than before the application of the salt, and obviously less distinct *from the rapidity of their motion.*"

Dr. Wilson Philip performed experiments, prior to Dr. Thomson, on the frog's foot; and having first proved that he could create increased action in the capillaries without exciting inflammation, happened to meet with one unfortunate frog, who had already by some means contracted inflammation; and he found, upon applying the microscope, the vessels greatly dilated, and the motion of the blood extremely languid;—and he says, "It was at once evident, on observing the part through the microscope, that where the inflammation was greatest, the vessels were most distended, and the motion of the blood was slowest."

Dr. Wilson Philip wetted the web of the frog's foot with *distilled spirit*, but although he continued to keep it moist for ten minutes, or a quarter of an hour, he could not perceive the slightest symptoms of inflammation. "The vessels, instead of appearing redder and more turgid, were evidently *paler* and *smaller* than before the application of the spirits." No wonder. Distilled spirit is the most deceitful application he could have used for such an experiment. In the first place, it might stimulate the circulation in the part, but its quick evaporation would *necessarily* produce coldness, which, no doubt, caused *contraction* of the vessels, and rendered them *paler* and *smaller*.

Dr. Hastings has subsequently repeated these experiments, corroborating those of the last named author. In all the experiments, whether performed by Thomson, Wilson Philip, or Hastings, the velocity of the blood is represented to have been increased in the capillaries, in the state of simple excitement; but it constantly happened, when inflammation commenced, that no globules could be seen in the blood of the affected vessels. Now, whether are we to join Dr. Thomson in concluding, that they cannot be seen because of the "*rapidity of their motion*," or Dr. Hastings and others, who state that the blood in an inflamed part, becomes itself morbidly changed, so that no globules can be detected? The point in dispute is thus brought within a very small space, and the reader is left to form his own opinions. The result of my investigations on this subject shall now be detailed; and it may be stated, that this has not been done hurriedly, but after considerable experience, and a very careful review of all that has been written on inflammation.

It appears to me that the view taken by Mr. Syme, in an essay on inflammation,* is the most correct. He thinks that too much attention has been directed to the obvious signs of inflammation, viz., redness, heat, swelling, and pain, and too little bestowed on the *altered functions of the part.* Mr. Syme justly thinks, that "if this remarkable character of inflammation had been kept in mind, pathologists would hardly have spent so much labour in disputing about contraction and dilatation of the vessels, since it is obvious, that mere difference of capacity, though it might, to a certain extent, account

* Published in Edinburgh Med. and Surg. Journal, vol. 30, p. 316.

for the redness and swelling, could never enable us to explain the alteration of function, any more than a knowlege of the size of capillary vessels could instruct us as to the mode in which their secretions, &c., are performed during health."—And he maintains, that "redness and swelling ought to be secondary considerations in the investigation of the inflammatory state, in comparison with the grand distinguishing character of *altered function.*"

Three points seem to have been much overlooked by writers on inflammation. 1*st*, The influence of the nervous system; 2*d*, The changes in the qualities of the blood itself; and 3*d*, The disordered functions of the capillaries. I have performed experiments upon horses, which prove most satisfactorily the influence of the nerves, even in chronic inflammation. It is well known that these animals are very liable to inflammation in the foot, from different causes; and I have seen horses, which have been lame for months, cured by dividing the nerves immediately above the fetlock joint, the effect being sometimes instantaneous, and occasionally permanent. With regard to the second point, there can be no doubt that the blood in the part affected becomes diseased; the red particles cease to be observed, and the blood assumes a flocculent appearance, becoming darker and darker, and the vessels become in some degree obstructed. It is not improbable that this change on the blood may be found to depend partly, if not principally, upon the cessation of nutrition and exhalation, and at the same time a stop being put to the conversion of arterial into venous blood.

It has been long known, that increased action of the vessels does not constitute inflammation, as we see every day illustrated in the act of blushing, and by the employment of friction to any part on the surface of the human body. In these instances, the vascularity soon subsides on the removal of the causes. But we can produce actual inflammation by a continuance of the friction; the blood will accumulate, and we shall have all the phenomena, and the usual effects of slight superficial inflammations. It may be produced also by obstructing the flow of blood in the limb for a sufficient length of time by applying a ligature, and this is what actually happens in a case of strangulated hernia.

Diminished action of the vessels may be produced and maintained for some considerable time, and the effect will perhaps be, not inflammation of the part itself, but of another part of the body at a distance. Again, if inflammation has been excited in an organ, an increased flow of blood takes place towards it, and all other parts must consequently suffer from a diminished supply of arterial blood; this increases the embarrassment in all organs—hence the general constitutional disturbance. In the practice of physic this last circumstance is too frequently overlooked. Physicians are apt to expect a cessation of the constitutional symptoms the moment the original disease is subdued; this not being the case, they often push their remedies far beyond the proper point, and make matters worse. This is, perhaps, more peculiarly a British error, and we are justly condemned for it by our continental brethren. Other physicians, again, do very great mischief by stimulating and throwing in bark and other

tonics too soon after convalescence has commenced;—they will be found in the morning ordering a large bleeding, and in the evening a stimulant. Cases no doubt occur in which a more immediate change of treatment may be necessary; all that is wished to be impressed upon the reader in this part of the work, is, that such practice is too often had recourse to, more from an unfounded *dread* of the occurrence of "typhoid symptoms," than from real necessity; and that sufficient confidence is not placed in the powers of the constitution, to repair injuries which have been sustained. Physicians are too often found tampering with the human frame, as if it resembled a piece of machinery of their own construction.

The essence of inflammation partly consists in more blood entering by the arteries than can escape by the veins, or than can be made use of, as when the part is in a state of health, when its functions are actively performed; the consequence is an accumulation of blood, or congestion and effusion from partial obstruction; and it is, I imagine, this degree of obstruction which produces the throbbing. The vessels of the inflamed part are greatly dilated, and the number which contain red blood is greatly increased.

It must be confessed, that in inflammation there is much undiscovered. Physiologists have to settle several disputed points in the doctrines of the circulation; and anatomists have to discover a great deal regarding the anatomy and physiology of the capillary and nervous systems, before pathologists can be expected to advance their part of the science of medicine in any remarkable degree.

Considerable difference of opinion still exists among physiologists, whether the circulation of the blood in the capillaries depends entirely upon the *vis à tergo* it receives from the heart, or whether these vessels possess an impulsive power independently of the heart's action. Those who examine this subject without preconceived notions, and with no other view than to discover truth, cannot reject the *vis à tergo* which the whole column of blood is regularly receiving from the heart. Neither can they reject the action which the vessels possess from their elasticity, in aiding other parts of the machinery, not to mention their power of contracting themselves even into a much smaller diameter than is natural to them, when circumstances require it for the preservation of life. With respect to the first point, it will be observed, that if one of the smallest arteries in the body, and at the greatest possible distance from the heart, be divided, the blood will be perceived to flow *per saltum*, the jets corresponding to the actions of the heart. As to the second point, if the extreme vessels are quiescent, not possessing any power of action within themselves, and depending entirely upon the action of the heart, how could irregular determinations of blood take place? When any internal organ is inflamed, we are taught, by experience and observation, to apply blisters and other irritants to the surface of the body, as a part of the remedial process. These applications excite a temporary inflammation on the surface, sometimes to the complete relief of the internal disease. This translation, as it may be called, is not effected through the agency of the heart, by the contractions of which the blood is propelled into the vessels generally;

it can, in all probability, have no power to send blood to one part, in preference to another.

The results of experiments lead me to believe that some notable errors or oversights have been committed by Hunter, and many other experimenters upon the circulation. In the essay above alluded to, Mr. Syme, in endeavouring to refute the received notions respecting the circulation in the capillaries, makes the following statements:—"In this case, also, we ought to discover, through the microscope, not only a change in the capacity of the capillaries, but an oscillatory movement of the globules passing through them. Instead of this, we see the capillaries apparently quite rigid and immovable, while the globules shoot through them in such a free, unconstrained manner, as to convince every observer that they are not impelled by a *vis à tergo.*" The results of one of Mr. Syme's experiments are worthy of being quoted in his own words:—"I have repeatedly seen the globules continue in motion through the capillaries of a frog forty minutes after the whole heart was excised. And this motion was not uniform—either as to direction or velocity, in which case the gradual contraction of the vessels might have been supposed adequate to account for it—but sometimes this way, sometimes that—at one time quick, at another slow—and always continuing quickest as well as longest in the smallest vessels. While in health, the motion of the blood is slowest in the capillaries."

Having been an eye-witness to these experiments, I can add my testimony as to their correctness, and that every precaution was taken to guard against the possibility of any fallacy.

Before concluding this subject, I beg to enter my protest against the employment of the term "debility," as too generally applied to the capillary vessels of an inflamed part. If a man were able to walk three miles in an hour with an ordinary burden on his shoulders, it surely would not be correct to say he is in a state of debility, because he could not go over as much ground if he had to carry an additional hundred-weight. This is exactly the condition of the blood-vessels; they are well able to perform their natural functions, but when over-loaded, they are rendered incapable.

Causes of Inflammation.

In stating the causes of inflammation, it is my intention to avoid adverting to occult causes. In medical investigations, it is very injurious to science to affect being overwise, and it is surely more philosophical to confess our ignorance, than to attempt, by special pleading, to leap over difficulties which, in the present state of our knowledge, are insurmountable. Instead of descanting at great length upon proximate, remote, exciting, and predisposing causes, it will be better to speak of common and specific causes of inflammation. The disease itself is improperly termed by Cullen and others, the "proximate cause;" this term will, for a considerable time to come, be fostered by symptomatical physicians, who call the symptoms the disease, and the disease the proximate cause; but there is no reason why it should be retained in this work, unless it were employed to

denote the proximate cause of the *symptoms*. As to predisposing causes, it is more consistent to take them into consideration when treating of prevention of diseases; but many writers have been guilty of great absurdities even with regard to their influence in the production of disease. One author, with whose writings most medical men are well acquainted, in treating of the predisposing causes of hooping-cough, mentions, among others, "a serous temperament—a scrofulous constitution—dentition—a disposition to contract catarrhal affections—the retrocession of eruptive diseases."

The common causes in the production of internal inflammation are, exposure to cold; sudden vicissitudes of weather, particularly when the air is damp; irregularity of bowels; unwholesome diet; insufficient clothing; cold drinks, particularly when the body is warm; depressing passions, &c. Almost all these causes tend to produce inflammation in the same manner, by inducing irregular distributions of the blood and venous congestion. The lost balance of the circulation is marked sufficiently well in the beginning of almost all acute diseases, by the accession of rigours, coldness, and paleness of the surface of the body. Some individuals are more liable to inflammatory attacks than others, and some to inflammation of a particular tissue or organ. Such persons may well be said to be liable to, or susceptible of, such disease; there can therefore be no objection to the term in this limited application.

Few persons escape inflammatory affections produced by specific causes. The contagion of small-pox is termed a specific cause, because nothing is capable of producing the disease but its own contagion, in whatever way it is communicated. Measles is produced by a specific cause. Scarlatina also, and *perhaps* hooping-cough. Erysipelas is not to be ranked with these specific diseases, because it is not produced by a specific cause, as is too generally imagined. If erysipelas were produced twenty times, by inserting matter taken from an erysipelatous surface, expressly for the sake of experiment, still it cannot be ranked as a specific disease, because it has also followed an injury produced by a splinter of wood, a perfectly clean sewing needle, a rusty nail, &c. It has also occurred after a prick received in dissection. No one ever alleged that small-pox, measles, or scarlatina, were ever produced in this fortuitous manner. It may be also mentioned, that there are other matters, the nature of which is unknown, but the effects of which are capable of producing inflammatory affections, viz., malaria, sometimes denominated marsh miasm, and human effluvia, together with another and still more mysterious agent, epidemic influence. But it appears to me, the great agent in the production of inflammatory affections is the sudden application of cold to the surface of the body, particularly when the stomach and bowels are out of order, and the mind depressed. Cold wet feet, for example, will sometimes produce determination to the head, and phrenitis will be the consequence; or to the lungs, producing pneumonic inflammation, &c. Dr. Thomson, in his work on inflammation, states that this cannot be explained upon any principle. The doctrine of determination of blood explains it so far, and in my humble opinion quite far enough for all practical purposes.

It is not, however, actual, but relative cold, which is so prejudicial to the human body; it is exposure to cold when the body has been previously much heated.

An individual, after sudden exposure to a cold damp atmosphere, may be attacked by inflammation of the lining membrane of the air passages. It becomes an interesting and important question to determine upon what part of the human frame the cold air acts. Dr. Thomson says, at page 57 of his work on inflammation: "In some instances, cold, or a diminution of temperature, seems to act more directly upon the parts with which it comes in contact. We have proof of this in the inflammation of the mucous membrane of the nose, fauces, trachea, and bronchiæ, from the inhalation of cold air." This is a most unhappy illustration. It is apparently a matter of little consequence how cold the air is that passes into the lungs, provided the body be sufficiently protected by warm clothing. In cold regions, if Dr. Thomson's hypothesis were true, an individual ought never to be free from bronchitis. We are assured, however, that the sailors in the voyages of discovery, which were made by Captain Parry and Captain Ross to the North Pole, enjoyed remarkably good health.

There is another curious point which must be noticed. Extreme cold produces exactly the same sensations and the same effects upon the living animal fibre as intense heat. Take a piece of frozen mercury in the hand, and it will cause a sensation similar to that produced by hot iron—inflammation and vesication follow; and if applied long enough, destruction of the part will take place. The hot iron destroys vitality by the addition of too much caloric; the frozen metal, by abstracting it too suddenly.

Division of Inflammation into varieties.

Inflammation has been variously divided and subdivided. The terms acute, sub-acute, and chronic, shall be employed in the course of this work, as being sufficiently precise, and well understood. It is wished to avoid the use of the term "passive," because it is employed too vaguely, sometimes to express the existence of sub-acute inflammation, at others that of the chronic kind. John Hunter also instituted the terms healthy and unhealthy. Is inflammation a disease? If it be, it is certainly not proper to call it healthy. Other varieties of inflammation have been mentioned, as scrofulous, gouty, rheumatic, erythematic, erysipelatous, &c.; but it is my belief, that as pathology improves, these terms will be less frequently employed. Another obvious division of inflammation depends upon the tissue or organ affected.

Phenomena of Inflammation.

External inflammation is characterized by redness, swelling, heat and pain. All these taken together, leave no doubt as to the existence of inflammation. In this respect, surgeons have the advantage of physicians. They can see and feel the part affected, in addition to the power of judging from the constitutional symptoms, and the account the patient gives of his own sensations. Whereas in physic

we have greater difficulties to encounter in forming a diagnosis. We observe local and constitutional symptoms also; but it does not always follow, because there are dyspnœa and fever, that the lungs are inflamed; the disease may be inflammation of the pericardium. There may be violent vomiting, tenderness in the epigastrium, thirst, with more or less fever, while the disease is in the head. There may be severe local and constitutional disturbance, without the existence of the slightest degree of inflammation, merely from a neuralgic affection of some tissue or organ, or from impeded function of some viscus. During life we cannot see the state of internal organs, to ascertain whether they are red and swollen; and a sensation of heat, pain, and fever, may exist without the least inflammatory action. It will be proved, in a subsequent part of this work, that the pulse cannot be depended on. With respect to buffy blood,* it may exist without actual inflammation; and, in inflammatory complaints, the blood does not always yield it. The shape of the dish modifies this appearance, as does the manner in which the blood flows from the vein. Mental agitation and fatigue produce the buffy coat. Sometimes it does not appear on the blood till the patient has been largely and repeatedly bled. I am inclined to place considerable dependence, however, on the buffy coat, *taken in connection with other circumstances*, particularly when the surface is also concave, or "cupped," as it has been termed, and when the quantity of serum is proportionably large.

It has often occurred to me to see dissections where great destruction of vital organs had taken place from inflammation, and yet there had been little or no pain complained of during life. Nay, I have seen instances of inflammation of the pleura to such a degree as to occasion death, where the symptoms were too slight to direct the medical attendants to the true seat of the disease.

No pathological physician will join Dr. Gregory, a modern writer on the Practice of Physic, in the following dogmas: "*Delirium marks inflammation of the brain; impatience of light, ophthalmia; hoarseness, inflammation of the larynx; and dyspnœa, that of the lungs.*" The practice of physic would, indeed, be simple and certain, were these things true. But this is not the proper place to enter upon a refutation of such arbitrary and erroneous assumptions.

The uncertainty of the pulse has been already mentioned. Inflammation may be going on towards a fatal termination, in an important organ, without any febrile movement. This was noticed long ago by Morgagni, Valsalva, and others, and it led them too hastily to conclude, that mortification of internal organs occasionally took place without the previous existence of inflammatory action.

What occasions the redness, swelling, heat, and pain, in external inflammations? The *redness* is occasioned, no doubt, by the enlarged

* Blood is said to be "buffy," when the surface, instead of being of a reddish colour, presents a yellowish crust of greater or less thickness. There are various opinions as to the cause of this appearance. Some attribute it to the slower coagulation of the blood; others to an increased quantity of fibrine; or merely to the hurried state of the circulation. Of one fact I am quite certain, from repeated observations, that blood may be seen to be buffed while it is yet flowing from a vein, and before the stream has reached the cup.

size of the vessels, and the increased quantity of blood in the part affected. Vessels, which formerly transmitted a lymphy fluid, now circulate red blood.

The swelling has been erroneously ascribed to the expanded state of the blood from increased heat; but it has been proved that the blood contained in the vessels of an inflamed part, is not one degree hotter than that which flows from the heart; besides, a few degrees of caloric could have no effect in producing the swelling. It seems to be owing to the increased quantity of blood in the part, and the effusion of a lymphy fluid into the surrounding cellular substance—the action of the absorbents being at the same time, in all probability, interrupted.

Heat.—Boerhaave and others imagined that this symptom depended on the friction of the red globules against the sides of the vessels, and that, in inflamed parts, the friction is greatly increased by the obstruction which exists. This, like all Boerhaave's doctrines, is too mechanical. It is difficult to determine on what cause the increased heat depends, and fortunately for humanity, it is not of much consequence; but it is probably in part owing to a peculiar action in the nerves of the texture, partly to the increased volume of blood, by which the *quantity* of caloric is augmented, although it be not indicated by the thermometer, but perhaps principally to diminution or suppression of the natural functions of the part.

Pain.—Pain in an inflamed part is not in general continued; it is most acute during the systole of the left ventricle of the heart. It would seem, that the state of the blood influences the sensibility of the body in disease; if the mucous membrane of the bronchial tubes be extensively inflamed, the circulating blood will be principally venous, in which case little complaint is made of pain.

Terminations of Inflammation.

Inflammation, (says John Hunter,) *cæteris paribus*, always proceeds more favourably in strong than in weak constitutions; for, when there is much strength there is little irritability. In weak constitutions the operations of inflammation are backward, notwithstanding the part in which it is seated may possess, comparatively speaking, considerable vascular activity.

This observation, like many others by the same author, however true with regard to surgical pathology, cannot be made to apply so universally in the practice of physic. We more frequently see acute diseases of internal organs gallop through a rapid course to a fatal termination, in robust, than in delicate individuals. Persons with delicate constitutions frequently sink, while labouring under internal inflammations, not because the diseased action has any peculiar tendency to terminate badly, but because the patients are too weak to bear the necessary remedies.

In another place, Mr. Hunter remarks:—"It has been supposed that different species or varieties of inflammation arise from the difference of the nature of the part inflamed; but this is certainly not the case; for if it were, we should soon be made acquainted with all

the different inflammations in the same person at the same time, and even in the same wound; for instance, in an amputation of a leg, &c.....It is the adhesive in them all, if the parts are brought together; it is the suppurative, if the parts are exposed." This observation, no doubt, in some measure holds true in surgery; but it cannot be admitted in physic, as it is well known that inflammation terminates differently in different organs and tissues.

The terminations of external inflammation are commonly styled "resolution; suppuration; ulceration; and gangrene." The first is, of course, the most desirable; and, fortunately for mankind, it is the most frequent. It is evinced by a diminution of pain and swelling —the fever gradually abates, pus does not form, nor does the structure of the part suffer permanent injury.

The second termination is that termed suppuration. After the inflammation has existed for a certain time, which varies much in different persons, pus begins to be secreted in the cellular substance, and either collects in one cavity, as in common phlegmon, or is diffused very generally over a whole limb, as in phlegmonous erysipelas.

Ulceration is the third termination mentioned.

The most dreaded termination, and fortunately the rarest, is the entire death of the parts affected, which are then said to be mortified or sphacelated. This condition is recognized by the sudden cessation of pain; the part, from being of a bright red colour, assumes a dusky hue; it crepitates from the extravasation of air in the cellular substance, vesications arise, a very peculiar odour is perceived, the pulse sinks, and every appearance announces speedy dissolution. Death, however, does not always follow mortification of external parts; the dead are sometimes separated from the living parts, and are ultimately thrown off, the patient surviving the injury.

It is now necessary to mention shortly the effects of inflammation in the following textures: 1. Skin. 2. Mucous membranes. 3. Cellular membrane. 4. Fibrous membranes. 5. Serous membranes. 6. Inflammation of the solid viscera and glandular system.

1. Inflammation of the skin.

The effects of inflammation on this part of the body are very various: such as the formation of rashes, as in scarlatina, roseola, &c.; pustules, as in small-pox, porrigo, &c.; vesicles, as in chicken-pox, herpes, &c.; papulæ, as in measles, lichen, &c.; scales, as in lepra; ulceration with loss of substance; and also gangrene.

2. The effects of inflammation on mucous membranes, are, swelling and dryness; effusion of mucus, or of matter of a puriform character--a mixture of the two, appropriately termed muco-purulent; of a serous fluid, and coagulable lymph. These different products of inflammation are sometimes colourless, at others yellow, and sometimes red like currant jelly. The mucous membranes are likewise liable to softening, thickening, passive hæmorrhage, ulceration, contraction, sloughing, and tubercular formation.

Some of these effects are common to the mucous lining of the air passages, alimentary canal, and urinary passages, as for instance, copious exudation of mucus, softening, thickening, and passive

hæmorrhage. Others are not so; tubercular formation, for instance, is more frequently met with in the alimentary canal. Ulceration is sometimes found in the air tubes, but more frequently in the stomach and bowels, particularly the latter, rarely in the bladder. Some parts of the mucous membrane of the same canal are more liable to inflammation and ulceration than others; for instance, the termination of the ileum and the colon. Inflammation is more liable to terminate in the exudation of coagulable lymph in some parts than others; it is seen most frequently in the wind-pipe and rectum, although other parts are not altogether exempt.

Considerable vascularity is not alone a certain proof of inflammation having existed in the mucous membranes before death, because it may be found only in depending parts of the canals; and congestions of this membrane may be occasioned by diseases of the heart and lungs, and by any other cause which obstructs the circulation of the blood.

3. Inflammation of the cellular membrane terminates in effusion of blood, of lymph, of serum, of pus;—in induration and gangrene. Inflammation in this tissue is generally termed phlegmonous, and although the cellular membrane is so extensive and loose in its texture, the disease tends to circumscribe itself by a sanatory process, and the effused matter to make its way to the surface of the body. Occasionally, though rarely, the inflammation has a tendency, from the first, to spread very extensively, from peculiar circumstances which have never been satisfactorily explained. To express this condition, several new-fashioned names have been invented; the one most applicable, is, "diffuse cellular inflammation." Sometimes the death of a small portion of the cellular membrane takes place, then the affection is called carbuncle.

4. Inflammation of fibrous membranes. This is the tissue which is generally supposed to be affected in gout and rheumatism; the chief peculiarities are said to be, that it never terminates in suppuration, ulceration, or gangrene, and the functions of the brain are rarely disturbed during the course of the disease. It is said to terminate sometimes by effusion of a gelatinous nature, or deposition of calcareous matter. This subject ought to be held as being open to future investigation; it is by no means proved that the inflammation which attends gout or rheumatism is situated in such a texture. All the phenomena and the terminations of these diseases, tend to confirm a suspicion, that it is seated in the extremities of nerves, more particularly when we reflect upon the sudden metastases. At all events, it is rather strange that so many authors should make the assertion, that inflammation of fibrous membranes *never* terminates in suppuration and ulceration. What do they call the periosteum? But this question is too intricate and extensive, and some may think, too surgical, to be investigated in this work.

5. Serous membranes in a state of health show few red vessels, and their surfaces exhale a thin serous fluid, which is just sufficient to bedew them. When inflamed, red vessels are seen during life, an effusion takes place either of serum or lymph, or of both. Sometimes the effusion is limpid, or turbid like whey: at other times

it looks like pus, and occasionally it is greenish, or resembles lees of wine; often large masses of coagulable lymph are discovered gluing the parts together. Adhesions between the different viscera of the thorax and of the abdomen seem to be effected by means of intervening portions of lymph, which subsequently become organized. The quantity of the effused matter is sometimes small, amounting only to a few ounces, at others there are several pounds. I have seen ten, twelve, and even twenty pounds in one side of the chest.

A bloody effusion is sometimes found, more particularly in the abdomen. Ecchymosis not unfrequently takes place when the inflammatory action is very violent. There can be no doubt that tubercles form *occasionally* under a sub-acute and chronic inflammation of this class of membranes, more particularly in the peritoneum, pleura *pulmonalis*,* and arachnoid coat. Emphysema also occurs in the cellular tissue immediately under the peritoneum. It has been proved by experiment, that the peritoneum, however vascular under acute inflammation during life, loses its red appearance even during the act of death. In chronic inflammation, it is sometimes found very red in colour, and thickened in texture.

Much has been written during the last few years upon inflammation of the arachnoid, by which science has certainly been benefited; but it appears to me that considerable misconception has taken place upon this subject. Although red vessels are rarely to be seen in the arachnoid, so rarely that in my whole life two undoubted instances only have presented themselves, yet no one who has paid attention to the situation of effusions of matter within the skull, will deny the existence of inflammation in that tissue. But it is comparatively rare. In my examinations (and they have not been few in number) to ascertain this point, it has not occurred to me above six times to find effusions external to the arachnoid membrane. If, on examining the abdomen, we were to find no vascularity, and no adhesions, or effusions of serum or lymph, within the cavity of the peritoneum, but were to discover the effusion on the other side of the membrane, extravasated for instance in the cellular tissue which connects the serous membrane to the adjacent parts, should we be entitled to say, from any thing we yet know, that this was a consequence of peritonitis. In the cases to which reference has been made, the effusion is between the arachnoid and the pia mater, which are united by fine cellular substance—*the wrong side*, if it proceeded from diseased action in the former membrane, unless it has two serous surfaces, which is not maintained by any anatomist. There is not, perhaps, in the whole body, a more vascular membrane than the pia mater, and I cannot avoid concluding that the effusions, not only on the surface of the brain, but also in the ventricles, depend more on diseased action in this than the other membrane.

Ulceration is also to be considered as an occasional, although rare, effect of inflammation in serous membranes. It has presented itself to me three or four times only. There are three splendid specimens

* Tubercles are rarely seen in the pleura costalis.

of this change in my museum, two of ulceration of the pleura pulmonalis and costalis, the other, of the membranes on the surface of one of the hemispheres of the brain.

Gangrene is one of the rarest results of inflammation of serous membranes, and it is to be doubted whether it ever occurs when the diseased action is confined to this tissue.

6. Inflammation of the solid viscera and glandular system. The first circumstance generally perceived is the presence of an unusual quantity of blood in the affected organ. The first change in the structure of the viscus is softening. Hardening is owing, in general, to chronic inflammation. With respect to inflammation of the solid viscera, it is to be remarked, that if the liver be excepted, the termination in the formation of abscess is rare. In the lungs, it is admitted by the best authorities to be rare; I have seen it once only in the substance of the lungs. In the brain, it is probable that the peculiar change which has been denominated *ramollissement*, and the remains of old apoplectic effusions, together with tubercular degenerations, have been often mistaken for abscesses.

Tubercles are found in the substance of various organs, as in the liver, spleen, kidneys, lungs, and brain; and there can be no doubt these are sometimes the result of inflammatory action, but no one is warranted in asserting that they are invariably so produced. I have frequently found in the lungs, and in the substance of the brain, depositions of a tubercular character, which were certainly not caused by inflammation, and which, in all probability, had been in existence for years without exciting inflammation. This statement refers to persons who were either killed by accident, who died suddenly without any previous complaint, or who were carried off by other diseases. One of the finest preparations in my collection, is the heart of a woman, extensively and deeply tuberculated, who died in a moment without a previous complaint, and no other lesion could be discovered.

Lastly. Inflammation affecting glands, has an aptitude to terminate speedily in suppuration. Sometimes, however, they suppurate very slowly, and occasionally induration takes place.

From this rapid sketch, it may be thought that the subject has not attracted a sufficient share of my attention, and that several points have been altogether overlooked; such as the marked difference in the constitutional symptoms in inflammations affecting different tissues, and the general principles of treatment. The truth is, that the importance of these points is felt too deeply to allow me to treat of them in a general description—a description moreover, which ought necessarily to be very short. These subjects will be fully entered into in subsequent parts of the work.

CHAPTER II.

ON FEVER.

HISTORY OF THE GENERAL DOCTRINES OF FEVER.

The importance of the subjects which are to be discussed in this chapter is very great, from the frequent occurrence and often fatal termination of this class of disorders; and it will appear still more so, when we reflect on the great extent of our dominions abroad, where, it is believed, febrile diseases carry off more than four-fifths of those who die.

If a person, after shivering, feels hot, restless, and thirsty, has a quick pulse, and complains of languor, he is said to have a fever.

Galen's notion of fever appears to have been that an extreme degree of heat is formed in the heart, and from thence extends itself to the rest of the body. It is one of the oldest notions in medicine, that fevers are produced by a concoction of something pernicious to the system, which is expelled by a critical effort of nature, as, for instance, by frequent and copious evacuations from the bowels, free perspiration, &c. This is the view of fever taken by the humoral pathologists.

According to Boerhaave, fevers arise from the same pathological causes as inflammations—thus ascribing them to viscidity of the blood, *error loci* and an acrimonious state of the fluids. He conceived that the cold stage of fever was produced by the *error loci*, and all that followed was to be regarded as natural consequences. As has been mentioned in treating of inflammation, the first idea which appears to have been given to the world, of the influence of the nervous system in the production of fever, originated with Stahl, and it was improved upon by his colleague, Hoffman. They supposed that fever consisted in a tonic spasm, produced on the extremities of the nerves by a deficiency of action in the brain. They also adopted the humoral pathology; but insisted, that the sanative process was impeded by the spasm at the extremities of the nerves, thereby preventing the disease from being thrown off; and it appears to have been their opinion, that it was this resistance which produced the constitutional commotion which attends fevers.

According to Cullen, the human body is composed of certain organs, whose actions are regulated according to laws peculiar to animal life, and superintended by a mobile and conservative energy, which is situated in the brain, acting wisely but necessarily for the general health, preventing mischief and repairing injuries, by a pre-

established relation between the changes produced, and the motions required for the restoration of health, which actions are performed by the nerves. According to him, the muscular filaments are merely the extremeties of nerves. He supposed that fever is produced by a collapse or diminution of the energy of the brain, in consequence of the influence of contagion, miasm, cold and fear acting as sedatives. This diminished energy produces a universal debility, and causes a spasm of the extreme vessels, and in this spasm the cold fit is supposed to consist. In fact, that fever is nothing more than diminished energy of the brain, and spasm of the capillaries. He conceived that the debility proves a stimulus to the circulating system, exciting increased action of the heart and arteries, which continues till it restores the energy of the brain; by removing the cause of the spasm of the extreme vessels, relaxation takes place, and health is restored by a copious sweat, or discharge of some of the other excretions. He divided the whole phenomena into three stages; *first*, the stage of diminished energy of the brain, and consequent debility; *secondly*, that of spasm of the extreme vessels; and *thirdly*, all that follows till the commencement of the sweating stage. Perceiving his doctrines to be exceedingly weak, Cullen sought support from certain powers which are supposed to be inherent in the constitution, which enable it to resist and throw off disease, commonly called the *vis medicatrix naturæ*. But it is important that he should here speak for himself. "Upon the whole, our doctrine of fever is explicitly this:—The remote causes, are certain sedative powers applied to the nervous system, which diminishing the energy of the brain, thereby produce a debility in the whole of the functions, and particularly in the action of the extreme vessels. Such, however, is, at the same time, the nature of the animal economy, that this debility proves an indirect stimulus to the sanguiferous system; whence, by the intervention of the cold stage, and spasm connected with it, the action of the heart and large arteries is increased, and continues so, till it has had the effect of restoring the energy of the brain, of extending this energy to the extreme vessels, of restoring their action, and thereby especially *overcoming the spasm* affecting them; upon the removal of which, the excretion of sweat, and other marks of the relaxation of excretories, take place. This doctrine will, as I suppose, serve to explain, not only the nature of fever in general, but also the various cases of it which occur."

It is remarkable that Cullen, who has insisted with so much pertinacity on spasm of the extreme vessels being a principal part of fever, should so completely have forgotten himself, as to assert that *atony*, which is the very reverse of *spasm*, is also a principal circumstance in the pathology of fever. But he shall again speak for himself. "From the whole we have now said on the subject, I think it is sufficiently probable, that the symptoms of anorexia, nausea, and vomiting, depend upon, and are a proof of, an *atony* subsisting in the extreme vessels on the surface of the body, and that this *atony*, therefore, now ascertained as a matter of fact, may be considered as a principal circumstance in the proximate cause of fever." "This atony we suppose to depend upon a diminution of the energy of the brain;

and that this takes place in fevers we conclude, not only from the debility prevailing in so many functions of the body mentioned above, but particularly from symptoms which are peculiar to the brain itself."

The meaning of "spasm of the extreme vessels," is morbid contraction; that of atony of the extreme vessels, is a defect of muscular contraction. Can a morbid contraction, and a morbid relaxation, coexist in the same vessels at the same time? This contradiction appears to me to be quite unparalleled—it always surprised and disappointed me in the investigation of this subject; and it is astonishing that doctrines founded upon such statements should still be maintained. In the present improved state of pathology, it is almost unnecessary to enter into proof, for the purpose of showing the error of attributing to spasm of the extreme vessels any part of the pathology of fever; but it may be mentioned that, in some fevers, copious perspiration takes place through their whole course; and, even in the cold stage of intermittent, the surface is occasionally covered with moisture.*

It appears that Cullen and others always confounded debility or actual weakness, with oppression from obstructed action. The debility which depends upon obstructed action is very different from that produced by starvation, a protracted disease, or great loss of blood, &c.; it is mere oppression occasioned by the loss of balance between the arterial and venous systems: and the proof consists in the well known fact, that upon the restoration of that balance, the overpowering sensations of weakness vanish, even when brought about by blood-letting, which is a remedy directly debilitating. If debility formed such a regular and indispensable part of fever, as the Cullenians assert, three circumstances ought to follow as necessary consequences. 1*st*, Weakness, produced in so many different ways, should invariably excite fever. 2*d*, Once a fever is lighted up in the system, it ought to be impossible to extinguish it, and particularly by any antiphlogistic means; and, 3*d*, The longer such an action continues, the greater will be the debility, and therefore the febrile symptoms ought to become more and more intractable.

The term "diminished energy of the brain," being a principal part of the foundation of Cullen's doctrines, cannot be allowed to pass without notice. It is one of those vague terms too often used by him to express a great deal more than we actually know, but which in reality explains nothing. It is one of those expressions which satisfies the youthful mind, without affording instruction or exciting inquiry. What is the natural energy of the brain? How is it propagated? It would be very satisfactory if the living advocates of this system would inform us, at what period of the disease the energy of the brain exists in its most perfect state, and greatest strength. Is it at the period of attack, or *at its termination?* It appears to me to be most unphilosophical to treat of diminished energy of the brain as a principal part of any disease, because it has no precise

* I have written more fully upon this subject, to show the great absurdity of the doctrines of Cullen, in a paper in the Medico-Chirurgical Review for January, 1828.

meaning. It can be of no use in explaining the nature and seat of fever, and of still less service in directing the plan of treatment.

Cullen too hastily rejected the humoral pathology, and seems unfortunately to have almost entirely disregarded the effects produced by outward causes, and inward irritations, in producing irregular determination of blood, and local engorgements; which, I shall hereafter attempt to show, are the great agents in exciting diseases, and especially fevers. It may be noticed in this place, that Dr. Mason Good, in his large and laborious work, advocates the truth of the chief parts of the Cullenian doctrines.

According to Dr. Brown, man is made of organized materials, endowed with a principle of excitability or predisposition to excitement, by means of a great variety of stimuli, some of which are constantly acting upon the machine. This excitability, in point of fact, is nothing more than the nervous energy of Dr. Cullen; it is the principle of life, or life itself. It is, according to Brown, constantly varying in its accumulation and exhaustion; yet it differs somewhat from the nervous energy of Cullen, which is influenced by something unconnected with the matter of organization, and which he terms "*vis medicatrix naturæ*,"—whereas Brown's excitability is passively exposed to the effects of such stimuli as it may chance to meet with, and yields to their influence. He divided all diseases into two classes: the first, caused by accumulated excitability, and marked by direct debility; to this class he gave the name of *Sthenic*. The second, produced by exhausted excitability, and marked by indirect debility; this class he termed *Asthenic*. And his treatment is as simple as the arrangement, viz. in the first case, to reduce the excitability by antiphlogistic means; and in the second, to increase the excitability by an opposite treatment. It can scarcely be believed, that an author who acquired so much reputation, could have been guilty of publishing such nonsense on a point of such vital importance, as the following:—"In order both to prevent and cure diseases, we must always use the indication proposed, and stimulate or debilitate; never wait or trust to the supposed powers of nature, which have no real existence."* It is surprising, considering that his works abound with absurdities equally glaring, that Dr. Brown should have made any converts; and it is not very creditable to the age in which he lived, that it should be told he had numerous followers—but they soon began to fall off; and it is curious, that in proportion as they declined in number at home, they increased abroad, and are at this very moment, with some modifications, in considerable force in Italy, notwithstanding the exposure of the fallacies of the system made by Rasori.

Dr. Darwin improved the Brunonian doctrines, in so far as he makes the brain the common fountain, from which every other organ is supplied with sensorial fluid. He regards the sensorial fluid as a mere secretion, capable of being exhausted in four different ways, through the agency of four separate faculties which he ascribes to it.

1*st*, The faculty of *Irritability*, exhausted by internal stimuli, affecting simple irritable fibres.

* Elements of the Practice of Physic, vol. i. p. 81.

2*d*, Of *Sensibility*, exhausted by stimuli affecting the fibres of the organs of sense.

3*d*, Of *Voluntarity*, exhausted by stimuli affecting the fibres of those organs which act in obedience to the will.

4*th*, and lastly, of *Associability*, exhausted by stimuli affecting organs associated in their actions by sympathy or long habit.

By each of these means, Darwin supposes the sensorial power becomes evacuated, as by food and rest it becomes replenished, often indeed with an accumulation or surplus stock of power. He therefore considers the occasional causes of fever, (whatever they may be,) as inducing a torpor of the extreme arteries, and the subsequent heat, as an inordinate action of the sensorial power hereby accumulated to excess.

This subject might be pursued much farther, but more minute detail does not consist with the plan of this work, particularly as the individuals whose names have been mentioned have bewildered themselves with theories, have substituted mere conjectures for facts to which they have given appellations, have replaced one mystery by adding another quite as inexplicable, and seem to have considered the subject without reference to morbid dissection, or to the habits and modes of living in different societies and climates.

I still have to mention the doctrines of more modern pathologists, which are alleged to be founded on morbid dissection. Some of these contend that fever (or as they term it, the proximate cause of fever) depends upon inflammation of a particular organ. Thus it has been attributed to inflammation of the brain—of the liver—of the digestive organs generally—of the mucous membrane of the stomach and intestines particularly—and of the arteries and veins.

It is necessary to caution young practitioners, and more particularly those commencing the study of medicine, against implicitly receiving the arbitrary doctrines of fever which divide the profession in the present day, viz. that fever is invariably produced by inflammation of one viscus, or set of viscera.

Dr. Clutterbuck, a physician of reputation in London, has most ingeniously attempted to prove that fever depends upon some degree of inflammation of the brain. In reviewing the merits of his system, it must be kept in view, that he practises in the greatest commercial city in the universe, among a people whose minds generally speaking are more actively employed then their bodies, who are exposed to intense anxieties, occasioned by extensive speculations and reverses of fortune, who are either in a state of considerable mental excitement or depression. If to these considerations we add the effects of heavy meals and sedentary habits, impeding the functions of the stomach and the bowels, it will be seen, that there may be considerable foundation for the opinions this gentleman has been led to advance. But I object to the arbitrary application of his doctrines.

Broussais, to whom the profession stands greatly indebted, and whose merits, like those of many others, have been more justly estimated abroad than at home, asserts that all fevers may be referred to gastro-enteritis, simple or complicated. In France it is no wonder that Broussais should so frequently find the mucous membrane of the

stomach and intestines altered both in appearance and structure, if the habits and modes of living of the people are recollected. The stewed meats, salads, oils and sweets, consumed by Frenchmen among the higher ranks, together with the hard beer and acid wines which they drink, and the unwholesome food eaten by the lower ranks, all tend to produce irritation in the digestive organs. Sooner or later, these irritating matters produce increased vascularity, which must frequently terminate in inflammation and ulceration. It is easy, therefore, to account for the doctrines of Broussais, and for the tone in which he supports them; and while I allow him every merit and commendation which is so justly his due, I cannot help objecting to the arbitrary manner in which he wishes to apply them.

There are other individuals of the present day, who assert that fevers have never any connection with inflammation, except in as much as they occasionally excite it in their progress; and in alluding to the appearances so frequently found on dissection, they triumphantly but erroneously allege, that such appearances are the effect, and not the cause of the disease. Change of structure is certainly only a consequence of previous disordered action, but in fever it is not always difficult to trace the progress of the local disease, from the beginning of the disordered action till the structure of the part is injured. They are many persons who imagine that inflammation cannot exist in any organ or tissue of the body, in any degree, without a strong and quick pulse, thirst, restlessness, and considerable pain. Fatal error!

The war of opinion in France respecting the pathology of fever, is at present too great to entitle us to expect candour from all the combatants. Much talent is already in the field, and when the stage of excitement is over, the science of medicine will probably be found to have gained very considerably. Some are ready to assert the universal truth of the *new doctrine* at the point of the sword, while others as strenuously, and apparently as sincerely, deny them. New advocates are daily coming forward on each side; and while we may express our admiration of the zeal, ability, and assiduity, displayed by so many individuals, still I cannot avoid stating my conviction, that their services would be more useful to suffering humanity, if many of the authors thought more, and wrote less. From this reflection, I would beg to exclude the truly valuable works of Broussais, Andral, Laennec, Boisseau, Bailly, and many others; but even with respect to these, if that of M. Bailly is excepted, it is melancholy to reflect upon the little practical benefit they have themselves derived from pathological investigations. They have filled large volumes with cases and dissections, but their practice is too *expectant* on most occasions, and generally weak and vacillating. Having already expressed myself candidly respecting the errors of authors of our own country, I may be permitted to do the same with respect to those of the French school; and I must farther add an expression of surprise at the little acquaintance with British medical literature, which even their best writers display. Frequent opportunities will occur, in the course of this work, to quote, with benefit to my readers, many important facts from French works; but in this doctrinal his-

tory, it would be of little service in general, and occasionally would make "darkness visible."

[*Physiological Doctrines.*]

[Broussais, whose name has excited so much attention in the medical annals of this country, and whose doctrines have created no little disputation, is the well-known author of what is entitled the *Physiological System of Medicine.* We shall not stop to inquire whether this system is with propriety styled a physiological one, and based upon correct views of physiology; or, on the contrary, whether it rests upon false conceptions of vital phenomena: because it involves a question which can only be decided by the acquisition of a greater number of facts than we at present possess, derived from an accurate and well directed observation of the phenomena of health and disease. Our object, therefore, will merely be to present to the reader a few of the general principles of this system, together with the mode of reasoning by which they have been arrived at, and afterwards to give a concise view of the droctrine of fever, as founded upon these general principles. This then will be our apology for the length of the following preliminary observations.

The animal frame consists of a number of organs, and these organs of different tissues, which modify their relative importance. The tissues are composed of solid and fluid elements, acting and reacting mutually upon each other by virtue of their molecular forces; the movements thus excited constitute organic action. The organs are formed to carry on, in a natural state, certain operations or functions, necessary in themselves, and conducive to specific purposes. They may be said to have an isolated existence when considered merely as to their dissimilar modes of operation; but they are, when regarded as portions of an elaborate and intricate machine, so intimately connected that each one, to a certain extent, is dependent upon the other; thus constituting a beautiful and complex whole, made up of equally complex parts.

The several organs are connected with each other by a subserviency of function; that is, the integrity of each one cannot be individually maintained without the assistance of the others; while at the same time there exists a sympathetic tie which pervades them all. For example, the brain and spinal marrow together with the ganglionic system, possess the command of nervous influence, which is brought to bear upon the functions of the heart; but it cannot exert this influence unless the latter keeps up its regular supply of arterial blood. The stomach, in like manner, cannot secrete the gastric liquor unless it is supplied with blood; nor can the heart furnish a supply unless the function of digestion is sufficiently active to elaborate the materials of nutrition. This arrangement holds with regard to all the organs, constituting a circle of dependencies, any one of which being disturbed, the whole is affected. The other species of connection, though less intimate, is still of great importance: it is the sympathy which exists among them, causing all to be more or less disordered by the derangements of a single one, and leading to

remote or present injurious effects, in proportion to the degree of disturbance. This connection preserves harmony of action in organs which are not contiguous, and sustains their relative tone and force. For the purpose of elucidation, we need only cite the relation which exists between the brain and the stomach, the stomach and skin, &c.

The organs have been stated to consist of tissues which differ in structure, uses and modes of life. They are combined in variable proportions, so as to adapt the organ to the purposes for which it was designed. To illustrate this, in the stomach are found four tissues, externally the serous, to enable it to glide with facility upon the neighbouring parts; next the muscular, to propel its contents; then the cellular, as a connecting medium; and finally, the mucous, to assimilate the food, and prepare it for its conversion into blood. In the construction of the heart are found three tissues—the serous, fibrous, and muscular, they being all required to perform its functions. The organs are divided into two great classes—one including those which are necessary to the maintenance of the individual; the other, those which are in connection with the exterior world.

Life is defined to be *organism in action;* it is supposed to be a state of activity in the organs maintained by the operation of stimuli. In order that these stimuli should act, a certain degree of susceptibility to their impression in the tissues and organs is requisite, which has been designated by the term *excitability;* and the state produced is called *excitation;* so that an organ in the full natural enjoyment of its functions, is said to be in a state of excitation. As far as we can judge, excitability is not the same in all the organs and tissues, since there is so vast a disparity of construction: but in each organ and tissue it remains unchanged as to nature, modified only by increase or diminution, and requiring an appropriate stimulus to bring it into action. Excitability is greater during youth, and diminishes in old age; hence it cannot be prolonged indefinitely.

The stimuli affecting our organs are the physical influences by which we are surrounded—as caloric, light, air, food, &c., which when not operating in excess, are fully capable of maintaining life; but when these stimuli are present in excess, or acquire more than their usual activity, an injurious impression is then produced, the excitability is increased, and super-excitability is the consequence: and as this is called *irritability*, the disordered excitation is termed *irritation.* The contrary of these, determined by opposite causes, and characterized by a depression of the excitability, and attendant inaction or torpor, is said to be a state of *ab-irritation.* According to this view it will be perceived, that we have two conditions; a physiological one, where life is maintained without excess or diminution; a pathological one, where life is carried beyond the natural standard, or falls short of its proper activity.

Excitability must be a vital property, since it is not possessed by inorganic matter.

The influence of any one organ upon the rest of the economy, is in proportion to its importance in the preservation of the individual. After birth, the brain, spinal marrow, heart and lungs appear of

greater necessity than the stomach, bowels, and other viscera; because, if the former are seriously injured, death must almost immediately ensue; but the stomach, from the fact of its supplying the materials of nutrition, without which all the organs must perish, rises in the scale of importance; and in this light all others are but auxiliary to it.

In a state of health it is rare to witness two organs at the same time excited in the same degree; that is, by a stimulant acting upon one and sympathetically transmitted to the other; since we observe, for instance, when the brain is in action the stomach is quiescent, and *vice versa;* but when several organs are roused at the same time by their appropriate stimuli, they react strongly upon one another, and excitement is generalized as much as possible.

The degree of excitability predominates in certain organs according to the age, sex and constitution. The preponderance of vital action in any one organ which influences more or less the whole of the organism, is the foundation of *temperaments.* Individuals compared with each other present remarkable differences of excitability; this constitutes *idiosyncrasy.*

When the functions of an organ are impaired, it is diseased. All disease consists in the alteration of the organic actions of one or more organs, leading to irregular exercise of the functions. Derangement of organic action in deep-seated parts, can commonly be appreciated only through the medium of the consequent functional disturbance, which never exists independently of the former. Symptoms then are nothing more than manifestations of disordered organic action.

Irritation is defined to be the augmentation of the organic action of a tissue beyond the limits compatible with the free exercise of its functions. The following are some of the laws which it obeys:

1. Irritation is always primitively local; it commences in some one organ. The stimulating impressions are mostly made upon the external surface, or those in relation with the exterior world. The idea of irritation being brought about without the operation of stimulants is erroneous; hence there is no disease strictly spontaneous; all are referable to some cause. Irritation can never exist in all parts of the body at the same time, but can occupy by irradiation at once, one, two, or three organs. The maxim of Hippocrates, however, is founded in nature. "Duobus doloribus simul existentibus, vehementior obscurat alterum." It is due to the impress of stimulating agents, to the transmission of this effect from organ to organ by the sympathies, to the momentary abstraction of stimulus from an organ where the excitability is great—to the removal of excitement from an important organ, so that surexcitation is caused in another. In this case there is a positive sedative impression, diminishing the organic movements; as, for example, the effect of cold applied to the skin, which it debilitates while it excites the internal organs; so also hunger, &c. Hence, directly or indirectly, irritation is first engendered in a single organ.

2. Irritation may exist in an organ, and yet its presence not be announced by any symptoms whatever, until it has accomplished

the destruction of the individual, and examination after death reveals its seat and nature.

3. Irritation deranges and weakens the functional actions of a tissue or organ in which it is located. The reverse, at first sight, would appear to be the case, because irritation is stated to augment the organic movements. The exercise of a function cannot be regular, however, when the organization of the tissue which executes it is impaired; hence irritation, by inducing derangement, is followed by embarrassment of function; the vital movements are carried beyond their normal standard, and, as it were, clogged by excess of energy. Thus an inflamed stomach will digest as imperfectly as one weakened by atonic influences; a single exception to this law exists—it is when nutritive irritation has increased the growth and power of an organ.

4. Irritation is susceptible of various degrees of intensity, which are evinced according to the tissues which it occupies, and the individual. As tissues are anatomically different, they are not all equally susceptible of irritation, and there is a similar disparity among individuals. The extent which it occupies, the amount of accompanying uneasiness, the tumefaction of the part, and the energy with which it reacts upon other organs, will point out its intensity, which is in proportion to the number of these attendant circumstances. Hence irritation is *acute*, when these are considerable: *chronic*, when less so, and the course which it runs is not rapid: *continuous*, when it pursues an uniform course from origin to termination; and *intermittent*, when it appears only at intervals.

The intensity of irritation depends upon two circumstances; the force of the stimulating impression, and the irritability of the tissue. If the causes are light, and the tissues little irritable, the irritation will be proportionably small; but where the opposite conditions exist, the effect is modified accordingly. Should the impress of stimulation be energetic, and the tissue possess little irritability, the effect may be light; but should the cause be light and the tissue very irritable, a high degree of irritation will be the consequence. A continued form is that under which irritation is most generally manifested. The reason is plain; an exciting agent acts forcibly upon a tissue; it exalts the irritability and produces an irritated condition. Although the cause may cease to act, yet the effect will be persistent, since the organic forces have been excited, and it requires some time to bring them back to their normal state. But an intermittent form may be presented. It is owing to causes which act at intervals. It takes place in organs whose functions are not continued, but periodical; or, it may occur from habit.

Irritation is susceptible of six principal modifications; in other words, the local phenomena which accompany irritation show themselves under six different aspects easily recognized. They are all attributable to the same law, viz., "ubi stimulus ibi affluxus." The first phenomenon is an afflux of fluids to the irritated point, provoking the conditions afterwards mentioned. If this simple mode of explanation is not admitted, there would be as many hypothetical causes as there are forms of local derangement; there would have to

be a specific power for the production of each; and whether it is called a *vis a tergo* or any thing else, one would be necessary to excite inflammation, another serous congestion, a third lymphatic accumulations, and so on; but all these are obviated by reference to the idea of an irritation everywhere the same in character, but modified by tissue and other organic conditions. In the greater number of cases the part becomes painful, hot, swollen and red, and there is more blood in the capillaries than necessary:—this constitutes *inflammatory* irritation. When the tissue is hot, painful, and tumefied, allowing blood to escape from its surface, *hæmorrhagic* irritation is said to be present. If there is little or no pain, little increase of warmth, and the tissue affected is not reddened, but tumefies, takes on a homogeneous whitish appearance, as if white fluids alone had entered the capillaries in excess, it is termed *lymphatic irritation*, or *sub-inflammation*. If the tissue is simply painful, there being no manifestation of change in colour, or increase of volume, *nervous* irritation is the designation by which it is known. In this it is supposed to reside entirely in the nervous filaments. The organic movements may be increased scarcely beyond the physiological action, but by long continuance may invigorate the nutrition of a tissue; this is the *nutritive* irritation of the physiological school. And finally, should it be located in a tissue whose office is secretion, there may be an augmented flow of its peculiar product: and this forms *secretory* irritation. In all the structures in which these forms of irritation occur, with the exception of the nervous, it is requisite that an abundance of vessels should exist. If, however, a purely nervous excitement in a part be augmented, and the pain be greatly aggravated, an increased amount of fluid will be directed to it, and tumefaction ensue. Morbid congestion and increased nutritive action, leading to disorganization, are, therefore, in all cases, the effects of a sufficiently powerful irritation.

In the foregoing account of irritation and its consequences, it is supposed that one organ alone is implicated; a succession of them, however, may be included within the circle of diseased action, and this is effected by means of the sympathies. Irritation rarely confines itself to the part originally affected, but is irradiated from this to others with a rapidity and energy which vary according to the irritability of the individual, the intensity of the irritation in the organ primarily affected, the importance of this one in the economy, its irritability, and the number and degree of its relations with others. Diseased sympathetic action is communicated in the same way, and by the same channels as physiological sympathy; and consequently, the organs which are most closely connected in a state of health, will be proportionably influenced when irritation is kindled up. Its transfer will be found strictly to adhere to this law. Thus the stomach, being connected with the brain and heart by the most intimate union, will convey to them its morbid impressions, and cause them to assume a portion of its irritation.

To exemplify the truth of these declarations, the following facts are brought forward. In infants, females, and those of a naturally excitable constitution, the lightest degree of irritation in an organ

will excite a train of sympathies which extends through the whole series, and becomes more or less general; while in old people, and those whose sympathetic relations are diminished and weakened, an organ will sometimes be seriously affected, and even destroyed, without reacting upon any other. Sympathies are more influenced by the intensity than by the mere extent of irritation; and the reason is, that the number of sympathetic connections which an organ possesses are limited, and an intense circumscribed irritation may excite the whole of them to their full extent, while a greater local diffusion of it can do no more than bring them all equally into exercise; so that the more intense this may be, the more decided will be the disturbance in other organs, and the contrary. A secondary may exceed and mask, to a certain extent, a primary irritation, and, as it were, become the predominant one. Hence, false inferences may be drawn from the symptoms as to the commencing seat of disease; the secondary irritation so far exceeding the primary that the latter is overlooked; when, if care be taken to ascertain the first symptoms which manifested themselves, they would be found to appertain to a remote organ. In this manner, also, the secondary irritation may continue after all traces of the primary affection have vanished. An apparent exception to this law may exist where the primary irritation is so intense in an influential organ, as to concentrate in it all the irritative action which, under ordinary circumstances, would be diffused through the organs generally.

If the irritability of an organ is great, the more easily will its sympathies be excited.

Of all the organs, the nervous system possesses the greatest influence with regard to the sympathies; next are the stomach and intestines; then the heart, skin, lungs, &c. Sympathetic action among the organs is reciprocal; those which receive the greatest number of secondary impressions, produce the greatest number when they themselves are first the seat of irritation.

Sympathetic irritation is similar in character to the primitive. Morbid sympathies are of two kinds; the *first* is manifested by organic phenomena, as congestions; augmented, diminished, or morbid secretions, &c.; and these are termed the sympathies of organic life. The *second* is evinced by pains, spasms of the voluntary muscles, convulsions, &c., which are the sympathies of relation. If the irritation is sufficiently intense in the organ secondarily affected, the character will be inflammatory; when it emanates from a primary inflammation, a hæmorrhagic action will ensue, as a consequence of hæmorrhage; and so of the others. *Diathesis*, then, is nothing more than the tendency to the reproduction, in other organs, of a condition similar to the one which exists in the organ first affected; and, therefore, the diatheses are thus particularized; the *inflammatory diathesis*, the *hæmorrhagic diathesis*, the *nervous diathesis*, the *sub-inflammatory diathesis*, the diatheses of *secretory* and *nutritive irritation*. This law is strictly maintained as long as the irritation is confined to a tissue similar to the one in which it primarily occurred; so that hæmorrhagic or nervous irritations in mucous membranes, will sympathetically produce the same affection

in a similar tissue; and sub-inflammation of the lymphatic ganglions will affect, in an analogous manner, the lymphatic system, and so on. If, however, the sympathetic or secondary irritation is not repeated in the particular tissue in which it first originated, but in some other, the effect will be modified by the character of the tissue secondarily affected; if, for instance, inflammation of the mucous membrane be sympathetically communicated to the lymphatics, a sub-inflammatory condition will ensue. Some exceptions, however, are admitted with regard to irritations transmitted to various points of the same organic system; for hæmorrhage, for example, may be the result of a transmitted inflammation, and the reverse.

Sympathetic irritation is transmitted by means of the nervous cords, with or without the intervention of the brain. Both systems of nerves are conducive to this end; the cerebro-spinal being the agents of the sympathies between the organs of relation; the ganglionic, of the organic sympathies; and the intimate connection between these two systems explains the attendant phenomena when both are involved.

The danger of death by acute disease, depends upon the intensity of cerebral disturbance, whether primary or secondary; so important is the immediate influence of the brain in the preservation of life. Other organs, by undergoing morbid changes, lead to this result at a later period; but when such changes are considerable, they react upon the brain, and transfer the risk of dissolution to derangements of that organ.

If, in acute disease, the skin, or any secretory organ, assume a transmitted irritation more intense than the original one, and, producing a free discharge of its peculiar secretion, a revulsive effect is brought about, the affection is said to disappear by *crisis*. There are crises which, instead of conducing to a favourable result, and leading to restored health, are productive of more alarming and threatening symptoms. It is said, in the language of those who have not scrutinized the subject, that nature has attempted a cure, but failed, and has sunk under the effort; such is the case of retrocedent irritation in secretory organs, as checked perspiration, diarrhœa, &c. These are called false crises, and are attributable to the sudden attack of some very important internal organ necessary to life. The termination of irritation is more or less rapid according to the tissue involved, the cause producing it, or the character of the sympathies which it has excited.

The state of irritation under which an organ or tissue labours, productive of increased vital movements, is called *hyperæmia*.

It will be necessary to devote a few words to *sub-irritation* or *anæmia*. In this case, life in an organ is below the healthy standard, the organic movements are depressed, and debility of its functions is the consequence. It is the very opposite of irritation; hence a short account of its causes and laws will be sufficient for our purpose. An anæmic condition of an organ is rarely primitive, but is rather the result of irritation located in some other viscus. The following explanation will convey a direct idea of what is understood to be its nature. Those organs which are not themselves irritated, and do

not receive transmitted irritation, may nevertheless become greatly enfeebled; because organic activity is concentrated in others, and withdrawn from them. If this were not the case, the first law of irritation would be incorrect; for then there might be a repetition of it in all the organs, and universal excitement be present, which is an impossibility. For example, when the heart and vascular system are stimulated to increased activity by the existence of visceral irritations, muscular power diminishes; when the locomotive apparatus is violently excited or convulsed, nutrition languishes, the secretions are impaired, the heart circulates blood irregularly, the brain is weakened in its intellectual operations. In maniacs, where the brain is in a state of high activity, the heart and muscular system may have acquired more energy, but the secretions are interrupted, the intestines rendered dry and insusceptible to stimulation, nutrition is suspended in them, and the sero-cellular tissues are in a state very opposite to that of inflammation. By this view of things the idea of *diathesis*, as meaning general habit, is refuted.

Anæmia may be produced in three ways: 1st, By the abstraction of all stimulation from an organ: 2d, By diminishing the stimulating influence which one organ receives from another by sympathy: 3d, By the intense excitement of some important organ concentrating activity in itself.

An anæmic state is marked by the following appearances and symptoms—Paleness, flaccidity, coldness and insensibility, diminution or total depravation of functions.

Sur-excitation and intense local morbid congestion, are compatible with the general diminution of the forces. This is one of the most important truths of the physiological doctrine, and ignorance of it has led to doubt, uncertainty, and erroneous practice. Diseases essentially active in consequence of mistaken ideas of their nature, have been treated for those of opposite character. It is difficult to convince some persons that when exhaustion and marasmus are the predominant symptoms, a focus of irritation is present, and progressing with its ravages; the general condition is confounded with the local, because correct ideas have not been entertained of the latter; in other words, anæmia of a majority of the organs is taken as the standard of the whole.

To conclude these remarks, we may state, that it is impossible to understand the derangement of the molecular action in the tissues of an organ; the most that can be accomplished is to investigate the sensible alteration of structure which they have undergone. To know the *seat* of disease, is to know in which organ and tissue it is located; to understand its nature is to recognize in what consists the organic alteration which constitutes it. Pathological anatomy is employed in this research. The errors in pathology, says M. Boisseau, have arisen from the following causes: 1st, Symptoms have for too long a time been the sole objects of study; 2d, It has been supposed that they always faithfully represented the condition of viscera removed beyond the scrutiny of the senses; 3d, Physicians have neglected to look to the organs upon which each one of the morbific or therapeutic agents first exerted its influence, and the laws which preside over the

propagation of this influence from one organ to another; 4th, It has been supposed that these agents must act upon the whole system at once, as they are recognized to influence a simple organ; 5th, And finally it has been inferred, that as the whole organism is concerned, all the organs were primarily affected.

Having thus explained the laws of irritation as announced by Broussais, we shall now proceed to consider his theory of fever founded upon them. According to this hypothesis, all fevers owe their origin to a local irritation or inflammation, by the reaction of which upon the other organs, through the medium of the sympathies, that group of phenomena is produced which is called febrile disturbance. *All that class of fevers commonly termed idiopathic, together with certain forms of traumatic fever, are attributed to an inflammatory condition of the mucous membrane of the stomach and bowels, and are, therefore, denominated "Gastro-enterites."** No matter what form the fever may assume, or by what name it may be designated, whether ataxic, adynamic, &c., it is still referred to this primary lesion. Essential or idiopathic fevers are, therefore, regarded as chimerical, not founded in nature or sustained by observation. In support of this doctrine he appeals to the history, symptoms, and post-mortem investigation of the disease. We shall see hereafter how far this theory is sustained by the researches of those who, in the same locality, and enjoying the same advantages, have entered upon a similar field of observation. To establish the truth of the assertion, that the seat of fever is primarily local, he has recourse to numerous arguments, which will be detailed in succession.

"Inflammatory fever represents an excitement of the vascular sanguine system, which is the consequence of all local irritations; this is admitted by all nosological writers. A local excitement will always be found predominating; and nothing proves to us that it is not the immediate cause of that form of febrile movement which has been hitherto considered essential." "Modern writers, in considering inflammatory fevers as idiopathic (essential,) have not pretended that they were independent of local irritations, since they tell us that a debauch, a violent fit of anger, excessive pain of a wound, &c., every physical or moral cause sufficient to establish a permanent reaction of the vascular sanguine system, can produce fever."—"We are of the same opinion with them, that all the inflammations can produce fever, but are not prepared to admit that fever, which is acknowledged to arise from all local irritations, can ever exist of itself, which it must do if it be essential." What is meant by the terms, mucous fever, bilious fever, &c., if they do not depend upon corresponding irritations? According to those who use these expressions, the irritations which produced such fevers are not inflammations, and yet they are sufficiently severe to excite fever, and after death the

*["Gastro-enteritis is observed in two forms:—with predominance of the gastric inflammation, and with that of enteritis. Gastric pain, loss of appetite, rejection of the ingesta, or difficulty of retaining them, characterize the first form: the second is marked by the power of satisfying thirst, and the rapid absorption of appropriate fluids. The other symptoms are chiefly common to both."—*Examen des Doctrines Medicales.*]

organs are found in a state of inflammation. Reference to the laws of the animal economy, the nature of life as far as its modes can be ascertained, the character of irritation, its peculiar local phenomena, and manner of propagation by means of the sympathies, are brought by Broussais to influence the weight and force of his reasoning. But he further endeavours to establish that the *primum mobile* of febrile disease is in the stomach and bowels.—These, of all the viscera, seem particularly adapted to receive morbific impressions, not only from the central position which they occupy, but from being in relation with the exterior world, and having the greatest number of sympathies radiating in all directions. By means of deleterious agents introduced from without, irritation is created on their mucous surfaces; inflammation succeeds, and then commences the congeries of diseased associations, which at all times have been regarded as fever. The first morbific impression, then, is made upon the stomach; and it may be brought about in two ways. The first, which is direct, has been indicated above; the second is indirect, and arises from sedative impressions upon the skin, or transmitted irritation from a remote part. Inflammation of the stomach is always attended by a similar condition of the small intestines, which last are consecutively affected. Irritation in the organ being thus established, its characteristic functions will be impaired, an inordinate determination of blood will take place towards it: congestion of the tissues, heat, &c., are the consequences; fulness of the vessels and corresponding oppression and weight in the abdomen follow; and the irritation, extending to the liver and small intestines, announce, by appropriate symptoms, the commencement of the malady. Hence follow loss of appetite, nausea, sometimes vomiting, thirst, uneasiness and pain, abdominal heat, with throbbing and increased sensibility to pressure. But an acute inflammation once begun in so important an organ, cannot long remain isolated; its effects are disseminated to others. Irradiation of irritation is the ariadnean thread of the physiological doctrine; it is the clue to the proper understanding of fever. The brain and nervous system invariably sympathize, as the next link in the chain of diseased associations, proclaimed by uneasiness, confusion of ideas, weight, and headache, disinclination to motion, intolerance of light, and diminution of intellectual vigour: there may be pain in the back, loss of muscular power, and a general state of uneasiness, which indicate that the spinal marrow is likewise involved. The cerebral disturbance becoming more intense, depression of spirits, augmented pain, wandering of thought, and delirium, indicate a true cephalitis. As every irritation of the organs is first made sensible in the brain and spinal marrow, as the common centre of nervous action, from these it is reflected anew to distant parts of the system, and the next in order is the heart. The contractions of the heart are augmented in force and frequency; blood is more rapidly driven into the arterial system of vessels; the pulse is quicker and fuller; the capillaries of the skin are injected; heat and redness are increased; the secretions are impeded, and dryness results. In this way the feverish condition is completely established. The accession of a paroxysm of fever is usually attended with chilliness—it is because the

first effect of irritation in the internal viscera withdraws blood from the surface and accumulates it in their vessels, causing internal congestion with its attendant sensations. The heart, oppressed, and at this time not sufficiently influenced by the force of sympathy to take on increased exertion, is feeble in its movements; but when excited to vigorous effort, throws off the accumulated load of blood, and brings about a state of reaction, assisted, in a measure, by a sympathetic irritation established in the skin. As the disease advances, the number of sympathetic morbid disturbances is multiplied; the tongue becomes dry, red at the edges, pointed, coated, and trembling; the lungs, liver and kidneys are more or less affected. This outline deduced from the introductory account of irritation, whereby the production of fever is explained, evinces how impossible it would be to convey just ideas, were not the play of sympathies rightly understood.

We must now enter into an explanation of the manner in which these laws can be applied to all the forms of fever. From the symptoms which have been detailed, it will at once be perceived that they belong to both systems of organs — those of relation, and those for the maintenance of the individual. Now all the irregularities presented by fever are referable to one of these two systems, and determined by the preponderance of irritation in some particular organ. Thus, in some instances, cerebral disturbances are the most marked, because the intensity of irritation in the brain is greater than elsewhere: pulmonic symptoms greater than ordinary may appear and characterize the disease, but without altering in the least the priority of irritation in the stomach; these forms are termed *ataxic*. Prior to the development of the physiological view of fever, the names which were employed to express the predominance of certain groups of symptoms conveyed no definite idea of their cause, nor did they inform us of the condition of the organs which gave rise to them. In accordance with the preceding exposition, bilious fever is nothing more than an extension of irritation to the liver, exciting or depressing its functions, and producing the attendant phenomena enumerated in nosological treatises; and so of mucous fever, and others. The same disease at different periods may assume different phases —inflammatory in the beginning, adynamic at the termination, but without changing its identity. The more prominent symptoms of adynamic fever are stupor, a fuliginous appearance of the openings of the mucous membranes, small feeble pulse, cold clammy skin, and fetor. The rationale, according to the principles laid down under the head of anæmia, is evident. A concentrated vital action takes place in the internal organs at the expense of the external surfaces; the function of assimilation and chylification is wholly impaired; a small amount of blood is elaborated and conveyed into the general circulation; imperfect hæmatosis consequently follows; and the suspension of nervous energy and pulmonary oxygenation, add to the universal complication; hence the symptoms enumerated.

From the foregoing reasoning, and mode of explaining the phenomena of fever, the following conclusions are to be drawn:

1*st*. All fevers supposed essential, are of local origin.

2d. They originate in the stomach and intestines.

3d. The affection of these viscera is inflammation; hence it is called gastro-enteritis.

4th. This primitive inflammation is communicated to the brain, producing cephalitis, and finally reacts upon most of the organs, exciting their movements, and constituting fever.

These are the ideas of Broussais himself upon this complicated and important subject, and to a great extent have been adopted by his pupils. Some difference of opinion, however, exists among his contemporaries; and the reasons for their dissent are contained in the various treatises which have been issued within a few years. Boisseau, in his Pyrétologie Physiologique, fully coincides in the first conclusion; because no morbific cause acts at the same time upon all the organs, inasmuch as the symptoms are never referable to the whole of them, nor are they equally intense in those affected; because, in all diseases, irritation commences in some one organ, and extends to the others; and lastly no disease, however general, leaves, after death, characteristic traces of lesion in every organ of the body. But to the second conclusion of Broussais he enters his protest, supported by the following facts. 1. The causes of fevers do not act solely upon the gastro-intestinal mucous membrane. 2. Although this membrane may be influenced directly or indirectly, yet this is not always the case, and if it is, the effect is very often of the lightest character. 3. Irritations of other organs can also act upon the heart, brain, lungs, &c., and produce fever. 4. An attentive study of the causes, and a close examination of the symptoms evince that the gastro-intestinal mucous membrane may be untouched, or so slightly disordered as not to sanction the conjecture that the disease originated at this point. 5. After death not only no trace of lesion may be found in this membrane, but, on the contrary, the highest degree of anatomical change is observed in other parts of the body. We do not wish it to be understood, that gastro-enteritis is excluded entirely by this author, but that he merely admits the stomach to be one of the many organs which may be primitively affected in the production of fever.

It should be stated, that these remarks are intended to apply to all fevers termed essential; and that M. Boisseau is as full a believer in the localization of disease as Broussais. When typhus fever, &c., are noticed, it will be seen how far he is correct. "The two opinions, the one that fever is a disease, sui generis, pervading the whole system, the other that it is a gastro-enteritis, are equally remote from the truth; nevertheless, they both have been extensively adopted, inasmuch as they are well calculated to please superficial or enthusiastic minds."

Inflammatory fever is a generic term, applicable to all fevers, and including the whole range. When the symptoms, as the disease is developed, announce derangement of some organ in particular, bestowing a marked character, the specific name is derived from this organ: hence we have *gastro-enteritis, cerebritis,* &c. Another source of specific nomenclature, is the presence of some positive or imaginary attendant circumstance; if there be prostration, for in-

stance, it is called an *adynamic fever;* if irregular in symptoms, *ataxic;* should there exist fetor or disordered and vitiated secretive action, it is variously called *typhus*, *yellow* or *pestilential fever.*

A great difficulty in coming to correct conclusions with regard to the nature of fever, is the employment of vague and unmeaning terms to express the different forms under which it appears, and the same form is so frequently described under different appellations, that it is impossible to attach precise ideas to it, or to understand its signification. It is a difficult task to locate satisfactorily in any one organ the invariable and exclusive causation of fever; hence the discordant opinions entertained as to its primary seat, or, in other words, its specific nature. The brain is contended, by some writers, to be the first affected; the heart, the skin, the lungs, by others; while as we have shown, Broussais is unqualified in his gastric pathology. But where there is no proof of an undeviating specific location, exhibited by the symptoms, it is difficult to be persuaded that an acute disease arises from a serious disorder of any one organ, (and serious it must be if it can produce such intense disturbances,) while no evidence is present to prove that this organ is implicated. The only conclusion which can be obtained from these statements is, that *there are as many primary locations of fever as there are organs*, and consequently we are not to look invariably to any single one for an explanation of the phenomena. If exclusiveness of location is rejected, the first symptoms are to be expected in the organ where disordered action has commenced; and whether they continue to be the most prominent, or in the progress of the disease are obscured by those which are sympathetic, their priority will lead to a knowledge of the first link in the chain of disease.]

It is now time that I should state the views which I have been led to form on this important subject.

First, Fevers may depend on inflammation of an acute, but more frequently of a sub-acute nature, of some organ or tissue of the body. If the inflammation be acute, the febrile symptoms will be correspondingly severe; but if sub-acute, they will assume a slighter form. It ought to be mentioned in this place, that the symptoms and terminations are variously modified by the organ or tissue inflamed.

Secondly, Fevers very often depend upon mere functional derangement of some organ, having as yet no connection with inflammation; and here again we have a modification of the symptoms and terminations according to the organ principally diseased.

Thirdly, Fevers sometimes depend on the mere loss of balance in the circulation, producing local congestions; fevers arising from these last two causes are generally called *idiopathic.**

After having watched the progress and termination of fevers in

* [Although the term idiopathic fever is vague and unsatisfactory, yet in the present state of science it would be difficult to dispense with it. Every practitioner has met with some cases devoid of any predominant category of symptoms which point to a particular organ as being more materially disordered than others. In these cases it would puzzle the nicest scrutiny to locate the disease. The system seems literally to labour under a disorder which has spread itself universally through all its parts; hence, if the class be abolished, there would be no place for this form of diseases in systematic treatises.]

various climates, I have been led to conclude, that the nature and seat of fever are pretty much the same in all constitutions, in all climates, and under all circumstances; the leading difference being in intensity, and the rapidity with which some run through their course; being sometimes connected with inflammation, sometimes not; at other times depending on functional disorder of some important organ of the body, and also upon lost balance of the circulation, by which means some local accumulation of blood takes place.

Some have supposed, from the tenour of the papers which were formerly published by me, that I deny the influence of the nervous system in the production of fever; but this is far from being the case. It would as soon occur to me to question the laws of gravitation. I have always maintained the existence of a strict connection between the vascular and nervous systems, in producing and keeping up febrile and inflammatory diseases.

There can scarcely be a doubt, that a disordered state of the functions of the brain, and other parts of the nervous system, occasionally gives rise to febrile action. It is impossible to deny to the brain, as an organ, that it may be disordered, like other viscera, in function, as well as diseased in structure. My ideas of fever may be summed up in the words of Dr. Fordyce, one of the best and most original writers upon the subject. "A fever," says he, "is a disease that affects the whole system; it affects the head, the trunk of the body, and the extremities; it affects the circulation, the absorption, and the nervous system; it affects the skin, the muscular fibres, and the membranes; it affects the body, and affects likewise the mind. It is, therefore, a disease of the whole system in every kind of sense. *It does not, however, affect the various parts of the system uniformly and equally; but, on the contrary, sometimes one part is much affected in proportion to the affection of another part.*"*

It appears to me, that certain general views closely touching this question are admitted by all writers whose opinions are of any value, although the same facts have been called by different names, and have led observers to draw opposite conclusions.

1*st*, That the functions of almost all organs are embarrassed in fever from the very beginning, and often for days before the sense of coldness is felt by the affected person.

2*d*, That the blood leaves the surface of the body, and accumulates in internal organs, and that, unless they are overwhelmed, the system makes an effort to relieve herself, and certain combined phenomena take place, which are designated by the terms "reaction, fever." A question has arisen to determine by what means this is effected. There can be no doubt that it is owing to the principles of life. There are two circumstances, in following which investigators have bewildered themselves; one is, the vain attempt to ascertain the first link in the chain of diseased action; the other is, the still more hopeless endeavour to discover the principle of life, which perhaps no man will ever be able to unravel.

3*d*, That inflammation of all parts of the body will give rise to fever.

* Dissertation on Simple Fever, Part I, p. 27.

4*th*, That inflammation may supervene during fever, without being the primary cause of the febrile commotion.

5*th*, That the nervous system is involved as well as the vascular; and,

6*th*, It follows as a consequence, if all these things be true, that the blood itself must be in a diseased condition.

This outline of my opinions must suffice at present—it will be best filled up when treating of the pathology of individual fevers—when an attempt will be made to account for the discrepant histories which have been given of fevers, and for the varieties of treatment recommended by different authors.

Division of Fevers.

Fevers have been divided into various kinds. Dr. Mason Good has four orders, thirteen genera, and each genus has several species. This is a very erroneous plan in writing as well as teaching; for every individual case has some peculiarity, so that this very learned author might with as much propriety have made many millions of species.

It was the opinion of the celebrated Dr. Rush, that it is "*not more improper to say that men are of different species, because some are tall, and others short, or because some are long, and others short-lived, than that fevers are of different species, because they vary in their symptoms and duration.*"

Cullen has divided fevers into intermittent, remittent, and continued, and this last is subdivided into synocha, typhus, and synochus.

It is my intention to reject the term "*idiopathic*,"* as applied to fevers, which I consider a most unhappy term, being one respecting which no medical man with whom I am acquainted can give a satisfactory definition. It seems to be a disease beyond the pale of pathology, having neither nature nor seat. It is defined by some to be a fever without a cause. Fever is alleged to be a certain combination of symptoms, but it cannot be said that this is the disease. The symptoms are to be regarded as evidences of a diseased condition of some part or parts of the system; whereas, those who speak of idiopathic fever, will be found very frequently to do so, either from habit, or from a dislike to change terms, they themselves having a particular meaning for it. But the schoolmen who are in the habit of using this term, I verily believe, do so from an erroneous impression that the symptoms are the disease, and it is understood that some of them even go the absurd length of treating of idiopathic hectic!

The terms adynamic and ataxic have been also avoided in this work, because there seems to be no good practical reason for their employment.

None of the arrangements, which have been hitherto laid before the profession, exactly meet my views; and in so far as I have been

* The fevers said to be "*idiopathic*," are "intermittent, continued, and exanthematous."

able to observe the phenomena of fever, I believe they may be advantageously arranged under the following heads:

1*st*, Intermittent Fever.
2*d*, Remittent or Yellow Fever: Infantile Remittent.
3*d*, Continued Fever, subdivided into four orders, viz.
Fever from functional derangement.
——— from inflammation.
——— from congestion.
A mixed form of fever between these three last, but in which congestion predominates, commonly denominated Typhus or Synochus.
4*th*, Hectic Fever.
5*th*, Fevers attended with eruptions, subdivided as follows:
Scarlet Fever.
Measles.
Small-pox.
——— modified.
Chicken-pox.
Miliary Fever.
Roseola.
Urticaria.
6*th*, The Plague.

General Description of the Phenomena of Fevers.

The following are Cullen's definitions of febrile diseases, and of fever:

First, of Pyrexia.

"After shivering, succeed a quick pulse, increased heat, with interruption and disorder of several functions, diminution of strength, particularly of the joints."

Secondly, of Fever.

"After languor, lassitude, and other signs of debility, pyrexia, without any primary local affection."

There are the strongest objections to all medical definitions. The following may be urged against the two above quoted; they are *symptomatical* definitions; and it is well known by physicians of experience that the symptoms vary much according to constitution, climate, and habits of living. They vary even in different individuals belonging to the same family, and during the same epidemic. The symptoms develope themselves in various degrees; one symptom, when exceedingly severe, frequently conceals or disguises the others. A definition to be useful either to the student or the young practitioner, should embrace such phenomena as are peculiar to that particular disease, and which never attend any other—phenomena which may be therefore said to be pathognomonic of the affection. As has been already stated, there is no case of fever, or, indeed, of any other disease, which has not some peculiarity that distinguishes it from another of the same family; in truth, the symptoms of diseases have a very wide range of character. A definition, giving a sketch, not of the symptoms, but of the *nature and seat of the disease*,

would be a most useful introduction to the practice of physic; but pathology, unfortunately, is not yet sufficiently advanced to enable me to adopt such a plan in this work.

It may be asked why Cullen, in his definition of fever, has taken no notice of pain in the head and in the loins, delirium and coma, of oppression at the præcordia, of nausea, want of appetite, thirst, and the state of the tongue? The reason appears to me to be evident; the mention of these phenomena would have led to the suspicion of *local affection*, which was contrary to his own dogmas.

"Fever," says Dr. Fordyce, Part 1st, p. 7, "of all other diseases, is that one in which a pathognomonic symptom is least to be depended upon; that is to say, an appearance which does not take place when there is no fever, or a fever which does not take place when there is no such appearance."

Febrile diseases sometimes commence without any rigor, and go through their whole course without any unusual heat of skin, quickness of pulse, or thirst. The rigor is not always followed by increased heat. Languor, lassitude, and other signs of debility, are symptoms common to almost all diseases, and therefore should not be ascribed to fevers in particular.

It is impossible to give a good general account of the phenomena of fevers, because, in addition to the objections urged above, they vary every day in the course of the disease. The symptoms which appear in the accession of fever, differ from those which manifest themselves in its progress; and these again from those which are observed in the decline and termination. These differences have given rise to a division of every fever into stages:

1. That of accession.
2. ——— increase.
3. ——— declension.
4. ——— collapse.

These stages have been differently named; the first is sometimes called the stage of oppression and depression; the second, that of reaction; the symptoms occurring in the third and fourth stages, have too frequently been called typhoid.

The symptoms vary also according to the organs chiefly affected. In some cases there are decided cerebral symptoms, from the very beginning, indicated by headache, intolerance of light and sound, *tinnitus aurium* and delirium, or stupor with low muttering delirium, and sometimes *coma*, &c. In other cases the viscera of the thorax are principally affected, indicated by dyspnœa, cough, expectoration, and tightness in the chest, &c. In a third set of cases, some of the viscera of the abdomen are implicated, announced by nausea or vomiting, uneasiness increased on pressure, obstinate constipation or diarrhœa, a morbid state of the alvine evacuations, discovered both by their appearance and odour; a tympanitic state of the abdomen, and peculiar appearances of the tongue. Occasionally, in the course of the fever, there are evidences of acute or sub-acute action in all the three great cavities, and this is what occurs in the worst forms of yellow and malignant fevers.

In fever the functions of every organ are more or less disturbed, so that there is the best proof of universal disorder, and the appearances so frequently seen on dissection warrant this inference. True it is that we now and then, on examining the body of an individual, find no very decided morbid appearance.* This is by no means peculiar to the practice of physic; for, in that of surgery, people sometimes die after capital operations, where there has been no loss of blood, and no organic lesion found upon dissection, to explain the cause of death. They are said to die from the shock, by which term I understand that the principal functions of the body become suddenly impeded to such a degree that life can no longer be carried on. In the same way, in fevers, individuals die before any alteration of structure has taken place; from peculiarity of constitution, they cannot stand the shock produced by the embarrassment of so many organs in the performance of their functions; and farther, many individuals cannot bear the remedies which have been thought necessary for the subduction of the disease.

Some cases of fever commence with shivering, quickly followed by increase of heat and other symptoms of pyrexia, and terminate in a few hours, after considerable suffering, by copious perspiration; this is the simplest form of fever, and is termed *ephemeral;* but when there is a regular succession of paroxysms, it is called *intermittent.*

Other cases commence in the same manner, followed by heat of skin, &c.; continue for a day or two, when the symptoms decline; and there is sometimes a state of complete apyrexia, which continues only for a short time, when they recur with perhaps increased violence. This kind of fever has obtained the name of *remittent.* When it occurs in infancy and childhood, it is called *infantile remittent.* When the skin becomes yellow, the term *yellow fever* has been applied.

Another kind of fever continues for days, or weeks, without intermission, and is therefore called "*continued fever.*" It has several varieties, of which the following are brief sketches.

First variety.—An individual feels impaired appetite; his bowels out of order; his urine scanty and high-coloured; he passes restless nights, and at length is sensible of increased heat of skin; towards morning he generally falls into a gentle perspiration, and enjoys a few hours sleep, from which he rises somewhat refreshed; he finds his tongue loaded, his breath more or less fetid; he feels unwell, but still is able to pursue his ordinary affairs. In the course of the day he is sensible of frequent slight chills, and flushes of heat; he becomes rather languid, has a little headache, but hopes to be better after dinner; he returns home, and although he has no appetite, forces himself to eat and drink, and passes rather a worse night. This goes on for several days, till at last he shivers pretty severely,

* This is seldom the case, however. The only places in which the physical traces of disease can be investigated with due care and deliberation, are public hospitals, and the indifference which generally prevails is shameful. If a physician has the ability, he is too much occupied, and some, unfortunately for science, have neither the ability nor inclination.

and feels so much oppressed that he is compelled to confine himself to bed. Then, for the first time, medical advice is sought: the physician can find no symptom which can be attributed to inflammation; there is considerable restlessness, but no great degree of suffering, except that which proceeds from a sense of oppression in the præcordial region, fulness in the stomach and bowels, and pain in the loins; the appetite is gone, and the individual loathes food of all kinds, but has considerable thirst. The mental faculties are commonly quite sound, but there is, perhaps, slight alienation during the night.

Abstinence from solid food, and a steady perseverance in gentle laxative medicines, soon produce an amendment. This is the form which I have denominated "fever from functional derangement."

Second variety.—A person is sometimes seized with a shivering more or less severe, followed by severe pain in the head, chest, or abdomen; accompanied by considerable heat, thirst, full pulse, and every symptom which announces a sub-acute attack of inflammation of some structure, within one or other of the three great cavities; and this is the form all writers term a pure inflammatory fever. But when the inflammation of any part runs high, it is then said to be an inflammation of a particular tissue or organ. It must be recollected, however, that inflammation of internal organs may go on to a fatal termination without strongly marked symptoms.

Third variety.—Another individual, without being sensible of any previous complaint, may be suddenly seized with shivering; the sense of coldness soon becomes intolerable; he is unable to support himself in a standing or even in a sitting posture; his intellectual faculties are soon observed to be impaired, his features shrink, a deadly coldness gradually spreads over the whole surface of the body, his pulse sinks, he makes little complaint, and dies without the appearance of any of the symptoms usually termed febrile. This is a form of disease which is certainly not very frequently met with in this country, but which is often seen in warm climates, and it occasionally attacks women in child-bed. This is the purest example which can be given of what has been termed congestive fever,* but it is not that form of it which we most frequently meet with in these latitudes, where it generally developes itself in the following manner:—A person, after feeling more or less unwell for some days, or perhaps for some weeks, experiences chilly sensations, alternating with unusual warmth; he is disposed to sit over the fire; feels weak, and after being in this situation for some time longer, with changes from heat to cold, the cold predominates to his sensation, while another person will pronounce him to be hot; but upon careful examination, his extremities, more particularly the hands and feet, will be found cold; he makes little complaint, and is often thought to be asleep, when in fact he is comatose. Occasionally, however, the head is quite free, he suffers from slight dyspnœa, is unable to take a full inspiration, but has no pain. The tongue is generally moist, sometimes loaded, white

* This is the form of fever which occurs in Rome and other places where intermittents prevail, and is termed *fièvre intermittente pernicieuse*, the pathological elucidation of which has been so fully pionted out by M. Bailly.

and shrunk. The pulse is soft, sometimes quick, at others not above the natural standard. Even when to all appearance he is in a complete state of coma, he can be roused, when his expression of countenance will be vacant, and appear as if he were in a state of intoxication. If questioned as to what he complains of, he will answer, "of nothing," or he will move his hand towards his head, or place it on his breast, signifying some uneasiness, but he quickly falls into a comatose state again.

Fourth variety.—The next form of fever, of which it is my duty to give a sketch, is that in which the patient is seized much in the same way as in the last described variety. He complains, however, from the first, of pain in his head, chest, or abdomen, has frequent attacks of chilliness followed by heat; with symptoms characteristic of diseased action in the head, thorax, or abdomen. But this state is quickly succeeded by more or less insensibility; slight delirium, rapid weak pulse; the surface of the trunk of the body feels hot, while the extremities are rather cold; the delirium which manifested itself only during the night, now becomes permanent; it is not of the furious kind, but that which is appropriately termed "low muttering delirium;" the tongue, which was moist for the first few days, is now observed to be dry and glazed, and tremulous; he passes his urine and fæces in bed; is always found upon his back, and however often he may be moved, will soon shrink down again towards the foot of the bed, which is a sign of complete prostration of strength, and perfect helplessness—a bad symptom in any disease. In this state it is impossible to rouse the patient, and it may be evident that he is also blind; the pulse being quick, and so weak as scarcely to be felt, while the action of the heart may yet be very strong, and a considerable pulsation felt in the carotids or abdominal aorta. Recovery is rare when the symptoms are so very severe, although the fatal period may be protracted to the end of the third week. Occasionally, in this form of disease, instead of the cold predominating, there is considerable heat, and the symptoms are pretty sharp, but at the termination of a few days, they become such as have been described above. This is the disease generally called *typhus*. But when the symptoms run very high at first, and subsequently become low, then it is usually called *synochus*. And this is precisely the form of disease which will be more particularly described hereafter, under the denomination of *a mixed form of fever*, from the want of a better appellation. The term typhus is objectionable, because it is sometimes used to denote a malignant or a putrid fever; at others it is employed to signify a nervous fever. The term synochus is also objectionable, for this reason, that it is stated to be of an inflammatory nature, but there is a supposed union with a typhoid state of the system, which, although present, remains latent in the first stages, and subsequently developes itself; and we are told that the appropriate remedies for inflammation are not to be employed, from a dread of typhus, which must inevitably follow.

The term hectic fever, is used only to signify febrile symptoms consequent to some previous disease, and restricted to symptoms which are produced by the formation of pus in some organ or tissue;

in fact, whatever doubts have been entertained with respect to the nature of all other fevers, this is almost the only one which is universally allowed to be sypmtomatic.

It is considered unnecessary to offer any general explanation in this part of the work respecting the fifth class, viz., fevers attended with eruptions; or the sixth, the plague.

Causes of Fever.

The causes of fever are marsh miasm, contagion from human effluvia, and epidemic influence. These causes, together with cold, fear, &c., are called in medical language remote; but I shall continue to employ the terms common and specific. Cullen resolves all remote causes into sedative, in order to support his dogma of debility; he could not consistently allow a cause of a stimulating and exciting nature. Marsh miasm he supposes capable of producing intermittents and remittents only, and he restricts the term contagion to human effluvia, capable of producing continued fevers only. He considers the common causes scarcely capable of producing fevers. Some authors assert that there is only one species of infectious matter peculiar to all febrile diseases.

No one who has attended to this subject, can deny the influence of contagion, and the air of marshes, on the human body; but I conceive that too much has been hitherto attributed to them, too little to the previous state of the constitution, and also by far too little to the common causes of fever, and to internal irritations. A weighty argument in favour of contagion, is sometimes drawn from the well-known fact, of fevers spreading not only from one to another in a family, but also in the same neighbourhood; but the similar circumstances under which the inhabitants are placed should not be forgotten. The anxieties, the hopes and fears which alternately affect individuals attending others whom they love, the exposure to cold and fatigue, the night-watching and want of rest, the irregularity in taking nourishment, and the neglected state of the bowels, all tending to produce loss of balance in the circulation, and local disease, will go far to account for a number of individuals in the same neighbourhood, and more particularly in the same family, being affected one after another. Neither should it be forgotten, that all these individuals residing in the same locality, and living in a similar manner, may have been exposed at the same period with the person first affected, to the miasm or epidemic influence, or some of the common causes which produce fever. Why one individual should be sooner attacked than another, and have the disease perhaps more severely, it is difficult to determine. An interesting question here arises—What length of time does the contagion remain latent in the body, before it shows its effect? This is an intricate question, and one which has never been satisfactorily investigated. Some say it can be for a few days or weeks only, while others state with great confidence, that it may remain many months. Dr. Gregory used to assert, that contagion might lie frozen for any length of time, and resume its virulence upon being thawed. There are other interest-

ing facts, which are not sufficiently attended to in considering this subject. It is my belief, that contagion will not produce fever, applied a thousand times to a person, if he be in a good state of body and mind. Dr. Gregory stated, that he must have been exposed to the influence of contagion some 20 or 30,000 times without affecting him once. The contagion of fever, to produce its effects, must be applied to a person ill-fed and clothed, or to one whose stomach and bowels are out of order, or who is labouring under the effects of some mental depression.

From the evidence before us in the records of medicine, it appears that individuals residing in low marshy countries are peculiarly liable to fever which has been termed intermittent. The air of a marsh, however, does not differ in its chemical properties from that of the most salubrious situations; it supports combustion, and therefore cannot, as some have supposed, be deprived of much of its oxygen. If its constitution were changed, it would affect all who breathed it, blacks as well as whites; but this is not the fact, for there are very many people, who live in the centre of marshes for years, without being attacked by intermittent fever. I have myself had many attacks of this disease during a residence in a marshy district; therefore, it has been in my power to investigate this subject minutely, not only with regard to the phenomena of the disease and its causes, but also the sensations produced during the paroxysms. From personal observation thus acquired, the first circumstances which attracted my attention were, that men were more liable to the disease than females—whites than blacks—the dissolute than sober steady-living men; and that agues were most prevalent at new and full moon.

Women are less liable to the disease than men, because they are less exposed to vicissitudes of weather, their habits are not so dissipated, and they keep more regular hours. Blacks, born in the West Indies, are less liable to this disease than whites, partly, no doubt, from the nature of their constitutions, but principally because they have neither the means nor the liberty to indulge themselves like their masters. But I am convinced that difference of constitution, enabling blacks to resist the causes of fever better, has been very much overrated, and that diseases which destroy so many Europeans, are owing more to licentiousness than to the effects of the climate. The dissolute are more liable to this disease than others, because they often expose themselves recklessly during the night, when the system is in a state of collapse; and the disturbance which is created and kept up in the functions of important organs, by constant excesses, must not be lost sight of.

Moisture alone has a great effect in producing disease, and its influence is speedily observed on the mind as well as the body. But moisture alone will not produce intermittent fever; the influence of excessive heat must be superadded, and then there is a rapid evaporation from the earth's surface. It is this evaporation, I imagine, which is productive of so much mischief to European constitutions in warm climates, particularly where there is any tendency to collapse. Agues are not commonly prevalent during the rainy season,

when the surface of the earth is more or less covered with water; but they become so after the dry season sets in, when it is alleged "the sun acts upon the soil itself, producing deep rents, whence it is supposed the miasm emanates." This, however, can be more satisfactorily accounted for in a different manner. During the rainy season, white people take greater care of themselves, and are less exposed; the sun is obscured from the eye by dense humid clouds; there is, consequently, a pretty constant deposition of moisture, but little or no evaporation. The sun's influence becomes very great when the rainy season ceases, and the extent to which evaporation goes on exceeds all belief. It is then that severe fevers and dysenteries generally prevail.

Dr. Fergusson has observed, that "the same rains which made a deep marshy country perfectly healthy, by deluging a well-cleared one, where there was any considerable depth of soil, speedily converted it, *under the drying process of a vertical sun, into a hot-bed of disease.*

With regard to the apparent influence of the planetary system in intermittents, it must be observed, that in localities where this disease generally prevails, the surface of the earth is scarcely above the level of the sea at high tides; so much so, that to prevent inundations, dykes are thrown up. At new and full moon the tides rise, the marshes become covered with water, the drains become charged, and the daily effects of evaporation produce the disease. I am indeed aware that in the interior of Ceylon, and above the Ghauts in the peninsula of India, where the tides cannot have the slightest influence, agues are very prevalent, both among natives and Europeans at certain periods of the moon's age. I am informed by Mr. Marshall,* that in the interior of Ceylon he has seen the mercury in the thermometer rise from 60° to 90° in the shade: and in the sun's rays even to 142°. The difference of temperature to which the troops were exposed from 5 o'clock A. M. till mid-day, amounted sometimes to 82 degrees.

Some have attempted to account for the occurrence of remittent fevers by the effects of excessive heat; but I believe that heat alone, unless the temperature be very high indeed, will not produce fever in any climate, till moisture be superadded, or sudden changes of weather take place, when the thermometer will suddenly fall twenty or thirty degrees, as I have myself observed in unhealthy seasons.

It will be seen that it is not my intention to deny the existence of some invisible substance suspended in or mixed with the air of the atmosphere, and which may produce intermittent fever.† A fact may be mentioned, on this side of the question, which must carry considerable weight with it. It has occurred to me to see a good deal of intermittent fever in situations far remote from marshes, but in every one instance the individuals had been at some period of their lives in marshy districts; yet it is certainly very strange that some of

* The well-known author of Notes on the Medical Topography of Ceylon—Hints to Young Medical Officers, &c. &c.

† Some writers go the extraordinary length of speaking of the specific gravity of marsh miasm.

them never had a paroxysm during the period of their residence in these places, and not till months, and, in some instances, years, had elapsed.

Some contagious diseases are communicated from person to person, by breathing the air in the apartment where the sick person is confined; others require that actual contact should take place; and some diseases are communicated in either way. In the plague, it would appear that actual contact with the affected individual, or with his apparel, is necessary; whereas, in small-pox, the contagion may be received merely by coming into the same room, and it is also conveyed by inoculation. Contagious diseases spread slowly from one person to another, and from house to house, and may often be concentrated within a circle, where it will attack all, or almost all, who are exposed to the contagion, particularly those who have not had the disease before.

When we say a disease is epidemic, it is understood that we mean one which is produced by a certain state or condition of the atmosphere at present unknown, and which has baffled the exertions of every one who has entered upon its investigation. The term implies that a greater number of people are suddenly seized at the same period. An epidemic disease, after continuing for a longer or a shorter period, suddenly ceases, at a time perhaps when the greatest number of patients are affected. These are facts which appear to have confounded those who assert that yellow and other fevers are invariably contagious.

It does not appear that intermittent fever is ever contagious: but I am of opinion the yellow fever, and that which has been termed typhus in this country, are so under particular circumstances, and sometimes in a very high degree. Observation and experience have induced me to conclude, however, that this cause of fever has been very much overrated.

In the year 1793, Dr. Chisholm made an attempt to prove that the fever which then prevailed in the West Indies was highly contagious, and imported from Bulam, on the coast of Africa, by a ship called the Hankey. Similar attempts have since been made in many places in America, as well as in Europe, to account for the severe fevers which have prevailed from time to time. The favourers of importation have invariably failed in proving the disease to have originated in that manner, and have not been able to show that it had not a local origin. In the town and garrison of Gibraltar, there are always cases of fever, particularly in sultry weather; many are severe, attended by yellowness of the surface of the body, and vomiting of a dark-coloured matter, commonly called black vomit. These cases are considered by all candid observers to be the ordinary remittent fever, common to this and other places under similar influences. The majority of the cases are found to occur in the lowest, worst ventilated, and filthiest parts of the locality. But in 1804–1810–1813–1814, and 1828, Gibraltar was visited by a fever more severe in its symptoms, more fatal in its results, and attacking a larger proportion of the troops, as well as the inhabitants. On each of these occasions attempts were made to prove its importation, and that it

afterwards spread by contagion, and had no trace of local origin. Considerable doubts were, however, entertained upon this subject; but in 1814, the supporters of importation and contagion failed so completely in showing the foreign origin of the fever which then prevailed, that many sensible people were led to doubt, and others to deny, the truth of such views. I wish at present to confine my observations to the source of the fever which prevailed in the town and garrison of Gibraltar in 1828.

A host of medical men, with the late lamented Dr. Hennen at their head, maintain that the disease was of local origin, for which there were abundant sources, and there is no proof of its having been imported.

One or two others, with Sir William Pym, superintendent-general of quarantine, as their leader, not only insist that it was not of local origin, but that it was imported in a particular ship called the Dygden, which sailed from Havana on the 12th May, 1828, and arrived at Gibraltar on the 28th June.

I have carefully perused all the evidence produced through the medium of the medical periodical press, and published by the following gentlemen:—Mr. Fraser, late surgeon to the civil hospital at Gibraltar; Dr. Smyth, surgeon 23d regiment; Mr. Amiel, surgeon 12th regiment; Mr. Wilson, late of the medical staff, who I believe retired from the service, partly from disgust, and partly from the persecution to which he was subjected, and would not submit; Dr. Barry, physician to the forces. Also, Sir William Pym's replies to queries put to him by the Royal Medico-Chirurgical Society of Cadiz —together with the opinions of the board of commissioners, and certain documentary evidence respecting the annual occurrence of fevers of a similar character at Gibraltar, as extracted from the books of the civil-hospital, and authenticated by the signatures of a number of highly respectable gentlemen.

After the most careful perusal of these productions, duly considering all the facts adduced in evidence by all parties, my deliberate opinions are as follows:

1*st*, That the fever of 1828 was of local origin, and for which there were unfortunately abundant sources in the bad state of the drains, the crowded condition of the poor inhabitants, and the exceedingly filthy and badly ventilated state of their abodes.

2*d*, That there is not a tittle of evidence to show that the disease was first propagated by communication with the Swedish ship Dygden. Indeed, it does not appear that there was any cause to suspect this ship of bringing the seeds of the disease from Havana. In the first place, we see from her clean bill of health, signed by the authorities there, that "this city and its neighbouring towns are free from all plagues or contagious epidemic disease; as likewise the said captain, with the fifteen men of his crew, are in a perfect state of health, according to the muster by his roll," &c. In the second place, we find the declaration of the captain, and the report of Dr. Hennen to the governor, the first of which bears that he "sailed from Havana on the 12th May, with a crew of fifteen men, all in good health. A few days after, two men of the Swedish part of the crew complained

of severe headache, and pains in the limbs, which increasing, they had to go to bed. Through sudorifics and purging medicine, they *got well in eight days*, so as to be able to attend to their duties. During that time, five others had taken ill of the same complaint, *but recovered in a few days*, under similar treatment. A lapse of ten or twelve days followed, during which the whole crew were in perfect health; but upon getting into a higher latitude, I met with gales and rain, when the greater part of the crew suffered much from wet, and immediately after, those who had till then been well, were taken ill, probably from cold produced by the weather, yet the symptoms which appeared were the same as in the others. The youngest recovered in a short time, but the eldest two died, one after five, the other four days' illness, which took place on the 27th May, and 1st of June. The old clothes they had worn, together with hammocks, and what was in them, were thrown into the sea with their bodies."

In Dr. Hennen's report to the governor of Gibraltar, dated 2d August, 1828, we find it stated, that he had minutely inspected the captain and crew, "whom I found in perfect health, and I shall repeat my inspection before the expiration of their quarantine, on the 6th of the present month. In my letter of the 29th July, I mentioned, as the reason for putting the ship in quarantine for forty days, that two men died on the passage. It is now sixty-six clear days since the first man died, and sixty-one since the death of the last, *and nothing like disease* has since appeared, nor have I the most distant reason to apprehend danger to the public health, from any circumstance connected with the Dygden."

3d, If the disease were contagious, it does not appear from the evidence to have been so in any high degree.

4th, It is an undoubted fact, known to every medical man who has been upon the rock, that remittent fever, attended by yellowness of skin, and black vomit, is a very frequent occurrence during the autumnal months. I am in possession of an authentic document, containing a history of the symptoms and appearances on dissection, observed in cases of remittent fever treated in the civil hospital at Gibraltar, in 1821, and the five subsequent years. Having compared these with the cases of 1828, I can discover nothing different. The two symptoms pitched upon by Sir William Pym, as pathognomonic of true yellow fever, viz., yellowness of the surface and black vomit, were present, and the morbid appearances found after death were perfectly similar.

The superior medical officers have had a heavy charge made against them in the following statement by Dr. Smyth. "At one period of medical rule in this garrison, every variety of fever *was ordered to be returned under one head.* Such, indeed, was the thraldom of the military medical press (if I may so use the expression,) at Gibraltar, from the termination of the epidemic fever of 1814, until the arrival of Dr Hennen, in 1826, that it was considered a most wicked heresy for a surgeon of a corps to return fevers under any other head than *simple continued fever.* The consequence is, that although febrile diseases are the most frequent of the numerous

cases treated both in the military and civil hospitals, no correct table of fevers can be now formed from the returns of these establishments; no distinction whatever being drawn between the different species of remittent and continued. The authors of such a measure can best answer for themselves." Was this done to deceive the governor, or did it receive his approbation to mislead the authorities in England? This calls aloud for serious investigation, in order to prevent the repetition of such disgraceful management. That it could have been endured, can scarcely be believed, except by those who have been exposed to the tyrannical conduct of ignorant and obstinate medical superiors.

5th, That Sir William Pym's answers to the queries of the Spanish physicians, are highly discreditable to him as a scientific man, and calculated to injure the public interests, however much they might be intended to *fix him in the receipt of the salary derived from his sinecure office of superintendent-general of quarantine in Great Britain.* These answers are for the most part vague assumptions—some being drawn from insufficient evidence—others from no evidence whatever—while many of them are at complete variance with the fact, of which last, the following is a notable example:—Answer to question 3d. "The first cases were, as I have said, in a house of 24 district, *the situation of which is healthy, very well ventilated,* and 200 feet above the level of the sea." Now it was in this district of the town that the fever avowedly first appeared, and was for some time confined. Whether it was such a healthy, well-ventilated spot, or one, the air of which was saturated with febrific poison, the reader is left to draw his own conclusions after the perusal of the following statement, copied from a document which I received from Gibraltar. It was not written to contradict Sir William Pym's answer, as it never entered the writer's imagination that the superintendent-general of quarantine, or any other gentleman who had resided at Gibraltar, could have hazarded such an erroneous statement.

The district in question (No. 24.) "is situated in a natural gorge of the mountain, and is rendered still more close by a high wall raised for the military protection of the town. The wall is called 'Charles the Fifth wall,' and is situated on the south of the town. The rear of the district (24), together with the whole town, is impenetrably shut out from the influence of east winds by the rock itself. The district itself is particularly cut off from the beneficial effects of perflation by a high and impending semicircular bluff of the mountain, in some degree insulating it from the rest of the town, on the north side. Charles the Fifth wall is higher than the tops of the buildings in this district. This locality is therefore excluded from the influence of every direct wind, unless that which blows from the west, which was not the case when the fever broke out. Besides, it is deserving of particular attention, that the superficial soil was filthy, that the district is intersected with numerous collateral drains, and gives origin to several others which unite on the level below, and these form one main sewer which disgorges itself into the sea at water mark, directly in front of this part of the town. The wind

enters the mouth of this sewer on the beach, rushes upwards through the drains, and escapes through gratings (which are closely concentrated in this district) loaded with offensive and noxious exhalations, and diffused within a limited circle among the houses erected round the mouths of the great branches. There is also a deep and common soil-pit in this district, which, at the commencement of the epidemic, was filled with impurities of every kind. In this situation a drain burst about the beginning of September, in the barrack-yard of the 12th regiment, and when I saw it, its contents had broke up the solid pavement, and was boiling over. The atmosphere of this part of the town was consequently noxious, and contained within itself a sufficiency of putrid matter to have disseminated a febrific miasm over the whole garrison. Now, it is a remarkable fact, that the first two cases of the fever originated on the ground floor of a badly ventilated house in this district, and in the close neighbourhood of one of the openings of the drains; and about 50 of the cases in the beginning of the epidemic were distinctly traced by several medical officers to come from the vicinity of the openings of the drains and privies of this district, or in the course of the drains."

We find the following statements made by Dr. Hennen, in his official communications, which I have copied from Dr. Smyth's paper: "That so many cases of a fever of a very serious nature have appeared in the barrack of the sappers and miners, on Hargrave's parade, which, I would observe to your excellency, is in the line of the drains, crossing from district No. 24, that I feel myself called upon to submit the propriety of immediately encamping that corps, and totally evacuating the barracks." In another letter to the governor, Dr. Hennen further stated: "In reference to my letter of this day's date, I have minutely inspected district No. 24, in company with Mr. Wilson of the civil hospital, Mr. Woods, the medical officer attached to that district, and other staff-officers; and it is with much regret that I have to state to your excellency, that at every step I took in that district, I had reason for surprise, not that fever had broken out there, but that it had not extended farther. From whatever causes it may have proceeded, the pauper population is dense to a degree incredible, except to those who have seen it. In sheds without ventilation, without drainage, and generally composed of the slightest materials; *in tiers of beds as close* as in a crowded transport, numerous individuals sleep. They go out to their work at an early hour, and return at gun-fire, locking up their miserable places of nocturnal shelter during the day, and leaving them saturated with the steam of their bedding, their food, and the overflowing receptacles of their ordure. The detail would be too disgusting to enter into; but I most respectfully submit to your excellency, the indispensable necessity of sweeping away the whole of these sheds, which I have every reason to suppose are unauthorized by the government." A commission was subsequently appointed by the governor's orders, to inspect the different districts of the town, which was composed of military as well as medical officers, and I copy the following statement from their report: "In the course of our inspection, we were struck, at every step we took, with the density of the population." So much

for Sir William Pym's answer to the 3d question, in which he has given a confident assurance of the healthy situation and well-ventilated state of No. 24 district, where the first cases of fever occurred in 1828. Both statements cannot be true, and I am sorry to say there are many other points in the same predicament. I wish it were possible for me to reconcile them with each other, not only on account of the reputation of Sir William Pym, as an old officer, but for the credit of the department to which he belongs, and the judgment of the authorities who appointed him to the lucrative situation of superintendent-general of quarantine in Great Britain.

6th, It is my opinion that the board of commission was not happily chosen by Sir George Murray. No medical officer should have been nominated, or any other individual, however exalted his rank, who had previously expressed decided opinions on the subject to be investigated.

7th, I humbly conceive Sir George Don, the governor, acted contrary to his orders, and certainly he did not act wisely, by delegating his authority as president of the commission, to any individual, and more particularly to Sir William Pym, *the superintendent-general of quarantine*, who immediately nominated his newly-acquired partisan, Dr. Barry, to be secretary to the commission. That Dr. Barry is an ingenious gentleman is well known; that he changed his opinions very suddenly at the time of Dr. Hennen's death is alleged, and has not been satisfactorily disproved; and that he immediately adopted the opinions of his new chief is undoubted. Whether Dr. Barry, in his capacity of secretary, gave colouring to the evidence produced before the commission, or improperly put leading questions to the parties examined, to favour the views of his chief, is best known to those who were present at the investigations. But it will be admitted, that such functionaries as president and secretary should not have been chosen from a class of persons to whom the slightest suspicion could be attached. On the list of the commission, I find another name as exceptionable as those of Sir William Pym, and Dr. Barry, viz., that of Dr. Broadfoot, *superintendent of quarantine* at Gibraltar. Besides these, there are also the names of two official gentlemen, the captain of the port, and the town major, who were thus also improperly placed in a situation either to accumulate or reject evidence, which might show inattention or dereliction of duty to such an extent as to compromise their situations! The only unexceptional appointments on the commission were those of Colonel Chapman, civil secretary, and Judge-advocate Howel, and the coincidence of their opinions is quite remarkable.

Colonel Chapman's opinion is as follows:—"Judging from the evidence produced before the board, the manner in which it has been given, together with the description of persons who have been brought forward as witnesses, I am decidedly of opinion, that the late epidemic disease is of local origin. As to the importation of the late epidemic, I am of opinion, *that the attempt to prove the introduction of the disease, after many months of fruitless inquiry by those who wish to prove it, has totally failed.*"

Judge-advocate Howel gave the following opinion:—"Upon a

careful review of all the proceedings before the board, I am of opinion, that the evidence brought forward has totally failed to prove that the late epidemic disease was introduced from any foreign source, either by the ship Dygden, or by any other means; and I am further of opinion, that the late epidemic had its origin in Gibraltar."

From Botta's History of Tuscany, the following statements are extracted respecting the epidemic yellow fever which prevailed in Leghorn, in 1804. "It was occasioned, as it appears, by the prevalence, during the summer of that year, of south winds, unusually warm and rainy; this sickness was by some termed the yellow fever, by others the black vomit; both names which agree well with the symptoms which mark it. *It began to rage in the lowest quarters of the city, and those most crowded and filthy*, to such a degree that some were cut off in seven days, some in five, others in three, and even in the short space of one day." "The disease was most violent in robust young men, more mild with the weak, the old, and with females; but almost all those last, attacked when pregnant, died; almost all the children escaped." Speaking of the remedies, it is remarked, "On the other hand, it was found, that from the air being impregnated with animal exhalations, the disease was more easily propagated, and the person infected was more violently attacked; and a confirmation of the argument was found in the circumstance, that the quarters of the city most filled with filth, and the houses of the poor, were the chief seats of the disease. On the contrary, the airy quarters, and where the houses were neat and clean, and enjoyed open and free air, were either exempted, or did not become worse, or the infection did not spread from one body to another." "It did not extend into the country, although persons in numbers, and goods in quantities, were transported and spread from district to district, and from the city to the country." On this occasion, also, an attempt was made to prove the importation of the fever from Vera Cruz, but was not successful.

When the yellow fever prevailed in Philadelphia, in 1794, the celebrated Dr. Rush was most shamefully persecuted by the authorities, to whom many of his medical brethren unhandsomely lent themselves, for having proved that the yellow fever existed in that city—that it was generated in the place, and had not a foreign origin. It is now more than forty years ago; and after reading the report made on the subject by his opponents, I can readily join Dr. Rush in his conclusion, that "it is impossible to review this report, without blushing for the shameful submission made, by the science of medicine, to the commercial spirit of the city."

It may be useful to my readers to know the evidence which Dr. Rush produced to show the local origin of the fever, and it will be observed that an attempt was made on this occasion to fix its importation on a ship. "It was produced," says Dr. Rush, "by the exhalations from the gutters, and the stagnant ponds of water in the neighbourhood of the city. Where there was most exhalation, there were most persons affected by the fever. Hence the poor people, who generally live in the neighbourhood of the ponds in the suburbs, were the greatest sufferers by it. Four persons had the fever in Spruce

street, between Fourth and Fifth streets, in which part of the city the smell from the gutters was extremely offensive every evening. In Water street, between Market and Walnut streets, many persons had the fever: now the filth of that confined part of the city is well known to every citizen. On the 25th August, the brig Commerce arrived in the river from St. Mark. After lying five days at the Fort, she came up to the city. A boy who had been shut out from his lodgings, went in a state of intoxication and slept on her deck, exposed to the night air, in consequence of which the fever was excited in him. This event gave occasion for a few days to a report that the disease was imported; and several physicians, who had neglected to attend to all the circumstances that had been stated, admitted the yellow fever to be in the town. An investigation of this supposed origin of the disease soon discovered that it had no foundation."

Vitiated air,* and the effluvia which proceeds from the bodies of individuals crowded together in jails, hospitals and ships, have always been abundant sources of fever. Dr. Fordyce mentions instances where sheep and hogs were transported, during the American war, from England to America, in the holds of ships, in which many were confined in a small space: an infectious fever frequently broke out among them, which destroyed great numbers.

History affords many melancholy examples of the baneful effects of vitiated air and human effluvia, and the speed with which they destroy animal life. The best example is to be found in the occurrence which took place last century in the Black Hole at Calcutta. One hundred and forty-six unhappy individuals were forced into a dungeon, about eighteen feet square, at eight o'clock at night, and at six next morning, when released, only twenty-three came out alive; *most of these were in a high putrid fever, and subsequently died.*

It becomes an interesting question, but one too extensive for this work, how contagion propagates itself, and to which part of the body it is first applied? In this inquiry, we shall be much assisted by the circumstances which are observed to take place after inoculation with small-pox. The mucous membrane of the lungs seems to be one of the first parts in which the diseased action is to be detected; and careful observation has induced me almost to believe, that in diseases produced by contagion, the bronchial membrane rarely, if ever, escapes.

Fourcrois tells us, that in several of the burial-grounds in France, in which the graves were dug up sooner than they ought to have been, the persons employed have occasionally been asphyxiated; those who were standing at a little distance, were often affected with vertigo, fainting, nausea, loss of appetite, &c. History affords us remarkable instances of the occurrence of diseases decidedly epidemic: the most ancient are those which will be found in sacred writ, in which we find, that on one occasion seventy thousand persons were destroyed by pestilence in three days' time; and we are told, also, that one hundred and eighty-five thousand persons were destroyed in the Assyrian camp in a single night. The most re-

* It is to be regretted, that the term *malaria* is not restricted to foul air, according to its literal meaning.

markable epidemic of modern times, is the cholera of the East, which extended itself in the very teeth of tempestuous winds.

Pythagoras first started an opinion respecting critical days, and he had an unlimited belief in the occult powers of certain numbers. Hippocrates seems to have entertained similar opinions; and it is an essential part of the old doctrines of concoction, according to which it was supposed that a separation of the morbific matter had a tendency to take place on one of the critical days, by a discharge from the skin, bowels, kidneys, or blood-vessels.

I have no belief in the influence of critical days, although I admit that the crisis frequently takes place in some of the ways mentioned. When an organ is affected with disease, there is a constant effort of nature to throw it off: this effort is, in truth, one of the great principles of life, and its object is effected by a determination of blood to another organ: occasionally, a spontaneous discharge of blood takes place.

From the time of Hippocrates, it has been generally believed that fevers have a tendency to remit on the 3d, 5th, 7th, 9th, 11th, 14th, 17th, 20th days, and even the 21st.* Many modern physicians have adopted this doctrine; but I doubt much whether it has not proved more injurious than beneficial in the treatment of disease. Often may physicians be seen prescribing a placebo, because the critical day is at hand, when they ought to be actively employed in eradicating the disease. When attending to this point, I have very often found the calculations made erroneously; and not unfrequently I have seen physicians disagree as to which was the proper critical day—one calculating from the period when the rigor took place—another from the period when the heat of skin occurred—and I have seen a third calculation made from the time when the patient confined himself to bed. There can be little doubt, that fevers and other diseases have a tendency to run through a regular course, and when they terminate favourably, this happy event generally takes place upon the occurrence of an eruption, or of some discharge, as by diarrhœa, copious perspiration, flow of urine, expectoration, &c. It cannot be denied, however, that in some diseases there is a strong tendency to periodicity, but far more so in the accession than termination. Thus, in intermittent fever, the attack may come on regularly at the usual period, but each stage may occupy a shorter or a longer space of time in one paroxysm than another. Sometimes an individual dies in the cold fit, but much oftener the hot fit is not relieved by sweating, and his disease becomes a continued or remittent fever, or inflammation of a particular organ takes place. But it is of little importance whether the doctrine of critical days be true or false, if the physician acts wisely, and neglects nothing which can tend to reduce the diseased action.

[* This question will be recurred to in the following pages.]

INTERMITTENT FEVER.

Of all the febrile diseases, intermittent is generally the simplest in form. It is composed of three stages, beginning with a cold fit, followed by heat, and terminating in profuse perspiration. It has been known from the earliest ages, and is most prevalent in some parts of North and South America; the Pontine marshes near Rome; in Holland; and in the fens of Lincolnshire and Cambridgeshire in England. We are told that, in the sixteenth century, this fever was very prevalent, and proved fatal to a great number of people in London; and in the year 1558 it raged like the plague, and was also very fatal; but it has become less frequent in Great Britain, which is to be ascribed to the increased comforts of the people, to their habits of cleanliness, and to the improvement which has taken place in the climate, owing to the draining of lands, and cultivation of the soil. It has been stated, but, I believe, without foundation, that a miasm producing intermittent fever, is generated in London, in the neighbourhood of St. James's Park. Intermittent fever is of very frequent occurrence in all warm countries, and is one of the purest specimens of a disease depending upon an irregular determination of blood, in which the system is often relieved by the unaided powers of the constitution.

Cullen's definition is, "Fevers arising from marsh miasmata, consisting of many paroxysms, with intermission, or at least with evident remission intervening, returning with remarkable exacerbation, and in general with shivering; one paroxysm only in a day."

Like most symptomatical definitions, this is very exceptionable. Paroxysms of intermittent have taken place from sudden change of atmosphere in situations where no miasm ever existed; and the most severe cold stage which ever came under my notice, and which lasted twenty-six hours, was produced by exposure to frost after the individual had got wet on the top of a coach. Mr. John Hunter informs us, that two children had ague from worms; they took bark, but it did them no good; but the worms were destroyed, and they got well. We have, in like manner, says he, agues from many diseases of particular parts, more especially of the liver and spleen, and from an induration of the mesenteric glands. Many instances are also recorded from repelled eruptions, the drying up of old discharges, as well as from the application of cold.

Sir George Baker has given an account, in the Medical Transactions, of an intermittent that prevailed in 1780; it affected the inhabitants who lived in the higher parts of the country, while those in the marshes escaped. Sir Gilbert Blane informs us that while the village of Greenhythe, nearly on a level with the marsh at Northfleet, is unaffected with intermittent fever, the adjacent hills suffer considerably from it.

There are usually reckoned three kinds of intermittents, the tertian, the quotidian, and the quartan. But they ought strictly to be regarded as the same disease, with a longer or a shorter interval; and the one frequently runs into the other. We often, however, see a

double quotidian. I have observed, that the longer the interval, the more severe is the paroxysm, and *vice versâ;* but there are many exceptions. TERTIAN is employed to express that form of disease in which there is an interval of *forty-eight hours* from the commencement of one attack to that of another; QUOTIDIAN, *twenty-four;* and the QUARTAN, *seventy-two.*

[Other forms—reduplications of these—are occasionally observed in the United States. As, for instance, *double* and *triple tertians.* The former may be mistaken for quotidians, a paroxysm occurring every day, but varying in intensity, time of access, duration, &c.; every other paroxysm will, however, be similar. The latter exists when two paroxysms occur every other day, and a single one on the intermediate day. Innumerable types are described in the systematic treatises upon intermittent fever. We once witnessed the return of a single paroxysm every two weeks, for three months in succession; and with the utmost difficulty its recurrence was at last prevented.]

Phenomena of Intermittents.

When an individual has once had an attack of intermittent fever, he is afterwards more liable to the disease, and is sensible of its approach some time before any one suspects him to be ill; the toes and the last joints of the fingers feel cold and benumbed, and the nails have a bluish colour; he has sensations of languor, and long fits of yawning; occasionally at this period there is headache, sometimes stupor, and pains in the back and loins.

Cold stage.—When the paroxysm actually commences, the patient feels the extremities cold, with a sensation as if a small stream of very cold water were flowing down the spine, which extends itself to the thorax and abdomen. He has great desire for warm drink, and to cover himself with as many bed-clothes as can be procured; the prostration of muscular power is considerable; the sense of cold very soon becomes insupportable; the teeth chatter, and there is a universal tremor over the body; and if I can trust my own sensations, and the accounts of others, the tremors affect internal as well as external parts. These tremors sometimes terminate in convulsions. The respiration is always laborious, short, and hurried, and the individual is unable to take in a deep inspiration when desired; a short hard cough frequently attends, without expectoration; there is great oppression at the præcordia. Some individuals complain most of headache, some of pain in the back, in the lumbar region and lower extremities, and others of universal pain. In almost all cases the patient is incapable of attending to any thing. Sometimes there is stupor, and at others, coma or delirium. The features are much shrunk and pale; the eye looks dull and hollow, while the cheeks and lips are more or less of a livid hue. The pulse is oppressed and weak, sometimes slow, at others quick, and frequently intermits; but the violence of the tremors renders it often impossible to feel the pulse distinctly. The tongue is moist. It is a curious circumstance, that while the patient complains of intense cold, the heat of the body

every where, except in the extremities, is sometimes above the natural standard.

The paroxysm occasionally comes on without any rigor, instead of which the patient feels a slight sensation of cold, or severe headache, is lethargic, or affected with languor and yawning. Sometimes the paroxysm is announced by violent articular, lumbar, and frontal pains; and sometimes a patient falls into a profound sleep for several hours, and awakes in a violent hot stage. These various forms are called by the vulgar the dumb-ague. It sometimes happens, that at the next attack, instead of a regular paroxysm, a violent pain is felt in the situation of the supra-orbitary foramen, and extends to the brow, affecting the nervous twigs of the frontal branch of the fifth pair; this pain often continues for many hours, and seems to resemble the tic douloureux. But it would be vain to attempt a description of all the appearances which this disease occasionally assumes.

The duration of the cold stage is very various, rarely less than half an hour, and seldom exceeding four. It sometimes happens that an icy coldness steals over the whole surface, and in aguish countries it is not an uncommon circumstance for persons to die in the cold stage.

Hot stage.—After the cold stage has continued for a longer or shorter period, the hot stage commences; the one gradually runs into the other, there being no distinct interval between them. The change is attributed by patients themselves to the treatment which has been employed, or to the effects of vomiting, which sometimes accompanies the cold stage. The skin becomes hot and dry, sometimes pungent; the face flushed and swollen; the thirst urgent, the tongue parched; there are restlessness, general uneasiness, and oppression at the præcordia; the respiration is hurried and anxious; and almost invariably, the patient complains of acute pain in some region of the body, generally in the head and lumbar region, very often also in the thorax, and left hypochondrium; there is frequently a slight degree of disturbance in the mental faculties, sometimes, indeed, delirium. On some occasions there are symptoms which announce cerebral disturbance, viz., severe headache, tinnitus aurium, and throbbing of the carotids, &c. The pulse is frequently quick, sharp, and bounding, even in patients whose health and strength are already much impaired.

I have seen the thermometer, the accuracy of which had been well ascertained, rise in the hot fit, even in this country, to 110°, and in warm climates it is stated to rise as high as 112°.

The duration of this stage varies more than the former; in general, it continues from four to twelve hours, and terminates in perspiration: but on some occasions the febrile symptoms continue for several days or weeks, when the disease is termed a continued fever; now and then there are marked remissions followed by exacerbations, when it is called a remittent: in addition to the last-mentioned circumstances, there are sometimes considerable irritability of stomach, black vomiting, and a yellow tinge of the skin; then the case is termed a bilious remittent, or yellow fever.

Sweating stage.—After the hot stage has existed for some time, it terminates in the sweating stage; the perspiration appearing first on

the forehead, arms, and legs, soon becoming general and profuse. It is difficult to calculate the quantity of this excretion in any case; but it is admitted by all who have attended to the phenomena of intermittents, to be very great. From the moment the perspiration begins to appear, the uneasy sensations, and other symptoms above described, begin to subside, and generally vanish after it becomes copious.*

Many patients fall into a profound sleep for several hours, and then awake quite refreshed; others complain much of weakness, while some whose constitutions have not been previously injured, are able to resume their ordinary duties almost immediately.

When this disease continues for some time, the patient not only becomes weak, and loses flesh, but he has no interval of ease; each paroxysm increases his sufferings, and he feels comparatively little relief from the perspirations, which he often prolongs, in the vain hope of alleviating his symptoms. He complains of headache, intolerance of light and sound; or he has a cough and dyspnœa, which will almost always be found to depend on inflammation of the lining membrane of the air passages; or he has constant thirst, flatulent distension of abdomen, constipation, or diarrhœa, with griping pains in the bowels, a dull pain and sense of weight in both hypochondriac regions, more particularly in the right. The skin continues hot, and feels harsh; the feet and legs frequently become œdematous; the abdomen permanently tumid; the urine scanty; the tongue dry at the tip, the rest of it being furred; the patient passes restless nights; and perhaps in the very next paroxysm he may die in the cold stage; or the sweating stage may not succeed the hot, and he may die in a few days of continued or remittent fever; or decided marks of inflammation of the brain, liver, lungs, &c., take place and he is cut off from the effects of disorganization in these organs. Such circumstances are of frequent occurrence in warm countries, where intermittents prevail; many such melancholy examples will be found, by referring to the works of Sir John Pringle and others; but more particularly to Sir James Fellowes's reports of the destruction occasioned by this fever among our troops employed in the expedition to Walcheren. The history of the fever which annually prevails at Rome, and which has been so ably and faithfully described by M. Bailly, also corroborates the above statements.

This fever sometimes attacks individuals when labouring under internal diseases, such as dysentery, hepatitis, &c., and I have frequently seen a remittent converted into an intermittent. It may also be mentioned, that enlargements of the parotid take place during the course of intermittents. The gland increases in size and hardness during each cold fit, and it seems, in the first instance at least, to owe its enlargement to sanguineous engorgement; subsequently, the gland suppurates.

It has already been mentioned, that when intermittents have con-

* M. Andral, in the first part of his very excellent pathological writings, p. 477, mentions a very curious case. A young man, who had been hemiplegic on the left side of his body from his infancy, was attacked with tertain intermittent. He only perspired on that half of his body which had not been paralysed. He stated that in his best health he never perspired but on one arm and leg, and one side of his face and neck.

tinued for some time, the lower extremities frequently become œdematous, the belly tumid, and sometimes even ascites takes place. The first does not denote danger, but the last always occasions an apprehension of an organic lesion of some important viscus. Nevertheless, both may be occasioned by mere functional derangement. In these cases, the thirst is considerable, the secretion of urine scanty, and sometimes dysenteric symptoms manifest themselves.

Appearances found on Dissection.

The following appearances have been observed in the bodies of those who died in the cold stage.—The vessels of the brain gorged with venous blood; and the carotids, after passing into the skull, may sometimes be seen greatly distended with black blood. The lungs much congested, of a dark colour, which is the condition described by the older writers, by the term "putrid state." In the very few instances which have fallen under my own observation, I have not observed any structural disease in these organs: for, upon making sections, and squeezing them in water, they have resumed their natural appearance and buoyancy. The heart, and veins near it, are gorged with blood; and sometimes an effusion of blood, or blood serum, is found in the cavity of the pleura. In the abdomen, dark-coloured patches are sometimes seen on the peritoneum, occupying a considerable extent of the intestinal tube; and, upon cutting through these portions, all the tissues are found highly injected, and it is probable that this appearance has often been mistaken for mortification. The liver is sometimes gorged with blood and discoloured; but when treated, like the lungs, in water, this organ is restored to its natural colour, unless it has been altered in structure by previous diseased action; when it is easily broken down, like coagulated blood. I have seen the spleen in a similar state; but was not able, by washing, to restore it to its natural appearance. The stomach and intestines contained, in one instance, a dark, sanguineous-looking matter, like the black vomit.

In corroboration of the above statement, as well as in proof of the pathological and practical views yet to be detailed, I beg to subjoin a short account of some of the interesting cases and dissections described in the excellent work of M. Bailly,* whose zeal in the cause of science led him to visit Rome in the sickly season, for the purpose of investigating the nature and seat of intermittent fever.

"Case I.—Benoit Simouelli, æt. 30 years, of a strong constitution, affected for some time with a tertian fever, came to the hospital on the 2d July, 1822.

"3*d*, Had a slight febrile access, afterwards took ℥ij. of bark.

"4*th*, Towards mid-day, he walked in the yard, felt very well, and laughed with the other patients. All of a sudden, he was seized with violent shivering, to which succeeded a very high fever, during which he had alternate flexion and extension of the forearms, and

* Entitled Traité Anatomico-Pathologique des Fièvres Intermittentes, Simples et Pernicieuses, 1825.

profound coma. He died in six hours after the commencement of the attack.

"Dissection the following day at 2 o'clock, P. M.—Vivid injection of the whole of the arachnoid; colour of the cineritious matter of the brain much deeper than natural, approaching a dark reddish gray; a little water in the ventricles. No false membrane on the arachnoid. Great inflammation of the stomach, especially towards its great curvature, which was everywhere of a deep, generally diffused red. Many worms in the small intestines, which presented also inflamed portions, especially where the ascarides had collected.

"Case III.—Pierre Donati, æt. 28, of a good constitution, was brought to the hospital of Saint Esprit on the 2d August, 1822.

"An hour and a half after mid-day, he was seized with an accession of fever, which commenced by excessive coldness followed by intense heat, and stupor. He lay upon his back, with his eyes half open. He awoke when any one spoke to him, and fell again into the same state of coma. His pulse was frequent and strong; the skin burning. In the night copious sweating appeared, the intellectual faculties returned, and in the morning he was in a state to answer concerning his health. Took several ounces of bark.

"*3d*, The fever returned half an hour after mid-day. Commenced with a very violent coldness, followed by heat and stupor, but nevertheless, he always awoke when any one called him, and he opened his eyes. The forearms were bent upon the arms, and could not be extended; the teeth were clenched, which prevented the state of the tongue from being seen. Sensibility of the skin diminished. He lies upon his back. There is no pain upon pressing the belly. At half past two o'clock, general perspiration, but not so abundant as the first. In the evening, return of sensibility and intelligence. Cessation of contraction of the arms. But the ideas are less clear. Other doses of bark.

"*4th*, The morning of the third day after his arrival, at half past 7 o'clock, the pulse was frequent; stupidity; together with a drunken appearance. At 11 o'clock, a return of the cold, subsequent fever more violent; stupor more profound, coma, return of the rigidity of the limbs; subsultus tendinum; he always lies upon his back; pulse full and strong. At half past 3 o'clock, sweat appeared, but less copious. After the sweat, he could not give an answer, and he was unconscious of his own state; cessation of the contractions. Died at 10 o'clock in the evening of the 5th.

"Dissection twelve hours after death.—Lively inflammation of the whole of the arachnoid; serosity between the circumvolutions, with engorgement of the vessels; injection of vessels of the lyra. The brain being raised, there escaped half a pound of blood. Some points of a red colour in the stomach and intestines; liver gorged with blood; spleen voluminous and easily torn. No morbid appearance in the chest.

"Case IV.—Francois Lauretti, shoemaker, æt. 60, of a lean constitution, fell sick on the 17th August, 1822. He had the fever

every day, beginning with shivering, and terminating in the night by sweating. At the same time he was constipated, and had pain in the epigastrium. Was brought to the hospital of Saint Esprit on the 24th August. In the evening, the surface of his whole body was of a deep yellow citron colour; said this colour appeared during the last paroxysm; extremities cold, while he had a feeling of internal heat; tongue red and dry; pulse 108, like a thread. He had still so much recollection, that he smiled on seeing us approach him, for we had already spoken to him when he was brought to the hospital, and before he was yet put to bed. He complained of nothing, appeared quite tranquil, and replied perfectly to all that we asked him.

"*25th.*—In the morning he was found in a state of coma; and died at 10 o'clock, A. M.

"Dissection.—The body was of a lemon-yellow colour. On opening the head, the *dura mater* was tinged as yellow as the skin; by repeated washing this tint could in part be removed; but on holding it to the light, the diminution of colour was scarcely perceptible; injection of the arachnoid; cortical substance of a deep colour; yellowish serosity between the convolutions. On slicing the brain, a number of red points were seen; a little water in the ventricles; the cerebellum natural; the lungs healthy; the cavities of the heart appeared to us larger than usual; in the right ventricle, was a clot entirely formed of albumen, as yellow in colour as that of the skin and *dura mater*. The belly, before being opened, was concave, and resting on the vertebral column; the stomach contracted on itself; it was everywhere of the colour of lees of wine. Although it was well washed, there adhered to its surface a thick mucus, similar to the tenacious expectoration of patients labouring under pulmonary catarrh. The smaller curvature, and a portion of the greater, presented that kind of eruption described at No. 30. When examined with a lens, it offered nothing more remarkable than to the naked eye, only instead of appearing to consist of small perfectly round elevations, and entirely separated from each other, they communicated by their bases. The redness of the stomach was less lively towards the *pylorus*, but it began immediately at the duodenum, where it was very intense, and continued without interruption in the small and large intestines. The gall-bladder was green externally, and filled with a black and thick bile; on pressing it strongly, only a few drops could be made to pass into the duodenum; the orifice of the *ductus choledochus* could not be distinguished, in the midst of red, bloody, and swollen folds of the mucous membrane of the *duodenum*, but by this means. The *ductus choledochus* being opened, presented nothing remarkable, except that its mouth was drawn into the *duodenum*, in consequence of the swelling of the inflamed tissue of the latter. The liver was of ordinary consistence; its colour was of the yellow of powdered bark: this is the only time I ever saw it in this state. The spleen was of the usual size, and quite diffluent.

"Case V.—Jean Olivier, æt. 40, of a good constitution, was brought to the hospital on the 6th July. He was then without fever. In the

evening the fever came on, preceded by shiverings, and followed by violent heat. Pulse strong, 120; coma. He lies upon the back. Right arm immovable. The left arm bent and carried towards the head. Sensibility everywhere. When an attempt is made to open the left eye, he appears to experience pain, and contracts the eyelids. Belly painful.

"7*th*, In the morning.—Coma; lies upon the back; pulse strong, 108. He died at seven o'clock, P. M.

"Dissection.—Injection and thickening of the *arachnoid;* engorgement of the vessels which run on the convolutions, which are separated by watery exudations; the left *lyra* greatly injected; watery effusions at the base of the brain; phlegmonous eminences in the stomach; which were of a gray slate colour; invagination of the small intestines; spleen voluminous and pulpy.

"Case VI.—Vincent Orsini, æt. 60, came to the hospital the 3d July 1822, in the following state: Coma; pulse insensible; extremities cold; demiflexion of the two thoracic extremities; when an attempt is made to extend them, a resistance is felt on the part of the flexor muscles. Left eye half shut, right eye open, pupils dilated, immovable; tongue dry, lying in the very bottom of the mouth. He manifests pain when pressure is applied to the belly. Died the same evening.

"Dissection.—Vivid inflammation of the *arachnoid*, with great injection of its vessels. There escaped some serum, which was situated between the *dura mater* and *arachnoid.* A fibrous tumour of the size of a large nut, adhered to the dura mater, under the posterior angle of the parietals, and compressed the brain; although the injection of the *arachnoid* was very lively on both sides, it was, however, greatest on the left. Hydatid in the *choroid plexus*, the size of a small pea. The water that was between the *arachnoid* and *dura mater* was more abundant on the left side than on the right; brain pretty soft. General inflammation of the stomach; the S. of the *colon* was of a brownish red.

"Case VII.—Donato Fanti, a collier, æt. 50, was brought to the hospital of Saint Esprit, in a comatose state, which continued even till death. Pulse strong, beating 80 times in a minute; when the extremities were pinched, the patient manifested pain; his skin was hot and moist; when they opened his eyes, he did not direct them to any object. It was impossible to see his tongue, because his jaws could not be separated sufficiently. He only complained of pain when he was pressed in the region of the liver, and did not appear to suffer any thing when pressed on any other part of the belly.

"Dissection.—On opening the cranium several ounces of blood escaped; the arachnoid was strongly adherent to the dura mater by granulations resulting from old inflammation; the vessels of the brain were very much engorged; on slicing it drops of blood escaped from the divided vessels, which reappeared even after wiping. The liver was blackish; it appeared composed only of black blood, slightly coagulated, and of cellular bands which alone offered some resistance

to the finger; where this weak resistance was overcome, the liver was but of the consistence of thin jelly; for the blood appeared effused in its tissue, which resembled a pulpy mass. The intestines were inflamed in several points, and each inflamed portion corresponded to some knots of worms which were still alive. The lungs, the spleen, and the stomach, were healthy.

"Case IX.—Joseph Trotti, horse-doctor, of a sanguine bilious temperament, strong constitution, was accustomed to go down every year to marshy situations, to direct the workmen in seed time, or at the harvest, which occasioned obstructions in the spleen and liver. In 1811, in the time of harvest, being then aged 40, and working with great activity, he was affected with an intermittent fever, which continued till the third paroxysm. At last he returned home; the fatigue of the journey procured for him a very short sleep. I saw him in the fifth paroxysm, when he was in the following state: Agitation; impossibility of finding a position which procured rest; pain under the right false ribs, mounting to the top of the shoulder, and extending to the left hypochondrium; pains in the articulations; head heavy; tongue covered with a white crust; bitter taste in the mouth, vomiting; thirst; face livid; pulse irregular, neither soft nor hard; great difficulty in respiring; urine red and clouded. He got an injection to loosen the belly. He had little repose during the night, for the fever returned preceded by a general coldness over all the extremities, and the pain in his side was aggravated.

"6th day.—A frequent dry cough without expectoration. The emulsions had eased the thirst. Had no appetite. The bitter taste in the mouth had disappeared. A pound of blood was drawn from the arm; the coagulum was almost soft; the serum was livid. At the return of the fever, the cold only attacked the extremity of the feet.

"7th day.—The pain worse and worse; the difficulty of respiring still greater; frequent eructations, urine always the same. As the tongue was white, and as he had no stools after the lavement, he took ℥i of manna, which produced a bilious stool. In the night he had no sleep; delirium.

"He became gradually worse, and died on the 14th day, when in the act of raising himself to speak to his confessor.

"Dissection.—The body offered nothing remarkable but tension of the belly. In the abdomen, there was a sanious effusion mixed with a little blood. The liver was putrid and tuberculous; this affection commenced towards the convex part, extending itself on all sides, and descending towards the concave part; nevertheless, the greatest destruction was on the convexity; the rest was engorged and inflamed, its volume was natural. The gall-bladder contained a little thin clear bile, not viscid. The inferior face of the diaphragm was erysipelatous; the stomach and small intestines were full of water; the spleen double the ordinary size, and of a black colour; the exterior surface of the right lung was covered with a white crust, the inferior part adhered to the *pleura costalis.*

"Case X.—Dominique de Marco, æt. 30, of a good constitution, was affected with a simple tertian fever since the 24th June, 1822. On the evening of the 7th July, he was seized, according to the report of his parents, with an accession of the pernicious, comatose intermittent. He arrived at the hospital on the morning of the 8th July, and he was in the following state: Coma; decubitus on the back; face red; forearms bent and contracted; pulse 112; convulsive trembling of the fingers; legs stretched and immovable; sensibility everywhere. They made him swallow three ounces of bark in six hours.

"At 2 o'clock.—Pulse 100; sinapisms to the feet.

"*9th*, in the morning.—He is in a sweat; remission of the fever; pulse 88; a watchful coma; he hears but does not answer, although he looks; two hours later, pulse 92, very full; several ounces of bark.

"Evening.—Pulse full, strong, 96; profound coma; resisting stiffness of the right arm; he cannot show his tongue; skin hot, and always moist with sweat. To make him swallow the bark, it was necessary to pinch his nose, and hold his mouth open with a key; afterwards water was poured in, which he kept in his mouth, and finished by rejecting it. He has taken seven ounces of bark through the course of the day.

"*10th*, in the morning.—Pulse 140, strong and full; coma; flaccidity; general immobility; mouth open; blood was taken from the jugular; respiration stertorous. Died towards mid-day.

"Dissection.—Injection of all the vessels of the *arachnoid*, even to the very smallest ramifications, and on both sides; but on the right side, and upon the anterior lobe, it was of an intense red, without any distinction of vessels; when it was torn away from the convulsions the *pia mater* was also removed; it adhered so intimately to the *arachnoid*, as to resemble one membrane, red, very thick, and in the tissue of which blood was effused, which appeared immediately to coagulate: little water in the ventricles; the brain of the ordinary consistence: when it was cut there appeared a great number of red points, which immediately became the seat of large drops of blood; the *arachnoid* of the *cerebellum* was also highly injected; the consistence of that organ was natural. Stomach gray, externally, contracted, slightly inflamed; small intestines presented two invaginations; a portion of this intestine white, transparent, distended with gas; the rest gray and contracted: in three places all the circumference of the tube is red, both within and without, occupying the space of three inches in length; all the large intestine is white, &c. Liver gorged with blood; spleen weighed between two and three pounds, and reduced into a gray, pulpy state.

"Case XI.—Paul Tossini, æt. 30, of a good constitution, was taken on the morning of the 29th June with a fever, which commenced with heat, and which returned every day until the 6th July, when he arrived at the hospital. He had had thirst, bloody stools, tenesmus, enlarged spleen; and he had taken cooling drinks and a purgative. He is now in the following state: His appearance is stupid; somno-

lence rather than coma; general pain of head. The patient only appears to be drowsy, for he is easily awoke, and understands sufficiently well what is said to him; decubitus on the back, the knees are drawn up, but he cannot extend the thighs without experiencing pain; during his slumbers the right eye is partly open, the left shut; it is impossible to depress the lower jaw, without producing suffering; the tongue is dry, red, covered with a black crust, which extends from the point towards the middle, the breadth of which is not more than half an inch; the tongue is drawn a little to the right; at intervals, slight convulsive movements of the hands; pain of belly upon pressure; skin hot, dry; pulse 120. When the right arm is extended the flexor muscles contract, and the patient seems to suffer much pain; but when once extended it continues so.

"In the night, bloody dejections, extremely fetid; declination of the paroxysm, which returned on the 7th in the morning; at seven o'clock the patient complained of cold. I did not see him till six o'clock in the evening, when the paroxysm was beginning to decline: the skin was hot and moist; the lips were encrusted; the pulse was not to be felt; respiration hurried; the two forearms bent, when it was wished to extend them; above all the right, violent pain was produced; preservation of sensibility, everywhere; sometimes the right eye a little open, the left being shut. He had several convulsive movements this morning and towards mid-day. He took kino before the accession at the moment when he already felt the cold. Increase of coma; died at half-past seven o'clock in the evening.

"Dissection.—General injection of the arachnoid, particularly that part which covers the cerebellum and the lateral part of the commencement of the spinal marrow. The injection of the right side was a little more intense than that of the left, although it was otherwise as vivid as it is possible to imagine, for it was not a simple injection, which merely shows the smallest vessels. The arachnoid was of a deep red, as if all its tissue were penetrated with blood. The brain presented nothing remarkable. The intestines were injected in the same manner, from the œsophagus even to the anus; their whole thickness appeared to be impregnated with blood; they were not either thicker than natural, nor contracted; on the contrary, they were distended with flatus. Spleen weighed from eight to ten pounds; when it was put upon the table, it became flat like a bladder half filled with water; its tissue was reduced to a pulp.

"Case XIII.—Francois Pompei, æt. 19, was seized on the 1st July, 1822, with an accession of fever, in consequence of a sudden chill which he experienced on entering a cool grotto when his body was covered with sweat. He was brought to the hospital on the 2d July, at six o'clock in the evening. Before he arrived, he had a considerable epistaxis. He was in the following state: profound coma, eyes widely opened, directed to the right, fixed; expression besotted; general immobility; decubitus on the back; insensibility of the extremities when pinched; they were quite flexible. He did not answer the questions which were put to him; the direction of the eyes did not change even when one approached him. He manifested pain when

his stomach was compressed; skin burning hot; a white œdematous swelling of the face; his parents said that this tumefaction had come on since the disease, for previously he had rather a thin face. This access continued until Wednesday morning the 3d July: he then took an ounce and a half of bark.

"4th July, Thursday morning.—The paroxysm returned, at the commencement of which he could still give answers to the questions put to him, but the coma went on increasing, and with it all the symptoms above described; the pulse was strong, vibrating, full, beating 84; the same direction of the eyes to the right, the same immobility of these organs, and of the extremities; respiration short. Eight leeches to the ears; died at ten o'clock in the evening.

"Dissection.—Several ounces of blood flowed from the nose in the dead-room; in cutting the scalp, more blood escaped; the whole might have weighed a pound. General engorgement of all the vessels which ramify upon the convolutions; the brain still covered by the dura mater, gave a feeling which made us believe that there was a fluid in the interior, nevertheless there was only a little serosity in the ventricles; the substance of the brain was of the natural colour. All the intestinal tube, without any exception, presented a red appearance, which was owing to a general injection of all the vessels, even in their smallest ramifications. It would be difficult to inject so perfectly the vessels either of the intestines or of the mesentery, as they were in this body. The intestinal tube, although a little transparent, was penetrated with this congestion throughout its whole thickness; every thing indicated the first stage of a violent inflammation, that is to say, of a sanguineous congestion.

"Case XV.—Thomas Adami, æt. 20, was brought to the hospital on the 23d August, 1822. He was delirious; they were obliged to secure him. After midday, the delirium subsided. A profound and intense coma succeeded; the pulse was strong, hard, and beat 85; the extremities were flexible, but motionless; decubitus upon the back; pupils immovable; features swollen and intensely hot; general insensibility. Body covered with a clammy sweat. In the evening the respiration was more hurried, and very much embarrassed; pulse not to be felt; froth was discharged from the mouth; he was insensible even when his skin was pinched; died at one o'clock in the morning.

"Dissection, eleven hours after death.—General inflammation of the *arachnoid*, of which the very smallest vessels were injected; no serosity; the cortical substance was of a deep red, compared with that of a subject dead from a shivering fever, (*la fièvre algide*) which we shall notice by and by, &c.

"Case XVI.—Antoine Turianne, æt. 12, of a good constitution, was brought to the hospital on the 23d July, 1822, at four o'clock in the afternoon. He was in the following state; commencement of stupor; his answers are slow, and not quite correct; the questions put to him made him discontented and unhappy; agitation; he turns himself on all sides in his bed; eyes open and stupid; skin hot and

dry. (Bled to 8 oz.; lavement; tisane.) In the evening increase of stupor, in consequence of the accession of another paroxysm, coma profound, eyes open, pupils contracted and immovable; the forearms bent upon the arms; no pain on pressing the belly. Sinapisms to the feet.

"24*th* July, in the morning.—Continuation of coma; pulse 124; head intensely hot; flexion of the forearm; it is impossible to depress the inferior jaw. Bled at the feet to 8 oz. In the evening, remission of the fever and of the convulsive symptoms; skin slightly moist; it was necessary to pinch his nose to make him swallow ℥ij of bark.

"25*th*, in the morning.—Return of fever, and the flexion of the forearms; continuation of the stupor; does not reply to questions; insensibility of the skin of the legs, that of the arms sensible; head intensely hot; decubitus on the back; eyes open. Boiling water applied twice to the feet; the patient did not feel it very acutely. Pediluvium during six minutes; snow applied to the head; the pulse fell to 82. Return of intelligence; he swallowed voluntarily the bark; but a little afterwards, violent agitation of all the body came on: the inferior extremities, which from the commencement were cold, were neither heated by the bath, nor inflamed by the application of boiling water and sinapisms. Of the four ounces of bark, which they made him take, he vomited more than two; neither could he retain the bark injections which were exhibited. He remained in this state till six o'clock in the evening: the coma returned, and he died at 7 o'clock.

"Dissection.—A very vivid injection of all the *arachnoid;* between its folds there was a membrane produced by the coagulation of effused blood; much serum between the convolutions, and at the base of the cranium; the cortical substance very red. The stomach natural; the small intestines contained a prodigious collection of worms; the inflammation was sufficiently intense in this part. The colon was contracted, its walls very thick, and the internal membrane much inflamed, of a dark red colour.

"Case XXX.—Joseph Maoloney, æt. about 60, came to the hospital on the 21st Sept. 1822. He had been sick for five days. His answers were so confused, it was impossible to find out what had been his previous state, further than that he said he had vomited some bitter stuff, that he was tormented by thirst, that he had suffered great distress, and had pains in the epigastrium. In the evening, tongue dry, vividly red round the edges; constipation, nausea without vomiting, heat natural over the extremities and the thorax; a burning heat in the epigastrium; anguish; severe pain in the stomach under pressure; pulse small, frequent; lavement of barley water —gum water—fomentations to the belly. During the night, vomiting, and had a stool.

"22*d*, in the morning.—Pulse more expanded; the ideas still confused, diminution of agitation, heat natural everywhere; tongue dry, thirst. Same treatment. About half-past 9 o'clock he had vomited the tisane with mucus, bile, and several lumbrici. About half-past 11 o'clock; stupidity; pains in the epigastrium increased. At 3 o'clock

P. M., lancinating pain of belly; pulse small, frequent; extremities cold, and bathed in cold, clammy perspiration; inferior extremities bent upon the belly. Bled from the arm; died in half an hour afterwards.

"Dissection.—Injection of the vessels which ramify upon the convolutions of the brain; substance of the brain presented an infinite number of small drops of blood; three or four ounces of water at the base of the cranium; lungs natural, crepitating. In the belly there were fifteen or sixteen ounces of dark blood, running like oil; spleen ruptured at its inferior part, not by a fissure as in the other cases, but presenting an opening the size of a dollar, out of which came a dark and putrilaginous substance; it was impossible to raise the spleen without breaking it, it was so diffluent; it separated in the hand into two portions, of which one when placed on the table became flattened like jelly, and the other portion remained attached to the diaphragm, which they were obliged to cut to expose the spleen completely; it was not much increased in volume. The stomach was of a reddish-brown in the greatest part of its extent; inflammation of all the rest of the intestinal tube; rose-coloured within; bladder natural; liver gorged with blood.

"Case XXXVIII.—Angelo Galetti, æt. 18, of a good constitution, was brought to the hospital on the evening of the 29th July. The patients who were near him said, that during the night, he complained continually of sharp pains in the belly. Took an ounce of bark; the whole of the body was as cold as ice.

"30*th*, 8 A. M.—Legs, thighs, forearms, arms, cheeks, of an icy coldness; the belly, chest and forehead were of rather a lower temperature than other parts of the body; pulse insensible at the wrists; I could feel it but very feebly in the crural arteries; it beat 100; the patient trembled and complained continually; his most common position was on the left side, with the thighs bent on the belly. He understood what questions were put to him, but not sufficiently well to give proper answers; he never entered into any detail; and died at half-past nine.

"Examination three hours after death.—The small intestines slightly distended with gas, were externally of a purplish red. The internal membrane was of the same colour, so that the violent injection of which they were the seat, had existed throughout the whole thickness of the substance of the intestine. This injection was recent. Inflammation of the upper half of the cæcum. The whole of the great intestine was white externally; on being opened, it presented an inflammation, the violence of which was greater towards the rectum, where the mucous membrane was so intensely inflamed, that some blood had been effused, which, mixing with the mucus, formed a thick coating, which adhered to the whole of its surface. The colour of all the interior of the colon, and especially of the rectum, was of a lively intense red: in a word, the most violent degree of inflammation that can exist without disorganization. The stomach was pale; after being washed, it presented, near the pyloric extremity, an infinity of little depressions, from half a line to a line in

diameter, and some of which contained in their bottom a small spot of blood, which was easily removed. The folds of the mucous membrane were, besides, nearer each other, and more numerous than ordinary. The mucous coat itself was thickened. The liver was healthy. The spleen large and pretty hard, but of a redness of the lees of wine. Slight adhesions of the right lung; the same between the whole surface of the heart and pericardium; they were easily destroyed. Injection of the arachnoid, engorgement of the vessels which ramify on the convolutions, and of those which compose the choroid plexus.

"Case XXXIX.—Vincent Crescenzi, æt. 60, of a thin but healthy habit of body, fell sick on the 19th August, 1822. He was attacked with fever, which set in with shiverings, followed by extreme heat, pain in the head and belly, vomiting of bilious matter. During the night, the paroxysm terminated in sweating. He was brought to the hospital of Saint Esprit on the 19th August, 1822. The fever returned in the morning, preceded likewise by shiverings, and accompanied by the same symptoms as in the evening; the stomach was painful on pressure; the patient experienced a great heat in the inside; anxiety; depressed countenance; the features were as if flattened to the bones of the face; the colour of the face was natural, the expression dull. (Half an ounce of bark on the decline of the paroxysm.)

"Evening.—Decline of the symptoms; skin wet with a cold clammy sweat; pulse small, frequent; general shivering; pain at the epigastrium; tongue red, but moist; no thirst. (Half an ounce of bark.)

"Night.—The skin remains moist and cool. The patient has vomited the bark.

"He had several paroxysms afterwards; became worse, and died on the night of the 23d, sensible to the last.

"Dissection.—Slight injection of the arachnoid; engorgement of the vessels which ramify upon the convolutions; an effusion of yellowish serum between the foldings of the arachnoid; cerebrum and cerebellum natural; heart and lungs healthy. Stomach gray externally and contracted. Inner surface of a bright red, deeper still towards the pylorus. Foldings of the mucous membrane better marked than usual. Small intestines gray externally and contracted. Internally their redness was brighter than that of the abdominal muscles, which afforded us a point of comparison. To give an idea of this inflammation, the colour of the large intestines could be compared to that which they would receive were they soaked in black blood. This inflammation increased as it approached the S. and the rectum; liver healthy; spleen of a middling consistence, between the state of degeneration and health. This inflammation could be compared only to that of the 30th case.

"Case XL.—Vincent Cola Paolo, of Rimini, æt. 40, of a good constitution, residing at Roma Vecchia, entered the hospital on 7th July. Had been attacked with a paroxysm of fever on the previous

evening. On the morning of the 7th, his state was the following:—Hands colder than those of a dead person; pulse 108, small, contracted; hiccup regular in its returns fourteen times in the minute; position supine; sighs drawn easily; answers pretty correctly; he experiences pain in the region of the liver. In the evening, the fit declined, and the hiccup disappeared.

"On the morning of the 8th, senses completely restored, with his natural expression, which, during the paroxysm, assumed that particular aspect which characterizes those labouring under the fever; but the hands have always an icy coldness which extends half way up the forearm; he is not aware of their being cold; but on placing them on his belly, he at once becomes sensible of it; he speaks as if he were in a state of health. At nine o'clock, his appearance became as if besotted; he replied with hesitation and reluctance. Has an inclination to sigh. He lay on the side, with the legs bent upon the abdomen; the fit commenced, the cold gained upon the trunk, respiration became short, some tendency to hiccup; in short, he died at three in the afternoon. He took some bark during the apyrexia.

"Dissection.—General injection of the arachnoid; which is thicker than natural, red, and as if doubled by a sanguinolent false membrane; the vessels distributed upon the circumvolutions of the brain are engorged; the stomach is much inflamed in its pyloric half, the rest of the intestinal canal healthy.

"Case XLI.—Angelo Donni, of Milan, æt. 35, weak, lymphatic constitution; preparer of macaroni. On the 5th July, 1822, he entered one of the grottos of Monte Testaccio, when he experienced a general sense of cold, which he attempted to shake off by drinking seven or eight glasses of wine; but could not, however, warm himself. He then felt a great weakness, which was the predominant symptom during the six days previous to his entering the hospital. His state had so little of a decided febrile character, that according to his account, the medical men could not tell him if he had had the fever. He had a sense of general uneasiness; took an emetic and a purgative, and returned to his work; but the general state of disease and uneasiness increasing, as likewise the weakness, on the 11th of July, in the morning, he came to the hospital of Saint Esprit, on foot, supported by a man on each side. Being arrived in the 1st ward, where I first saw him, he seated himself upon a form, and appeared to feel ill. He let himself fall down upon the right side, but the expression of his countenance was not that of a person fainting. There was something in the motions of his head, of his eyes, resembling those symptoms produced by drunkenness, and not that want of power occasioned by the cessation of the motions of the heart. He was merely supported, and recovered, and he was then enabled to ascend more than thirty steps, in order to reach the clinical ward. When in bed, the following was his condition; pulse frequent, weak; temperature of thighs, legs, hands, and arms, cold; tongue moist and not red. He was able to give a history of his previous state, nevertheless, he begged the physician to question his companion, who accompanied him to the hospital, for although he had neither delirium nor coma,

nor syncope, he appeared so confused, so little master of his ideas that he declined to give any account of it. All he assured us of was, that he had never had the fever. In the afternoon he was twice ill.

"Evening.—Pulse scarcely perceptible, great pains, extremities cold, the left hand more so than the right; it is of a livid colour. Temperature of the belly, and the chest, almost natural; face pale, delirium, agitation, inquietude. (Decoction of bark ℥viij. Extract of bark, theriaque, āā ℥ij. Laud. liq. anod. camph. emuls. āā gr. xx. blisters to the thighs)

"12th July.—At half past one in the morning, sweat general and copious, but cold. In the morning at the visit, weakness the same; pulse insensible at the arms, which are cold, as also the thighs; the belly is a little warmer, but it is also below the natural temperature; pulse at the temples 114. The blistered surface pale, no water under the epidermis, which remains only detached. He has lost no part of his judgment, but manifests a tendency to drowsiness; complains of no pain; the belly is not tender on pressure; the principal ailment is great weakness. (Blisters to the arms. Bark ℥ij in wine.)

"A little later, return of the same symptoms, alternating with delirium and drowsiness; general and intense sense of cold; died at half-past five in the afternoon.

"Half an hour after his death, the body was warmer than during life.

"Dissection.—Stomach highly inflamed between its great curvature and the pyloris. Intestines presenting traces of inflammation in some parts. Spleen soft and pulpy, liver healthy, old adhesions of right lung. Before opening the cranium, the head was separated from the trunk, when there escaped by the occipital foramen a great quantity of bloody serum. Injection of the arachnoid in its minutest ramifications, but a little more on the left than on the right side. Great engorgement of the vessels distributed on the circumvolutions, more marked on the left side. Gray substance of the brain, of a pale, rather than of a deep hue; choroid plexus pale; serosity between the circumvolutions; brain of a soft consistence."

From these and other cases it appears, that M. Bailly found in thirty-three dissections, more or less extensive disease in the brain: in twenty-two of these there were thickening, and other marks of inflammation, in the arachnoid coat; and in eleven, inflammation of the substance of the brain. In twenty cases there was gastro-enteritis. In four cases gastritis by itself, and also four of enteritis, uncomplicated with gastritis. In eleven the spleen was softened; in some instances enlarged; one weighed from two to three pounds, and another from eight to ten pounds. In two cases the spleen was large and hardened. In three cases the spleen was ruptured, and in one it was gorged with blood. In two cases the liver was softened; in four gorged with blood; and in one case the gall-bladder was inflamed. In two cases there was pericarditis. In three, peritonitis. In one, pneumonitis. In one case there were inflammation and enlargement of parotid.

These statements respecting the appearances on dissection in in-

termittent fever, will be found fully corroborated in the works of Morgagni, Pringle, Cleghorn, Chisholm, and Fellowes.

Causes of Intermittents.

In point of form, I ought now to treat of the causes of intermittent fever, but having explained myself so fully on this subject, when treating of the causes of fever in general, at page 56, it is unnecessary to do so in this place, further than to repeat my conviction, that the effects of internal irritations, sudden variations of temperature, and of evaporation, as causes producing intermittents, have hitherto been too much overlooked.

Pathology of Intermittents.

As there are three distinct stages in this disease, it will be proper to treat of the pathological condition of the body during each.

Cold stage.—Perhaps the first link in the chain of morbid action may be in the nervous system; there is decided evidence of its being involved from the beginning to the termination of the disease. But as there is nothing to guide us in the investigation, I shall not enter into it. The first circumstance which we distinctly perceive, is diminished circulation of blood in the extremities, then a sense of coldness, and with it a feeling of weakness. These are evidences of an irregular determination of blood, by whatever cause produced; and in proportion as blood accumulates in the vessels of internal organs,* their functions become impeded. The lungs show their gorged state, by the short, difficult, and anxious breathing; by the impossibility of inflating them beyond the least degree; and by the violent dry cough which occasionally takes place. The livid appearance of the cheeks, lips, and mucous membrane of the mouth, is an additional proof of the embarrassed state of the lungs, showing that the blood is not properly decarbonized. The disordered functions of the brain in this stage, depend, I imagine, principally upon the gorged state of the lungs, and also upon the overloaded state of the right side of the heart, preventing the free return of blood from the head. The disordered functions of the brain may also be produced by a change in the balance of the circulation of the vessels of the head, independently of the state of the lungs and heart. The tremors may probably be attributed to an accumulation of blood in the vessels of the brain and spinal marrow. The sense of cold seems to be owing partly to the state of the nervous system, and partly to the state of the lungs. The pain in the head and loins, and oppression at the præcordia, may be fairly attributed to the same causes. The muscular prostration, and feeling of sinking, are not owing to actual debility, but to obstructed action, in consequence of the above-men-

* This is the state termed congestion, which implies, that the balance between the arterial and venous systems is deranged for the time, the latter being overloaded or congested with blood; and not that the circulation in any organ, or set of organs, is entirely obstructed: which, nevertheless, does actually happen in those extreme cases in which reaction does not take place, and the individuals die in the cold stage.

tioned condition of organs. The proof of all which circumstances is to be found in the fact, now well known, that abstracting blood, in the cold stage, will immediately remove not only the difficulty of breathing, the pain in the head and loins, the disordered functions of the brain, (when these exist,) the oppression at the præcordia, &c., but will also stop the rigors, restore the strength of the pulse, increase the heat of the whole body, and cause the sensation of cold to vanish in an instant. Cullen and others believed, that all the subsequent phenomena of fever depend upon the cold stage, which, although a mere hypothesis, is now for the first time proved to be true.

The pathological views which are still taught in most of the schools of Great Britain may now be stated, and this shall be done in the words of the late very celebrated professor of physic, Dr. Gregory: "The languor and debility depend upon diminished nervous energy: the uneasy feelings, on muscular debility; the paleness of the face and extremities, and shrinking of the features, are owing to spasms of the extreme vessels; the coldness is to be explained by the blood being propelled from the surface by debility, or prevented from entering the vessels by the spasm; thus the cold may be produced either by the spasm or by the debility; the tremors depend upon debility of the muscles, but there is also some irregularity of nervous energy; the breathing during the cold stage is small, frequent, and anxious, owing to debility of all the muscles that serve for respiration, while, at the same time, the *congestion* of blood produced by the weakened action of the heart, would require the breathing to be often repeated, and the respirations to be fuller than natural, which circumstance tends to increase the uneasiness; the heart partakes also of the debility; this debility of the heart produces an accumulation of blood in the great vessels, and this occasions that unusual motion of the organs of respiration, termed yawning. Want of appetite, nausea, and vomiting, are owing to debility of the fibres of the stomach. Costiveness is produced partly by spasms. Failure of attention and memory, and also delirium, are owing to debility."

On perusing these statements, the reader will observe sufficient proof of the pathological condition of the body which I have described, but instead of attributing it to the same state of organs, he places spasm and debility as the cause of each phenomenon; thus most unphilosophically, like the rest of the disciples of the Cullenian school, he makes the facts to suit the doctrines. Influenced, as this distinguished man's mind was, by such erroneous pathology, it is no wonder that he should have pronounced the following dogma: "I have no doubt, therefore," said he, "that the causes producing fever act first by inducing debility; and accordingly we find, that stimulants employed at this period have produced good effects in checking this disease, while evacuations, as *blood-letting*, which at another period of the disease, might have been proper, if employed in the *first stage, never fail to be attended* with most dangerous consequences; or it is, to use the words of Celsus, *'hominem jugulare.'*"

I shall now show that this is a statement which Celsus never made with reference to the cold stage of intermittent. On a careful reference, I find no allusion made to such a practice in his works; but in

treating of the danger of bleeding in *vehement fevers*, he expresses himself thus—"*Quod si vehemens febris urget, in ipso impetu ejus sanguinem mittere* HOMINEM JUGULARE EST."—Lib. ii. cap. 10. It appears to me that Dr. Gregory was led into this error by a statement made by Sir John Pringle, who, in allusion to the good effects of bleeding in the camp fever which he describes, observes, on page 210, (Observations on Diseases of the Army, ed. 1768,) "A person unacquainted with the nature of this disorder, and attending chiefly to the paroxysms and remissions, would be apt to omit this evacuation, and to give the bark prematurely, which might bring on a continued inflammatory fever. A vein may be safely opened either during the remission or *in the height* of the paroxysm; for besides that I have observed the remission to come sooner and fuller after hemorrhage, I have repeated experience of the safety of bleeding *in the hot fits;* and not only in this, but in the marsh fever, even after it had come to almost regular intermissions. In order to make Celsus's maxim (he quotes the above passage from lib. ii. cap. 10,) consistent with this practice, we must interpret his term *impetus febris* in the sense of this chilliness or cold fit which preceded the hot one in the fevers which he describes, *for then, indeed, bleeding would be improper.*" This is straining an author's statement to suit other views with a vengeance! The meaning of Celsus is clear and precise—he makes no allusion to the cold stage. Does not this show how liable we are to be misled by the authority of a name?

Hot stage.—Acting upon the principle of not inquiring into occult causes, very little need be said respecting the circumstances which produce the reaction; but there has long existed a pretty general belief that the blood accumulated about the heart, in the cold stage, proves a stimulus to that organ, and produces reaction. In this manner Dr. Gregory and others make the spasm of the extreme vessels the cause of the diminution of blood on the surface; and then he observes—"The blood thus driven upon the internal parts, must accumulate in, and prove a stimulus to, the heart and great vessels."

The next question comes to be, how is this effected? The truth is, that we know nothing of the matter; and, after all, it is perhaps best to attribute it to "*the principles of life;*" or, in the language of Cullen, to "*vis medicatrix naturæ,*" which is ever in action, to prevent injury, and to remedy the evil after it has occurred. The phenomena which are ascribed to the state of reaction, are those, *the combination of which* is denominated fever; namely, hot and dry skin; quick pulse; thirst and loss of appetite; restlessness and anxiety; headache, and occasionally delirium; hurried respiration; dry, furred tongue, &c.

With respect to the heat and dryness of the skin, the old opinion of Boerhaave need scarcely be alluded to, who attributed this condition to the friction of the globules of the blood against the sides of the vessels; neither is it necessary to dwell upon the still older opinion, which attributed the heat to fermentation; nor is it requisite, after what has been previously stated in this work, to say a word more respecting spasm of the extreme vessels. The heat and dryness of the skin in the second stage of intermittent are, no doubt, owing

partly to the suppression of the secretions and excretions; also, probably, to some change in the nervous system, but principally to the increased quantity of blood driven to the surface of the body.

Sweating stage.—It has been stated, that, in cases in which no organic lesion exists, the pains and uneasy feelings begin to subside after the commencement of the sweating, and soon afterwards disappear. An interesting question here presents itself, How does the perspiration produce the effect? It appears to me that it acts in two ways; *first*, cooling the body by evaporation; and *secondly*, it moderates the force and frequency of the heart's action, by depleting the system. It is impossible to state the precise quantity of fluid perspired in such cases; but, if I can trust the hasty, and far from accurate observations made respecting this point, by placing oil skin on the outside of the bed-clothes, I am inclined to believe that it amounts to considerably more than two pounds; and it must be kept in view, that this discharge comes directly from the blood itself.

[The pathology of intermittent fever has ever been a vexed question in medicine, nor shall we attempt to solve it; at the same time, we propose to give a brief view of those modern doctrines, which, originating with the French pathologists, have been more or less adopted wherever medicine is cultivated.

The physiological school apply their idea of irritation, somewhat modified, however, to explain the phenomena of intermittent fever. The fundamental principle to be established is, that irritation can admit of total disappearance for a longer or shorter period, and then return at stated intervals with its previous intensity, leading finally, to alteration of the tissues of organs. It is contended that periodicity is natural to a state of health; that the activity, and consequent functional energy of many of the organs, are not constant, but roused at certain periods, while during the intervals they are in a state of comparative repose; thus the brain has its waking and sleeping hours; the stomach digests its food, and becomes quiescent; even the heart and lungs undergo diminution of energy. But there are more marked periodical occurrences, as the menses, hemorrhoidal fluxes, &c., which give both force and plausibility to this position. On referring to the modification of irritation by the tissue in which it is located, it will be found that in those which are so anatomically constructed that it can easily be produced, and as rapidly removed, periodical irritations are universally seated. Such tissues possess a looseness of structure, and abound with nervous filaments and blood-vessels. Those which are low in the scale of vital activity, which are closely allied to the osseous structure, and which, when once diseased, go through long and protracted changes, are not affected by periodical irritation. The tissues, then, in which this form of deranged organic action is manifested, are those which possess the highest degree of vital activity, as the brain, mucous membranes, and the hollow viscera. For reasons analogous to those which induced Broussais to locate the primary irritation of continued fever in the stomach and intestines, he is led to maintain that the primary seat of intermittent fever, is in the same viscera; and without searching for the cause of periodicity, is satisfied of its existence as a fact.

Intermittent fever, therefore, is regarded by him as gastro-enteritis running through its stages in a limited time, and terminating by a translation of irritation to the skin, inducing profuse perspiration; thus constituting a true *crisis.** The phenomena of the paroxysm are accounted for in the same manner as those of fever generally, some of the preliminary symptoms being referable to the organ primarily affected, the others to sympathetic disturbances. In proportion as the first is intensely affected, will the symptoms be acute, and the sympathies called into action, giving rise to attacks of greater or less violence. If any one of the vital organs be so much deranged as to threaten life, as, for instance, the brain or lungs, a form of disease appears which is termed *pernicious intermittent;* or if attended with putrid or adynamic symptoms, it is called *malignant intermittent.* Intercurrent intermittent and remittents are only shades of the same disease; the irritation subsiding at intervals, but not totally disappearing, and then again occurring with fresh energy, changing the *type* of the fever, but not its essential character. Congestion in important internal organs, is the most formidable attendant upon these intermittent irritations; the blood is so forcibly, and in such quantity determined to them, as to suspend their functions, or even to destroy them in debilitated persons, or in those who are prone to irritation. This effect is what is designated by the "lost balance of the circulation;" and means nothing more than diminution of excitement, and anæmia of external organs, while an irresistible attraction of fluid exists in the central. The analogy between continued and intermittent fever, (the latter being regarded as identical in nature with the preceding, only running its course in a shorter time,) is strikingly demonstrated by the easy transition of one into the other. Thus, by stimulating a patient labouring under the aggravated symptoms of intermittent, the periodical irritation can be converted into continued; and frequently the continued form may, by soothing measures, be made to assume a partial and even perfect periodicity. The irritation being disturbed, the transfer to the skin, or crisis, will be imperfect; which is another cause of prolonged irritation, and change to the continued form. Hemorrhagic and neuralgic irritations sometimes assume an intermittent character; hence the close affinity noticed by authors, between them and intermittent fever. M. Broussais endeavours to confirm his reasons for establishing the *primum mobile* in the stomach and bowels, by reference to the different organic lesions which are found to ensue from protracted attacks: as, chronic inflammations of the mucous coat of the stomach, with thickening and alteration of texture; enlargement of the liver with alteration of function leading to jaundice; disordered digestion, and its concomitant evils; and enormous increase of the spleen, vulgarly denominated ague cake; these all result from that form of irritation constituting inflammation.

M. Roche has thrown out some ingenious reflections upon the

* ["Each regular attack of intermittent fever is the sign of a gastro-enteritis, the irritation of which is transferred to the cutaneous exhalents, producing a crisis; if the irritation is not completely displaced, the fever is remittent; if it ceases to remove at all, it becomes continued."—*Examen des Doctrines Medicales.*]

disease which at present occupies us. He contends that fevers cannot assume the intermittent type, unless the causes are of the same periodical character; and upon an examination of them, it will be perceived, that they are intermittent in duration. Intermittents most generally abound in the spring and autumn. Now it will be acknowledged that, during these seasons, there is the most marked difference between the temperature of the day and night, and consequently, at short intervals of a few hours, an alteration of action and reaction takes place in the human frame, which soon may be converted into habit.

The impression of marshy exhalations is precluded during the day, in consequence of their being diffused and dispersed into the upper atmosphere by the effect of solar heat: but as soon as the effect of this is removed, the upper strata are condensed and precipitated in a concentrated form, so as to have acquired peculiar violence; when, coming in contact with the skin and mucous membranes, they are absorbed, and produce the phenomena which constitute an accession of intermittent fever. If the action of marsh miasmata be intermittent, it is not astonishing, that the malady which is produced by them is equally so. According to this author, the accession of the paroxysms is repeated by virtue of a tendency of our organs to reproduce certain acts which once had taken place, even when the cause first provoking them had ceased to operate. Very frequently the repetition of a paroxysm does not occur, in consequence of a withdrawal of the causes; this is countenanced by the fact, that removal from an infected district cures the disease in numerous instances.

M. Brachet has paid some attention to the phenomena of intermittents. Basing his theory upon the peculiar views which he takes of the offices and connections of the two nervous systems, the cerebro-spinal and ganglionic, he attributes the primary lesion to their derangement, to the exclusion of irritation as understood by the physiological school. The ganglionic system presides over all the actions of organic life, as nutrition, secretion, &c.; while the nervous system of relation has charge of the connection with the exterior world. According to him, the phenomena of intermittent fever, are such as can only be produced by derangement of the healthful influence of the first communicated to the second; and no matter whether the modifying impression is made externally by atmospheric or physical agents, or takes place internally by marsh miasm, the first effect is produced on the nerves of the organic movements. That the result of this impression is not inflammation, he proves by the following experiments. Towards the end of October, 1822, he took for seven nights in succession, at midnight, a cold bath in the river Saone. The first bath was of a quarter of an hour's continuance; the second half an hour; from this he went on protracting the time, until he was enabled to remain in the water a whole hour. After each bath, he laid down in a warm bed, and underwent considerable reaction, with increased warmth, followed by profuse sweating; after which he went to sleep. At the expiration of seven days, M. Brachet omitted his experiments; but was surprised to find, during the

following day, that between twelve and one o'clock P. M., all the attendants of a true intermittent paroxysm made their appearance. As he experienced no inconvenience during the interval, he allowed this artificial fever to proceed, and experienced six distinct attacks. Upon the seventh night following the last bath, he was called upon to ride some distance upon professional business, a short time prior to the expected invasion; the exercise thus taken produced excitement of his system, which was kept up by placing himself near a large fire, and from that time no accession reappeared. This account corroborates, in a measure, the statement of M. Roche, that intermittence of cause will produce a habit, more or less difficult to counteract, in proportion to its fixedness. In speaking of these conclusions of M. Brachet, it is understood that the paroxysm is simple in character, and unaffected by organic lesions which would modify its type, and be productive of such complications as are found in these fevers of serious grade.

Malignant intermittents assume forms which are characterized by acute symptoms, arising from serious lesion of some particular organ. If it be the brain, there will exist phrenitis, apoplexy, &c. If the heart, the various manifestations of cardiac disease; if the liver, hepatic derangement; if the lower bowels, dysentery may be the complicating attendant. The danger of these different complications is, of course, measured by the importance of the organ and the force of the attack.]

Treatment of Intermittents.

It was formerly a matter of high dispute among physicians, whether an intermittent fever ought to be immediately cured, or allowed to run its course. Many believed that the system is benefited by the disease—that the febrile symptoms, in fact, are the natural cure of some other disorder in the constitution—and they argue that curing it must be hurtful. Some still assert that the disease will cure itself; and therefore, that it is improper to apply any remedies, except laxatives, to keep the bowels open.

The best maxim in physic is, to get rid of diseased action as quickly as possible, as there is no saying what mischief is to follow in the train of consequences. "There could not be a moment's hesitation," says Dr. Fordyce, "in determining to restore the patient to perfect health at once, were there any remedy or mode of treatment that would certainly prevent the returns of the paroxysms of a tertian intermittent, and take off the symptoms remaining after the crisis, so that no other disease should follow. But there most undoubtedly is no medicine uniformly efficacious, or that always leaves the patient in tolerable health, and secure of not being destroyed by the remains of the disease, or by any other disorder arising in consequence of it."—"Were there any such, why should different practitioners attach themselves to particular varieties of bark; recommending the brown, the yellow, or the red, with such decided preference? Why should they prefer arsenic or zinc, if any one were uniformly successful?"

The discovery of such a remedy has always been a great desideratum; and although no one remedy has yet been found out, I believe bleeding, in the cold stage, conjoined with laxatives, and the occasional use of the sulphate of quinine, to be as certain a mode of treating intermittents, as any other set of remedies can be said to be certain in the treatment of any other class of diseases.

Treatment in the cold stage.—As the cold stage demands different management from the hot, and both of these from the sweating stage, and all these from the intervals between the paroxysms, I shall treat of the means to be used in each stage, and then describe the plan which ought to be adopted in the intervals, to prevent a return of the complaint. In the cold stage, which generally lasts from half an hour to two or three hours, the first thing to be done is to endeavour, by every means in our power, to restore the heat of the body, and to relieve uneasy feelings, with a view to shorten its duration, and bring about reaction. Hot applications; additional bed-clothes; warm drinks; stimulants; opiates and æther, have been strongly recommended—with how little success, every experienced man can testify. The best method of applying heat is, to surround the patient with bottles filled with hot water; and it affords considerable relief, when a sufficient degree of heat can be applied to the epigastric region. It appears to be more efficacious than the general warm bath, in which I have seen the patient shiver, and complain loudly of cold, when the bath was heated above 100°. It is a common plan to give a bumper of gin or brandy, with some pepper to create reaction, and cut short the cold stage; and there can be no doubt that it has sometimes succeeded; but I have seen much injury ensue in many cases. This enables us to account for the horror entertained by the older writers, at cutting short the cold fit, because it was never attempted by any other means than by ardent spirits, large doses of opium, and æther. Dr. Gregory used to mention, in his lectures, two cases of violent epistaxis, succeeding to doses of brandy and pepper, which reduced the patients to great weakness. In the instances which fell under my own observation, and to which I have already alluded, fever and violent cerebral symptoms succeeded, and in two or three instances, local inflammations.

[Opium is sometimes given with decided effect to arrest the cold stage of intermittents. The usual method is to administer thirty drops of laudanum in a tumbler of hot lemonade, and if the desired result is not obtained in a quarter of an hour, give half the quantity in the same medium. The ague is in most instances, speedily arrested, sometimes in a few minutes, and followed by the hot stage, which latter is rendered shorter and more tolerable by the opiate treatment.

Emetics also assist in abridging both the duration and severity of agues, nor is there any objection to the use of ipecacuanha or mustard for this purpose. There is often a disposition to vomiting; and by promoting it, the stomach may be relieved of undigested food or irritating secretions, and becomes better prepared for the reception of curative remedies at the close of the paroxysm.]

Bleeding, in the cold stage, will, in a great majority of instances, cut

it short; in fact, it will rarely fail in stopping the existing paroxysm, and, on many occasions, it has prevented a return of the disease to which the patients had been long subject, and by which they were nearly worn out. It is difficult to determine what quantity of blood it will be necessary to draw in any given case; sometimes it requires twenty-four ounces; I have known three ounces suffice, and, in one case, an ounce and a half produced the full effect. The larger the orifice in the vein, the greater is the chance of arresting the disease at a small expense of blood; but, in many cases, the operation is attended with considerable difficulty, from the convulsive tremors which affect the whole body. I was once successful in arresting the disease by bleeding, in a cold stage which had continued twenty-six hours; but I regard this as an extreme case. The blood sometimes only trickles down the arm; and, as the system is relieved, the stream becomes larger and stronger, till at last it springs from the orifice, and frequently before six ounces are taken, the patient will express relief from violent pain in the head and loins, and it will soon be observed that he breathes more freely. The tremors become slighter and slighter, and, by the time a few more ounces are abstracted, they will cease altogether, and with them will vanish the painful sensation of cold. The pulse will be found stronger, and a gentle moisture will be observed on the body. If the patient be properly managed with respect to bed-clothes, neither hot nor sweating stage will in general follow. Most of the patients who have been treated by myself, or by my pupils under my immediate inspection, have fallen asleep immediately after the operation; but some have even got up and dressed themselves.*

I wish to impress upon the minds of my readers, that by venesection in the cold stage of intermittents, we stand upon vantage ground, by affording our patients the benefit of the following circumstances.

1*st*, The injury which in many cases results from the continuance of the venous engorgement, which so constantly leads to organic diseases, is avoided.

2*d*, The danger proceeding either from the want of sufficient reaction, or from its excess, is also avoided.

3*d*, The practice prevents debility, in a direct manner, by saving the vital fluid, as well as by materially shortening the duration of the diseased action.

4*th*, The chance of a return of a paroxysm is diminished; or if it should recur, the force of the attack will in general be weakened; and in that case a most important point will be gained, by affording an opportunity for the administration of other remedies, as bark or arsenic, which might previously have been exhibited in vain.

5*th*, Experience has also taught me, that bleeding in the cold stage

* [The author, in support of his views of the advantage and importance of bleeding in the cold-stage of intermittent fevers, has given a condensed history of numerous cases treated in this way, both in Europe and in India. Though these cases are published in our last American edition, we have thought it unnecessary to reprint them on the present occasion, inasmuch as the author's views are sufficiently elucidated without them; and also because the treatment in question, however appropriate in the apoplectic or congested state of vital organs, is seldom requisite in the management of the common forms of intermittent fever in this country.]

is far more efficacious than bleeding during the hot stage, or in the intervals. Several cases are quoted, in which bleeding was had recourse to in the hot stage to moderate threatening symptoms, but without preventing a return of the disease at the regular period; and in these same instances, bleeding in a subsequent cold fit, had the effect, not only of stopping the existing paroxysm, but of preventing its return.

If any other evidence were wanting to show the advantage of a radical change in the treatment of intermittent fevers, it will be readily found by contemplating the results which befell one of the finest armies Great Britain ever sent from her shores, and which went to Walcheren on the 5th July, 1809. The prevailing disease was intermittent fever, and in the course of six weeks, 8000 sick were sent to England, and 3000 more soon followed. While only seven officers and ninety-nine men were killed in action during the whole campaign, we find that forty officers and 2041 men died from disease. It is further stated in the official returns laid before Parliament, that several months after the return of the army, there were on the sick list 217 officers, and 11,296 men! All this took place, notwithstanding the *scientific* employment of bark in every form.

A curious and an interesting fact was communicated to me by Dr. Foot, (who served with the 17th regiment in India,) when he did me the honour to attend my lectures—that some Persian physicians apply ice to the surface of the body in the cold stage of intermittents, and, it is reported, with good effect. I have also heard that it is a practice with some in India, to use the cold affusion.

It is proper, also, to mention the plan of preventing the paroxysm upon the first appearance of its approach, by applying tourniquets to the extremities, which was first noticed by Dr. Kellie, in the 1st and 2d volumes of the Annals of Medicine.* [After many experiments this gentleman came to the following conclusions: 1. If during the cold stage of an intermittent, the tourniquet be so applied as to obstruct the circulation in either the arms or legs, the hot stage will follow in the short period of three minutes. 2. The cold stage may be wholly prevented by applying the tourniquet before the paroxysm begins. 3. The result of thus preventing or abridging the cold stage, is to render the hot stage shorter and milder. Ten or fifteen minutes' pressure with the instrument is sufficient to produce the desired effect; and it was found that a more protracted compression tended to defeat rather than promote the desired object.] The tourniquets appear to act, by confining the blood in the extremities, and preventing so much at least of the congestion in internal organs.

Treatment of the hot stage.—The best treatment which can be pursued in the hot stage, is to remove the bed-clothes as far as the season and the patient's feelings will admit; to sponge the extremities with water; to use cold drinks; and, in fact, to employ every means which can diminish the temperature of the body. If there be symptoms of local inflammation, bleeding is to be had recourse to, either

* This curious remedy is mentioned by Boisseau, p. 523, as if it were the original invention of Lallemand.

general or topical, which has always been employed by judicious practitioners in such circumstances. I need not speak of febrifuge and diaphoretic mixtures, which are very good for the druggist, will assist in filling the pockets of the routine practitioner, and suit the notions of a symptomatical physician. It is more than doubtful, whether such medicines ever diminished the violence, or shortened the duration, of the hot stage of an intermittent.

Treatment in the sweating stage.—When the sweating stage commences, it must be encouraged until the uneasy feelings are relieved, or at least mitigated. Great injury is done by allowing patients to perspire longer, by which they are not only unnecessarily weakened, but the subsequent paroxysms of the disease are in general rendered more violent. The best way of arresting this stage, is to change the linen, after drying the patient carefully with towels and to place him on a couch. A second paroxysm has been frequently traced to a chill, occasioned by the coldness of the damp clothes, towards the termination of the sweating stage. Should there be no marks of any local inflammation, the patient may be offered light nourishing food, and even wine if necessary.

Treatment during the interval.—The first thing to be done, is to determine whether or not there exists any local disease, and if so, what is its nature and seat. Medical men have hitherto deceived themselves very much by treating this disease, as well as many others, merely from its name; because it is intermittent fever, bark must be prescribed! Another error, into which they have fallen, is, that they imagine the only organic lesions which take place exist in the liver and spleen, whereas, the brain and the lungs suffer, perhaps, more frequently. I have seen fatal affections of the heart arise in the train of consequences from intermittent fever. Bronchitis is also of frequent occurrence. These facts are stated from my own experience; and, except the last, respecting bronchitis, they are fully proved by the cases and dissections recorded by M. Bailly, as well as by the facts which are to be found in the works of Pringle, Cleghorn, Chisholm, and others.

If any organic disease exists, bark will be injurious, until it be either mitigated or entirely removed. Sir James Fellowes (Reports, page 350, states, "that the dissections of those who died, discovered to us a series of morbid appearances of which we had no suspicion, and they enabled us to account for many of the phenomena of the complaint, and to form a more rational plan of treatment than that which we had at first adopted." M. Bailly came to the following practical conclusion; that he bled, to dispose the system to receive the action of the bark, and that he has suddenly, by such means, subdued intermittent fevers, which had previously resisted all other means; and he assures us at page 366, that although he would not altogether proscribe bark, yet he believes that bleeding alone, in most cases, above all, in our climate, would bring about a more substantial recovery. He also makes a very strong statement at page 375. "*In the commencement of an intermittent fever,*" says he, "*one is almost always sure to destroy it by a large bleeding;*" and he shows that this disease is not so fatal to poor debilitated subjects, as

to those who are better off, and better fed. For example, the mortality at Rome, where great misery prevails, is 1 in 26 of the whole population; whereas, in the marshes in the neighbourhood of the Sienne, the mortality is in the enormous proportion of 1 to 10 of the whole population. He also assures us, at page 383, that we are not to dread debility; that those patients who were bled by himself abundantly, and at short intervals, not only were not depressed by this debility, but acquired in a few days a state of strength and health which they had not known for a long time. Had this distinguished author been aware of the safety and success of the plan of bleeding in the cold stage, he would not have made the complaint, that in the worst intermittents, that is to say, those in which the patients died in the cold stage, he had "not time to employ bleeding." Speaking of the advantage of bleeding in this disease, he says at page 383 :—"*Car j'en excepte toujours les fièvres intermittentes pernicieuses, dans lesquelles on n'aurait pas le temps d'employer la saignée, si on ne se rendait pas maître de mouvement nerveux par ce précieux anti-périodique.*"

It is in such instances that the great advantage of bleeding in the cold stage is most apparent. In some of M. Bailly's cases, stimulants and bark, in considerable quantities, were given without benefit, and in the majority the pulse is described as having been strong.

Bark has been long in use, and although I never denied that it had virtues, yet, when given in substance, in the large doses which are admitted to be necessary, I have so frequently seen it do mischief, that the question has often suggested itself to me, whether it was not more injurious than beneficial? It seems to be injurious in many cases, by overloading the stomach and bowels with indigestible ligneous fibre, and I have seen it cause serious intestinal irritation, as displayed by griping pains in the bowels, diarrhœa, and painful tenesmus. On examining the stools in these cases, they seemed chiefly to consist of bark, with a considerable quantity of mucus, occasionally tinged with a little blood. That preparation of bark which is known by the name of the sulphate of quinine, is the greatest improvement in modern pharmacy, and the knowledge of its beneficial effects in simple intermittents, affords sufficient proof of the virtues of the substances from which it is extracted; yet this remedy, all-powerful as it is, is useless in the cold stage, and must also fail in cases complicated with organic disease. Dr. Fordyce, who had great experience in the treatment of this disease, states, that "*in many cases of perfectly regular tertians, the most skilful practitioners have been baffled in the use of Peruvian bark, and every other medicine recommended as useful in this disease.*" My youthful readers may rest assured, that the same observations are equally applicable to the sulphate of quinine. They may rest satisfied that no means hitherto devised can be universally successful; and the cases have been already pointed out, in which the sulphate of quinine may be expected to be beneficial, as well as those in which the same happy result is not to be looked for. It cannot be too strongly impressed upon the mind that experience has taught me to beware of

any preparation of bark while the patient has fever, complains of oppression at the præcordia, or has a loaded tongue.

Sydenham's recommendation, of prescribing bark in the intervals, has been supported by subsequent experience. Bark is given in substance, in decoction, infusion, and in extract; but no one who has seen the superior efficacy of the sulphate of quinine, will, I am persuaded, if he can obtain it, ever use bark in any of the other forms. With respect to the doses of quinine, Andral states that Lerminier has prescribed it in a very great number of cases, in two doses of three and four grains each, with an interval of half an hour, four or five hours before the paroxysm. And he assures us, that given in this manner, it has almost always cut the fever short. In some cases, the fever has been equally prevented, by the exhibition of the quinine twelve or fifteen hours before the paroxysm. Once the quinine was given by accident in the middle of the cold stage, and that paroxysm was neither weaker nor more intense than the preceding one. The greater part of those individuals who took the two doses of three grains each had slighter paroxysms than before; but the fever was not suddenly cut short, as it was in those who took the two doses of four grains each. He also states, that in two cases the sulphate of quinine did not subdue the fever till the dose was increased to twelve grains; and Lerminier gave three individuals twenty grains each during the day, stopping the fever without producing any accident. But with several other patients, to all appearance in the same circumstances with the preceding, a few grains created troublesome nervous symptoms, such as violent palpitation of the heart; oppression; the globus hystericus; general uneasiness; flying pains in different parts of the chest and abdomen.*

The manner in which I have prescribed quinine is, to give three doses of five grains each, with half an hour of interval immediately before the expected paroxysm; or three grains every half hour, beginning about three hours before the expected paroxysm. I have taken three and five grains, without feeling any thing unusual, and afterwards ventured upon ten, but a violent headache followed, which continued for nearly three days; I have given ten grains, however, to others, on two or three occasions, without producing any such effect.

Arsenic has been long in use in intermittent fever, and there can be no doubt that it has often proved serviceable. Fowler's solution is the preparation now in general use, under the name of *liquor arsenicalis;* the dose is from two to twenty drops twice or thrice a day. Other tonics and bitters have been recommended; the best of these is the effusion of quassia. Opiates have been exhibited immediately before an expected paroxysm, sometimes with benefit, but they generally produced violent headache. Laxative medicines, to keep the bowels open, form an essential part of the treatment; and in general, the stools should be examined. I have met with cases which resisted every remedy, till it was ascertained that the patients had given erroneous accounts respecting the number and appearance

* Clinique Médicale, p. 488.

of the stools; and upon the bowels being put in proper order, the disease has given way without further trouble. From the idea that intermittent fever is a disease of debility, many practitioners give nourishing and stimulating diet, with wine, in all cases; but after the above pathological account, and the appearances found on dissection, a word more need not be said to show the impropriety of such treatment. In some instances, nourishment and stimulants prove beneficial, where there is no local disease; but in others, such treatment must prove prejudicial. The patient should be clothed according to the season of the year, and the temperature of the climate. He should avoid exposure in bad weather, (particularly in our climate during the prevalence of easterly winds,) and keep to the house after sunset, till he be sufficiently recovered.

[With regard to the exhibition of quinine, some remarks remain to be presented. In this country it is seldom requisite to administer more than twenty grains during the first interval, and half that quantity during the following one, to effect a cure. Instances, however, frequently present themselves, in which the exhibition of a larger quantity than is necessary to attain this end, would be positively injurious; and practitioners have adopted the safer plan of giving a grain or two grains each hour, and limiting the quantity to the number of grains above specified. It has been stated that this indispensable remedy sometimes fails: it is, therefore, important to inquire into the causes of failure, and how they may be avoided. With regard to blisters, and all stimulants, in fevers, there is said to be a specific point in which they are to be employed: if they are applied before this has been attained, an increase of disease is the consequence. This point is a state of reduced local or sympathetic excitement in organs which, when stimuli are applied to them, will not cause reaction to be transmitted from one to another. Should the stomach be irritable, the quinine will most probably be rejected: but even should this not happen, it is liable to cause sympathetic irritations which may prove extremely embarrassing; as, for example, increase of fever, determination of blood to the head, oppressive constriction of the chest, &c. It is, therefore, necessary first to obviate the general excitement; and to prepare the stomach and bowels by the milder cathartics, and such other means as the occasion may demand, in order to obtain a *perfect intermission* before we administer the quinine.

Cases, however, not unfrequently occur, in which the intermission is complete, but owing to irritability of the stomach or repugnance to medicines, the patient cannot take by the mouth a sufficient quantity of quinine to prevent the expected paroxysm. Under these circumstances we have two resources,—injection into the rectum and the endermic application of the medicine. For the purpose of injection, ten or fifteen grains of the sulphate of quinine should be dissolved in four ounces of mucilage of gum arabic or flax-seed, and administered at a single operation; and this must be repeated three or four times at intervals of three, six or eight hours, according to the duration of the intermission.

The endermic plan is equally, but not so speedily available. A

blister is to be applied to the epigastrium during the apyrexia, and the vesicle clipped at several points without removing the epidermis. To this vesicated surface apply six or eight grains of powdered quinine, (either alone or mixed with a little starch,) four times a day, for two successive days. I have seen this practice succeed most happily when the system had resisted all other modes of treatment; and if the patient remains quiet, the irritation of the surface is not distressing, and can always be relieved by the application of a poultice without removing the quinine.

There is a tendency in intermittents to return in about two weeks after the paroxysms have been stopped; and in order to break up this liability, I am in the practice of anticipating the paroxysm by recommencing the use of quinine two days before its expected recurrence; and by pursuing this plan two or three times at equal intervals, the morbid habit may, in most instances, be speedily eradicated.

Dr. Hartle, of Port Spain, in the West Indies, has made extensive use of piperine as a substitute for quinine in those cases in which the latter has proved inefficacious. Seizing the first indications of the intermission, he gives three grains every hour until eighteen grains have been taken, and during the next following intermission, he repeats the same dose every three hours. Dr. Hartle speaks in the strongest terms of commendation of the piperine, which in certain cases he combines with blue-pill; and we may here remark, that the latter may often be administered with quinine to great advantage, especially in cases which present a persisting gastric irritation, as manifested by a furred tongue, nausea, &c.

The bark of the common dog-wood (Cornus Florida,) is extensively used in some parts of the United States as a substitute for the preparations of bark. It is chiefly given in strong decoction.]

MALIGNANT REMITTENT, OR YELLOW FEVER.*

This is a fever in which there are remarkable remissions, followed in a few hours by exacerbations; so that it bears some resemblance to an intermittent. This circumstance has led Cullen to identify them; and in his definition of intermittents, it will be observed that he has embraced remittents also;—of the last he gives no separate definition. Remittent fever is a disease of warm climates, and when the skin is yellow it has obtained the name of yellow fever. The milder forms depend upon general functional derangement, which runs more quickly into disease of structure than is observed in the fevers of this country. Remittent fever has a wide range of cha-

[* The author, in his arrangement of fevers, page 51, and again in this place, uses the terms *remittent* and *yellow fever* as synonymous. This nomenclature is so opposed to the received opinion in this country, that I have prefixed the word *malignant* to the heading of this chapter, in order to prevent ambiguity. The subsequent chapter on *continued fever*, embraces also the history and treatment of various modifications of remittent fever.]

racter; modifications of the complaint occur without end, according to the organ or organs affected, the character of that affection, the constitution and habits of the patient, and the locality of his place of residence. In its severest form, the viscera of the three great cavities are implicated from the first onset of the disease, and there is no complaint in which the appearances on dissection may be so truly predicted.

Symptoms.—The disease begins sometimes with great excitement and without rigor; on other occasions, the rigor is severe. Generally speaking, there is some previous indisposition, such as headache and giddiness; want of appetite; symptoms of indigestion; oppression at the præcordia; constipation of the bowels; a feeling of debility and fainting, and bad nights. Sometimes it happens that the patient dies before reaction takes place, but this is comparatively rare; sometimes cases occur where the seizure is sudden and unexpected—the patient is struck down, as it were; he loses his senses; irritability of the stomach soon appears; black vomiting ensues, and he is carried off in the course of thirty-six hours. "It often occured," says Dr. Fergusson, "to a well-seasoned soldier, mounting the night-guard in perfect health, to be seized with furious delirium while standing sentry, and when carried to the barracks, to expire in all the horrors of the black vomit, within thirty hours from the first attack." This, it must be confessed, is the most severe form of the disease.

There are many varieties, concerning each of which it is impossible to treat in a work like the present. The most frequent form of the disease is that in which, after the rigor, which may be more or less severe, there quickly succeed violent reaction, heat of skin, and determination to the head, announced by the following well-marked symptoms: face flushed; conjunctiva injected, the eyes look heavy, and often feel burning; the expression of the countenance leads an experienced person to judge correctly of the severity of the attack. The respiration is hurried, and frequently laborious, often attended by cough, and the patient occasionally sighs, and seems to gasp for air. The head is thrown about from side to side; and the patient is excessively restless from anguish. Intolerance of light, and severe darting pains in the head, are sometimes complained of, as also in the small of the back and down the thighs. There is sometimes a burning pain in the pit of the stomach; exquisite tenderness in the right hypochondrium; unquenchable thirst, with incessant retching of every thing taken into the stomach. The fluid ejected is mixed sometimes with much bile, and accompanied with a discharge of flatus, belched up with great violence; the urine suppressed. The pulse is various even in people similar in age, constitution, strength and habits; but in plethoric subjects who are seized soon after their arrival in warm climates, the pulse is quick, full, and bounding for a few hours, at least, after the reaction is fully developed. In some it is quick and not strong, and in others it is not particularly quick, and it is sometimes very irregular. The tongue is furred, perhaps red, but soon becomes parched and dark-coloured. These symptoms indicate the first stage of this fever. An anxious and distressed countenance, redness and sense of heat in the eyes, flushed face, intense headache,

quick or laborious respiration, burning pain in the region of the stomach, with great thirst and excessive vomiting, announce a formidable disease; but in my opinion, not so formidable and hopeless as another variety, in which there is some insensibility from the first with coma, weak and oppressed pulse, and cold extremities.

The duration of the first stage is very uncertain. In severe cases it lasts from twelve to eighteen hours, but in those which are slighter, it may go on for three, four, or five days.

In the second stage, the skin and eyes acquire a yellow tinge; the heat subsides; the head is confused, or delirium appears; the breathing becomes quicker and more anxious; the eyes begin to look glazed; the pulse sinks; the retchings are rather more violent; the matter vomited becomes thicker and begins to look dark; and if the person be sensible, he desponds; he occasionally falls asleep, but instantly awakes in great terror; sometimes he starts out of bed furiously delirious, but instantly falls down in a tremor upon the floor; the tongue is always parched, and in general covered with a dark fur; and the skin becomes clammy. In this stage, as well as in the first, there are often cramps in the belly and legs, which distress the patient much. The duration of this stage is also uncertain.

The first stage sometimes terminates by a remission of the more urgent symptoms, when the patient and his friends indulge the fond hope that he may recover; indeed, these remissions often occur, but the deception is soon manifested by the recurrence of all the symptoms in an aggravated degree. In the second stage, there are remissions, also, particularly towards its termination, when the hope of recovery is again entertained; for although the vomiting be more frequent and more copious, all uneasiness generally subsides, but the pulse sinks, becomes irregular, and intermits; although it sinks in strength, yet it increases in frequency. Nothing is retained in the stomach; the matter vomited is of a dark colour, resembling coffee grounds, and is termed the "black vomit." The breathing becomes more laborious; the tongue has perhaps lost its fur; it is shrunk, dry, and red; the eyes are sunk and glazed; the whole features are sharpened. As death approaches, the limbs become cold as marble; there is a troublesome hiccup, which, perhaps, has existed throughout the whole of the second stage. Hæmorrhage sometimes takes place from different parts of the body; the abdomen is frequently as tense as a drum; and death steals on slowly, or takes place suddenly.

The symptoms in each of these stages must of course vary much according as the brain, the lungs, and contents of the abdomen, are more or less affected. In some instances, the functions of the brain remain undisturbed, even to the very conclusion of the last scene; at other times, when there is extensive disease within the head, the delirium is more or less ferocious, or the patient is comatose; he exhibits a variety of nervous symptoms, such as convulsions, rigidity of the extremes, tremors, subsultus tendinum, and picking the bedclothes. Where the head is more slightly affected, the senses are only occasionally obscured; the patient may be said to be lethargic rather than comatose; he is easily roused, and, when roused, his countenance has a drunken or besotted appearance.

If the lungs be affected, the breathing will be altered from that of health; mere dyspnœa may, however, exist, without any structural lesion of these organs. There may be cough also, attended or not with pain, followed by expectoration. I never saw a case of remittent fever in which the functions of the chylo-poietic viscera were not very seriously involved, as indicated by nausea and vomiting, thirst, pain in some region of the abdomen, meteorism, and altered condition of the stools.

It has been mentioned that the functions of the kidneys seem to be almost, if not altogether suspended, little or no urine being passed during the course of the disease, and upon dissection the bladder is usually found much contracted, as in cholera.

Another variety frequently met with in very sickly seasons, is that in which a person, after passing several restless nights, is able to go through some of his duties for the first two or three mornings; but this costs him a very great effort. His weakness increases, the bowels are out of order and constipated, or after having been for some time so, he may now complain of diarrhœa; he feels alternate chills and heats, but the least exposure makes him complain of cold; his stomach now begins to get irritable, he takes to bed, the senses become rather obscured, the breathing is affected in no other way than being short, and he cannot, even when he makes an effort, distend his lungs freely; he complains most of oppression at the præcordia. Sometimes a remission of most of these symptoms takes place, and his skin, which was never hot, and his pulse, which was never full, quick, and bounding, are now felt to be nearly natural; but in a few hours the symptoms become aggravated. The patient is more inclined to be comatose than restless, he complains now, perhaps, of violent pain in some region of the abdomen; the breathing is oppressed, the extremities cold and damp, while the surface of the abdomen and thorax is hotter than natural; hiccup comes on, the coldness steals onwards to the trunk, the pulse sinks, the countenance looks ghastly, and the patient's fate is quickly sealed.

In a work like this, it is impossible to describe all the varieties of remittent fever which occur in warm countries. It will be sufficient to repeat, that sometimes the brain is the organ chiefly affected, when the symptoms are what may be called cerebral and nervous. In another set of cases, the disease is concentrated on the lungs, when the symptoms will vary accordingly. In another set, the different organs within the abdomen may be affected, producing other varieties; and of these there may be various modifications and complications.

Appearances on dissection.—These appearances vary much, according to the duration of the disease, and the organ which has been chiefly affected; some dying in the first stage, when we must not expect to see much, if any, appearance of inflammation. Some patients may have been largely depleted, and we shall therefore see less vascularity in their bodies than in those subjects who have lost no blood. Some individuals may have died of remittent fever, with organic lesions produced by previous diseases. All these circum-

stances must be kept in view when we are employed in the investigation of morbid appearances.

Some blood is generally found in the heart and large vessels near it, and also in the lungs, if the individual has not survived long, or been largely depleted. Pleuritic effusions are sometimes seen, and recent adhesions; the lungs themselves, in some instances, show various stages of inflammation, and the bronchial tubes are extensively diseased. In the abdomen as in the thorax, various lesions are occasionally observed, viz., the results of peritoneal inflammation, mortification of the bowels; the liver pulpy, soft, very yellow, and easily broken down; sometimes its structure is completely destroyed, and it has been described by some authors to be in a state resembling "rotten cork." The spleen has been found altered in a similar manner. The stomach and bowels, when slit open, are found to contain more or less of the dark-coloured matter which has been vomited during life, and the mucous membrane very vascular, of a deep red colour, not in depending portions only, but over a great extent of surface, sometimes throughout the whole.

Until lately, it was not much the fashion to examine the mucous membranes minutely; and we still want information on the following points:—Whether the vessels which make such an appearance are in the mucous membrane or not? Whether the whole coats of the intestine are discoloured or not? Whether this colour is owing to inflammation or infiltration? At what particular points ulcerations are most frequently met with, together with a particular description of the appearances of the ulcerated surfaces, and the adjacent mucous membrane? And it would confer a lasting favour upon me, and a benefit on science, if some enthusiastic pathologist would take the trouble to inject portions with vermillion and size, and send them to this country, together with sketches showing the recent vascular appearances; if to enrich my rapidly increasing museum, the greater obligation will be laid upon me, and no remuneration which it is in my power to bestow, will be thought too great a sacrifice for such a boon.*

[The late lamented Dr. Lawrence has left the notes of fourteen cases of yellow fever, examined by him, in the city of New Orleans during the years 1817–18–19—which contain the following interesting facts In all except one, it was found that the stomach presented the appearances of active inflammation, particularly throughout the mucous surface of the larger curvature. The case which formed an exception, exhibited the stomach of "a dark dirty colour in some parts of its internal surface. The small intestines were, in every case, in a state of inflammation, particularly the duodenum, which, in several instances, was marked with dark livid spots. The stomach of one individual was "very large, and distended with air, containing some black, coagulated stuff mixed with a mucous substance. This mucous substance was very copious, and much resembled the villous coat of the stomach. In fact I had no doubt, but that some of it was the villous coat; as this coat, particularly about the middle

* It may be mentioned, that nothing affords me greater pleasure than to spend an hour in my museum with any pathological inquirer.

of the stomach, was remarkably thin, and could be taken off with great ease. In some places were dark-looking patches, intimately united, resembling the coagulated substance in black vomit. I soon had scraped off the mucous coat from these places, and the dark matter was removed with it, as if it was the mucous coat itself, merely changed in colour. This would lead to the inference that the black vomit is nothing but a rejection of the disorganized villous coat of the stomach." The lungs and other viscera were generally found in a sound condition, with casual lesions, however, some of which were attributable to former disease, others to that which was of more recent origin; but there was no uniformity of occurrence.

Dr. Jackson, in his history of the epidemic yellow fever which invaded Philadelphia in 1820, has presented the result of the *post mortem* investigations which were then made. The following details are worthy of attention. "The brain did not exhibit marks of active inflammation. The veins of the dura and pia mater were mostly turgid with blood. Effusion of serum under the dura mater was found in three cases which had terminated with convulsions, and a larger proportion of it than ordinary appeared in the ventricles. The substance of the brain in no instance displayed any strong marks of disease. The viscera of the thorax presented no appearances that indicated their partaking largely of the diseased action of the system. It was among the abdominal viscera, that was to be discovered the evidence of the fatal storm, and of these the stomach was a uniform and principal sufferer. This viscus presented different appearances. I was much surprised to find it, on the first examination I made, without any marks of inflammation. The villous coat was of a rather whiter aspect than is usual, but a considerable quantity of black, coffee-like fluid was contained in the stomach. In eight or ten instances a nearly similar state of that organ was discovered, there being no inflammation, or a slight blush, mostly about the cardiac portion, being alone observable. The flowing out of the matter which constitutes black vomit, appears to have relieved the loaded vessels in those cases and to have terminated the inflammation; but the death of the organ still ensued. It would seem, as I believe Dr. Physic has remarked in his dissections, that the formation of black vomit is an effort of nature to terminate violent inflammation of the stomach. But in the far greater number of instances, the stomach was highly inflamed. The inflammation was always confined to the villous coat, the muscular and peritoneal escaping the affection. It was not uniformly diffused over the surface, but would be deeper in one part than another. The cardiac portion was generally more inflamed than the pyloric, and sometimes a greater intensity was observable between the superior and posterior surfaces, a well-defined and distinct line separating them. No erosions or abrasions were discovered, though the villous coat was at times nearly livid, and broke with ease upon pressure with the nails. The vessels of the stomach were so turgid with blood, that portions of it cut out and dried, have formed very perfect preparations, exhibiting the ramifications of the vessels into their minutest divisions. The matter constituting black vomit was met with in every examination.

In two instances, in which it had been thrown up during life, with the usual characters, a fluid more resembling blood was found after death." The liver varied in appearance, never constantly presenting the same aspect: it was usually gorged with blood, but not always. The gall-bladder was sometimes distended with bile the colour and consistence of tar. In two instances, the internal coat and lining membrane of the ductus communis were inflamed. The spleen and pancreas generally natural.

"The intestines most commonly were more or less inflamed, not in a uniform manner but in patches. They were in one subject contracted in some parts so much, that the little finger could scarcely be passed through them, and were swelled and distended in other parts. Three or four introsusceptions were formed in this case, but which were unattended with any inflammation at the spot where they existed. This patient had taken large doses of calomel and had died strongly convulsed. The intestines always contained considerable quantities of black mucus, bearing a resemblance to the flocculi of black vomit. In some cases it was evidently sanguineous. The urinary bladder was sometimes much contracted and contained no urine; at other times small quantities were found in it.

"The whole of the system of the vena portæ was always distended with blood. It was at first supposed that the blood, being thus fluid, was in the dissolved state so often mentioned by writers. But Dr. Hewson, wishing to make some experiments, collected portions of it in cups. In the course of ten or fifteen minutes, it was firmly coagulated; and this was found in subsequent observations invariably to occur. The notion, therefore, of the blood being dissolved in this disease, frequently described by writers as observed in their dissections, is not correct.

"The opinions that were held with respect to the nature of black vomit were various and loose, until the examinations instituted by Dr. Physic in 1798–99. It was demonstrated very satisfactorily, that it proceeded solely from the stomach, that it did not partake in the slightest degree of the nature of bile, which had been the commonly received doctrine; and in fact that the liver had no share in its production. Dr. Physic considers black vomit to be a diseased secretion from the vessels of the stomach. This opinion is entitled to great attention, and is rendered very probable by the arguments and experiments with which it is supported. But from the great turgescence of the whole portal system always found distended with blood, I am disposed to believe that the inflammation of the stomach and of the other abdominal viscera in this disease is venous, and not arterial, and arises from an engorgement of the veins extending to their minutest division and first origin. Should this view be correct, black vomit, it is not unlikely, may arise from a sanguineous effusion from the capillary extremities of the veins. The matter of black vomit does not maintain invariably the same characters, but recedes more or less from, or approaches to, an appearance of blood. I have seen several cases in which the discharge towards the termination became nearly sanguineous; and a similar fluid was also found in the intestines.

"Dr. Rhees, the resident physician at the city hospital, instituted a series of observations on the black vomit, with a solar microscope. Innumerable quantities of animalculæ were found to exist in it. A single drop contained many thousands, apparently a congeries of them. The black mucus of the intestines exhibited the same phenomena. When the fresh matter thrown from the stomach was examined, the animalculæ were alive, and in constant motion, but if taken from the dead subject, or inspected after standing some time, they were always dead and quiescent. Comparative examinations were made of the discharges from the stomachs of patients ill with autumnal, bilious, and remittent fevers, but no similar appearances were discovered."]

Causes.—It has already been shown that the extremes of cold and heat are not very productive sources of disease. Fevers are produced more by sudden changes of temperature, or by heat conjoined with moisture, than by heat itself, however intense. The state of the mind has also great influence, as well as the habits of the individual.

It has often been remarked, that there is great mortality among troops after their first arrival in a tropical climate. This is sometimes to be attributed to a want of due care on the part of the government, in choosing the season at which they ought to arrive at their destination. I believe a greater number of men will be lost during the first twelve months, if they are landed at the beginning of the rainy season, than after its termination; perhaps the loss will be double. Great care should be taken in the selection of the troops; none but well-seasoned soldiers should be sent out. Sir George Ballingall has written very strongly and sensibly upon this subject, in his excellent work on some of the diseases incident to the troops in India. No young recruit should be sent out to be made a soldier; all his drills and exercises should be completed in this country.

When troops arrive in a distant country after a tedious voyage, it is natural to expect that they will indulge themselves in many ways beyond due bounds. Cheap new rum, and an abundant supply of delicious fruits, attract their attention, and do incalculable mischief. Some men leave England in the utmost state of despondency, and it will, in general, be observed that they are the first victims. New comers are also apt to indulge in drinking too largely of cold fluids, and sitting in a thorough draft of air when the body is over-heated; in fact, it requires considerable time before a European obtains knowledge to manage himself properly. Some are fool-hardy, and take no care of themselves whatever; and I feel convinced, that an amusement in which young strangers too frequently indulge, known in the West Indies by the name of "*Dignity Balls*," causes many a death.

Many cases have come under my observation, in which fatal attacks of fever appeared to have been produced by inattention to the bowels; and I am convinced that it is a matter of the first importance to every one going to a warm climate, to keep his bowels open by gentle medicine. Repeated observation has induced me to believe that a person may very often be exposed to any or all the causes of fever, even in the most unhealthy situations, without being

affected, provided his bowels be in a proper state, his mind free from apprehension, and his habits good.

These are a few of the many causes of disease in warm countries, entirely independent of the influence of contagion, marsh miasm, and epidemic influence.

Pathology.—With respect to this part of the subject, I have little to say, except to refer to the general account already given of the pathology of fever. Remittent fevers have the same pathology as other fevers, only it will be found in general that the structure of more organs is involved than in the ordinary fevers of this country. But it may be stated, that no species of fever upholds the doctrines of Broussais more completely than the remittent.

Treatment.—There have been as great revolutions in the treatment of the fevers of warm climates, as in that of any other class of diseases. The supporters of the doctrines of putridity have, of course, always avoided bleeding even in the first stage, when they admit the existence of inflammation, for fear of the debility which they expect in the latter stages. They begin by clearing out the primæ viæ, and then have recourse to bark in very large doses without regard to the state of the stomach, local inflammations, or any other circumstances. This is the practice recommended by Clark, Lind, and others. They prescribe opium for the purpose of keeping the bark upon the stomach, and give wine and brandy in considerable quantities, with the view of supporting the strength, keeping off the stage of collapse, and preventing putridity. But it may be stated without fear of contradiction, that this practice cannot be too severely condemned. It should be recollected, that the stage of collapse must come on sooner or later. No person can pass from a state of fever into that of health and strength; and the longer it is postponed the worse will it be for the patient, whose situation very much resembles that of an individual in debt, who puts off the evil day from time to time by various means, and when his creditors meet at last, he is found without means to pay, whereas, had he disclosed his real situation sooner, the strength of his credit would have survived the shock without injury.

The late Dr. Chisholm, about the year 1793, introduced the plan of affecting the system with mercury as speedily as possible, employing bleeding in small quantity, and only occasionally, more with a view of enabling the system to receive the mercury, than as a powerful measure calculated to subdue the diseased action. Now my recommendation would be the reverse, to use bleeding early as the chief means, in cases which require depletion, and mercury afterwards as an auxiliary. The celebrated Dr. Rush bled and gave calomel to diminish the increased action; and the reason this practice did not maintain its ground is, that he trusted a little to the bleeding, and a little to the calomel, on the principle of gradually depleting the system. He rarely took more than ten ounces of blood at a time; and notwithstanding he repeated the bleedings from day to day, yet he never produced sufficiently decided effects upon the disease, although he sometimes took away from one hundred to one hundred and fifty ounces of blood. The practice would have been far more

successful, had he taken away twenty, thirty, or forty ounces at once.

When bleeding is thought necessary in this disease, it is trifling with the patient's life if the blood be not allowed to flow till some impression is made upon the disease, and upon the system; and it is impossible to determine beforehand the quantity which will produce one or other of these effects. This is the kind of practice which was pursued by myself and many others who were in the West Indies nearly thirty years ago; and it appeared to be attended with great success.

Some practitioners trust almost exclusively to the action of mercury, and in India more particularly, it is deeply to be regretted that a great waste of human life has consequently taken place. Some years ago, Dr. Haliday, of the Honourable East India Company service, was, by order of the Marquis of Hastings, put under arrest, and deprived of rank and pay, for showing, by most incontrovertible evidence, that in the general hospital of Calcutta, *the enormous quantity of* 26 *pounds of calomel were consumed by* 886 *patients:* And that under the painful digestion of this mineral, the proportion of deaths was 1 in about 6¾ of the whole sick list—whilst under a more rational treatment the mortality was reduced about one-half: In fact, that the mortality bore almost an exact ratio with the quantity of calomel exhibited. After a delay of many years, Dr. Haliday was restored to his rank by the express order, more than once repeated, of the India directors. This transaction has never been brought before the British public, but having carefully perused all the evidence, I have no hesitation in declaring that as a piece of persecution, from beginning to end, there is no parallel case to be found in the annals of any free country. Wherever the story is known, it must cause a blot, never to be effaced, upon the memory of the then Governor-General of India and all his advisers, military as well as medical.* The result of the practice of the rising medical officers in India has fully corroborated the statements formerly made by Dr. Haliday; and mercury is now not so much abused as it once was. And as pathological knowledge advances in India, which it is doing rapidly, mercury will be still less trusted to. It must be always kept in remembrance, however, that the liver suffers more frequently in the fevers of warm climates than in this country, and therefore mercury, under judicious management, cannot be altogether dispensed with.

In 1796, the deaths in the West Indies under Dr. Chisholm's mercurial plan were never exceeded, amounting to nearly one-half of the whole number of troops.

* The author regrets want of sufficient space to speak more fully of the transaction, but he cannot avoid annexing an extract from a letter addressed by the East India Directors to the governor-general, after full investigation. "In the mean time we authorize and direct you to remove the restrictions you have placed to the further employment of Dr. Haliday, unless stronger objections shall exist to his restoration, than those which have been reported to us in the proceedings under consideration. It appears to us, that your interference in the professional discussions which were brought under your notice, has been carried further than is desirable, or consistent with the improvement of medical science." Notwithstanding this communication, Dr. Haliday was doomed to undergo still further persecutions.

The bold and decisive use of the lancet in this disease has met with an able and influential advocate in Dr. Jackson, who was inspector of army hospitals in St. Domingo, and subsequently in the Windward Islands. This distinguished individual bled to the extent of thirty, forty, fifty, sixty, and even eighty ounces at once in the very beginning; and he repeated the operation within three hours, if the first evacuation had not been productive of permanent benefit; after this he gave calomel in doses of from five to thirty grains, repeated every third or fourth hour.

Bleeding has been strongly objected to, on account of the condition of the blood. In some cases it appears of a very dark colour, and streaked with red and bluish lines; it coagulates very imperfectly, sometimes not at all, and does not separate any serum. It is in the state commonly called "dissolved blood," and which announces, it is supposed, a putrid state of the whole body, and particularly of the fluids. This appearance does not deter me from recommending a repetition of the operation, as I have long been aware that it exists more or less in all severe cases of congestion. It has been frequently seen by my pupils, in cases of intermittent fever, in which I bled in the cold stage; and also in cases of congestive fever. It has also been noticed in Asiatic cholera, and a similar condition of blood may be seen in patients affected with the common cholera of this country, and has been observed in some severe cases of bronchitis.

Dr. Rush says he paid no attention to the dissolved state of the blood, when it appeared on the first or second day of the disorder; but repeated the bleeding afterwards in every case where the pulse indicated it. He states a fact which I can verify, that it is common to see sizy blood succeed to that which was dissolved. He states also, that he was never deterred by the presence of petechiæ from blood-letting, in cases in which the pulse retained its fulness or tension.

Although the necessity of keeping the bowels freely open in this class of diseases must be admitted, yet I had not been long in a warm climate before I observed the injurious consequences produced by strong drastic purgatives, and many individuals were lost by the constant irritation kept up by this means. The appearances on dissection, too, warrant me in cautioning practitioners not to persevere too long in using strong purgatives; there can be no advantage from moderating irritation and increased action, if these be immediately re-excited. The common purgative formerly used in the West Indies, was ten grains of calomel and a scruple of jalap. Emetics have been often extolled, but I believe every experienced tropical physician will agree with me in cautioning young practitioners against their indiscriminate employment; irritability of the stomach is one of the most frequent and troublesome symptoms, and once excited, it is always difficult, in many cases impossible, to restrain it. I have seen emetics exhibited, and the vomiting has continued till death, in spite of every remedy. The same caution is necessary with regard to those remedies that are employed for moderating the action of the heart and arteries. When in the West Indies, I have often regretted not having

a command of leeches, and am persuaded, that upon a proper representation, the government would take steps, at whatever expense, to secure a proper supply to the medical officers of the army and navy. There is no disease in which dissection reveals so many organic lesions, and the efficacy of abstracting blood in such cases by leeches is generally admitted, particularly after the severity of the disease has been broken by the lancet.

After the publication of Dr. Currie's work, cold affusion became generally used in remittent fevers, but much mischief followed, and it has fallen into disuse. Dr. Currie has distinctly stated, that it is not admissible in cases where there is any internal inflammation; therefore, in the majority of cases of the fever now under consideration, the practice will be found to be injurious rather than beneficial. But when the skin is dry and burning, nothing gives the patient more temporary relief than sponging the body with water, or vinegar and water, which ought to be very frequently repeated.

The application of blisters and other contra-irritants is highly serviceable after bleeding, &c., but should never be had recourse to in this, or any other fever, in the early stage of the disease.

Stimulants sometimes appear to save life, but in candour it must be mentioned that I have also seen them very prejudicial; nothing in the whole practice of physic requires more caution and experience than their exhibition; but I shall speak more fully upon this subject when treating of the fevers which prevail in this country. The best stimulants are wine and brandy; in many cases where the stomach is irritable, brandy will be found to be superior to wine. In the last stage, great care should be taken to support the heat of the extremities.

Partly from the notion of the resemblance between remittent and intermittent fevers, and partly from this disease being supposed to be one of putridity, bark has been employed. By some it is recommended throughout the whole course of the disease, by others only during the remissions, and in the last stage; but I believe it has done more mischief than good. I have often had to blame myself for bringing on an exacerbation, not only by the use of bark, but by nourishment and stimulants, during the first remissions; and a strong impression is left upon my mind, that it would be better for patients if less were done for them in the state of apyrexia, and also in the commencement of convalescence. No doubt, however, can be entertained, that the sulphate of quinine will be of signal service in many cases.

[The method of treating yellow fever by large doses of calomel has for years been pursued throughout the United States, particularly in the south. The efficacy of this practice has latterly been questioned, and physicians have in a great measure yielded to the change in public sentiment. It is at least evident, that the exhibition of the enormous quantities of mercury which have been given both in this disease, and in other forms of fever, is not attended with the unfailing success which alone could warrant its employment; and the consequences have been so frequently destructive to health and comfort, as to lead to the opposite extreme of total proscription of this powerful article: a circumstance much to be regretted, as in proper doses, and

at suitable periods of the disease, its use is highly serviceable. If the general system is affected with considerable reaction, venesection is required; but in most cases the prompt application of leeches, or cups, as near as possible to the diseased organs, is followed by a decided amelioration of the symptoms. They should not be placed, however, so immediately in contact as to run the risk of increasing excitement. As an auxiliary measure, the sedative impression of cold has a beneficial effect, and is peculiarly grateful to the patient: iced drinks, ice applied to the head, if this organ presents symptoms of disordered action, and the injection of cooling enemata into the bowels, are the modes of application. The use of small doses of calomel, or blue pill, will admirably promote the cure when the force of the local irritation has been reduced; and it only remains to unlock the secretions, and gradually restore them to a natural state. To sum up the most approved plan of treatment in concise terms, we are to remove all irritating causes; mild, soothing, diluent substances are to be administered; while local and general symptoms are to be relieved by the means already indicated. The allowance of such diet as is suited to the condition of the digestive powers, will be regulated by the principles which guide us in inflammatory conditions of the stomach.*

Yellow fever has, of late years, been treated on a new plan in the United States, viz., by giving quinine in very large doses at a particular stage of the disease. Thus, from twenty to sixty or eighty grains are administered at the commencement of the fever, while the morbid action appears to be in process of formation, that is to say, within six or eight hours after the accession of the malady. When taken under such circumstances, the first effects are a very slight increase of the febrile symptoms; the pulse, perhaps, becomes quickened, the respiration more hurried, and the usual consequences of stimuli are present. This condition, however, is but transient, and is promptly followed by corresponding depression. All the more violent symptoms subside; the temperature of the surface is lowered; pain diminished; the pulse is gentle and subdued; the skin is covered with a healthy moisture; in short, the chain of morbid associations becomes broken, sleep is superinduced, from which the patient awakes refreshed and subsequently better, and from twenty-four to thirty-six hours is considered in a state of convalescence. The treatment is, of course, not exclusively confined to the employment of quinine, though this is the chief remedial agent. The usual means of obviating tendencies to local irritation must be resorted to. The skilful practitioner will modify his curative measures according to the necessities of the case; cupping, leeching, the warm bath, and local applications, may be used as circumstances call for their employment. The quinine is administered in a single dose; the object being to bring about the sedative influence of the remedy before any of the organs, as the head, stomach, &c., become specially affected by the disease. If it should fail to produce the anticipated effect,

* For evidence of the advantage of this plan, we refer to the cases of Drs. Barton and Harris, treated in New Orleans during the year 1833, and reported in the American Journal of Medical Sciences.

the case is too far advanced for a second trial, and it must be treated on general pathological principles. Let it be remembered, however, that in thirty or forty cases which have been subjected to this novel curative method, not one has terminated fatally. The action of the quinine has been uniformly most salutary, operating like a charm, and dissipating the symptoms of the malady ere they become concentrated on different organs."*

On this point we have no experience of our own; but as it comes from medical men of acknowledged ability and extensive practice in yellow fever in New Orleans, and other southern cities, we gladly insert the facts as announced by them; at the same time, we believe it has been proved that this course of treatment has not effected the same happy results in subsequent years, but on the contrary, has often been attended with entire disappointment; a fact which is amply accounted for in the known variableness of yellow fever in different seasons even in the same localities.]

INFANTILE REMITTENT.

Many diseases occurring in infancy and childhood have obtained this name, viz., inflammation of the brain and lungs, the irritative fever produced by teething and worms, rheumatic affections, &c.; in all of which, and even in cerebral and pulmonary inflammations, there are very remarkable remissions in young subjects. But the disease which is to be considered in this section is a febrile affection which is, in general, found to depend on irritation, inflammation, or ulceration of the mucous membrane of the stomach and bowels.

Symptoms.—The little subject is observed to be listless, fretful, and thirsty, and to pass restless nights, with some heat of skin. In a few days the skin is hot and dry, the thirst and restlessness are increased, the breathing is hurried, and the pulse very quick. The child is more uneasy and restless at night, but towards morning the skin becomes slightly moist, when it has some disturbed sleep; the bowels are constipated, or there is diarrhœa, but the former is more frequently met with; or there is frequent desire to go to stool, but little is passed; if there be any evacuation, it is discoloured and fetid. In colour, the evacuations are not always dark, but sometimes white, showing a deficiency of bile, and sometimes bluish, but always offensive, often mixed with mucus, and occasionally with a little blood. The child cries frequently, and draws its knees up to the breast—it cries more when the belly is touched, which is hotter than the rest of the body, and tympanitic. It prefers to drink cold water, and frequently shows signs of increased abdominal pain after a copious draught; the stomach is occasionally very irritable, and every thing is vomited; the tongue, being at first moist and loaded,

and occasionally very red round the edges, soon becomes dry over a triangular space at the tip. On some occasions it is difficult to keep the hands and feet sufficiently warm, while the face is flushed and the rest of the body parched.

If proper treatment be not soon pursued, the functions of the brain occasionally become disturbed, and it is difficult, in many cases impossible, to determine whether or not disease of structure is going on in the head.

On other occasions the respiration, which has been hurried from the first, owing, perhaps, merely to increased circulation through the lungs, becomes laborious, a troublesome short cough also appears, and, in general, auscultation will announce a more or less extensive inflammation of the bronchial membrane; and if the disease be not subdued, wheezing and expectoration follow. Sometimes the child appears to be recovering for a few weeks, and then relapses; during the remissions he gains flesh and strength, but the abdomen remains tumid, and in this condition he may continue getting better and worse till the mesenteric glands become enlarged, or dropsical effusion takes place in the abdomen; the emaciation increases; there is no fever except at night; the appetite is occasionally voracious. In fact, the little sufferer presents all the symptoms of the disease usually known by the name of *tabes mesenterica*.

Appearances on dissection.—The chief traces of disease are found in the abdomen. Sometimes peritoneal inflammation seems to have been the immediate cause of death, and I have had many opportunities of ascertaining that inflammation of this tissue has been excited by the extension of ulceration from the mucous membrane, through the muscular and serous tissues. The mesenteric glands are found very generally enlarged, sometimes enormously so, and seem to consist of a cheesy-looking matter, which is usually described as depending on scrofulous action, but perhaps hastily, and without good foundation. On cutting into the stomach and bowels, the mucous membrane will be found in various conditions, occasionally very vascular, thickened, softened, or ulcerated. The ulcerations in the ilium and colon strictly resemble those which I have afterwards to describe in the bowel complaints of children, except that the whole mucous surface of the colon is occasionally involved in one sheet of ulceration, with a rough and ragged surface and hypertrophy of the other coats, as is observed in many cases of phthisis pulmonalis. When there is no ulceration, we sometimes see mere vascularity, with or without softening of the mucous membrane; the quantity of thick mucus adhering firmly to the surface is very great; and it is curious, that after being carefully removed by washing and wiping, I have seen fresh exudations take place during maceration, not only in water, but in spirits; and I have been surprised, after having laid aside preparations for many months, to find them again thickly coated over with mucus. Large abrasions are also sometimes found in the mucous membrane of the stomach, at the splenic extremity, which have penetrated through all the tissues at one point; in other places they appeared to be converted into a gelatinous mass. From careful examination, it would seem that this kind of disorganization

is the effect of previous inflammation. This appearance has excited considerable interest of late years, and has been noticed on the continent by Cruveilhier and others, and in this country, many years ago, by Underwood. The profession stands greatly indebted to Dr. John Gairdner of Edinburgh, who has collected a great number of interesting cases, some of which occurred in his own practice, and which will be found in the first and second volumes of the Medico-Chirurgical Transactions of Edinburgh.

It has been stated in the description of the complaint, that symptoms of cerebral and pulmonary disease sometimes become lighted up; but on watching the progress of the affection, these are observed not to form essential parts of it; nevertheless, the appearances sometimes found in the head and thorax, deserve to be mentioned.

In the head there is generally effusion in the ventricles, and also between the arachnoid and pia mater, with great vascularity in the latter membrane.

In the thorax, the most common morbid appearance is found in the bronchial membrane, which is vascular, and the tubes are more or less filled with mucus; which is to be described more particularly when treating of bronchitis. The substance of the lungs also shows various degrees of inflammation, and occasionally there are traces of pleuritis.

Causes.—These are indigestible food, such as crude vegetables, sweet-meats, &c.; the habit of allowing children to eat too many articles of food at one meal; together with insufficient clothing and unwholesome food, to which the children of the poor are so frequently exposed. Teething sometimes produces symptoms like those above described.

Pathological remarks. From this view of the phenomena of the disease, together with the appearances on dissection, and the causes, the reader will have anticipated what I have to state respecting the nature and seat of the disease, that it depends on irritation and inflammation of the mucous membrane of the stomach and bowels, particularly of the latter.

Treatment.—Abstinence from solid food is necessary; even biscuits, crusts of bread, and the pulp of oranges, frequently produce relapses. Leeches should be applied to the abdomen in all cases where there is much vascular action, pain, or heat of skin, if gentle laxatives, frequently repeated, do not mitigate the symptoms. Fomentations should be applied to the abdomen; when the skin is hot and parched, sponging the body frequently with tepid water will often take off the restlessness. The practitioner should be particular in all cases, but more especially in attending children, to examine the stools, and the quantity of clothes with which they are too often covered. A remarkable case occurred to me four or five years ago, which is worthy of being mentioned. A child aged seven was seized with some degree of chilliness, followed by reaction, thirst, want of appetite, nausea; the respiration became hurried, and he complained of considerable headache. He was ill for five or six days before I saw him, and had taken repeated doses of salts and senna. On examination, I found the abdomen distended, tense, tympanitic, and

somewhat painful to the touch; his thirst was considerable, the respiration quick, the face flushed, with some headache, and he complained of noise and light; the tongue loaded with a white fur, moist everywhere but a small triangular space at the tip, which was red, as were also the edges; he had no vomiting, but a dislike even to the smell of solid food; he was very uneasy and restless, passed sleepless nights, and the pulse was quick, but not particularly strong. During the course of eight days, leeches and fomentations were frequently had recourse to and with marked relief, but always of short duration. Gentle laxatives were frequently given, and injections administered, but all to no purpose; the stools were slimy and scanty, and as the child had been so long without even taking gruel, it was imagined that the bowels were empty. The abdomen was blistered. At last, something excited my suspicion respecting the state of the bowels, and castor oil was given on the fourteenth day, every second or third hour, after a moderate dose of calomel and jalap. On going to stool, he complained very much of pain; he was observed to strain most violently; and after some time, he passed what appeared to be a very large fetid stool, which surprised me very much; it was so large that I was induced to examine it minutely, when three hard masses were discovered, surrounded with a great quantity of mucus. Upon close examination, they proved to be a dollar biscuit, and two pieces of solid meat; the biscuit was soft, but quite undigested and whole, with the exception of its margin, part of which had been broken off; the depressions generally made on the surface of biscuits were quite distinct, as also several of the letters of the baker's name. This biscuit was seen by a great number of gentlemen who were attending my lectures at the time, and is now in my museum. One piece of meat was large, and must have formed a good mouthful; the other was small, but both were quite unchanged by digestion, and not so putrid as might have been expected. It appeared that the boy was frequently in the habit of *bolting* whatever he had in his mouth, without mastication. His recovery was progressive after he got rid of these substances.

If the disease become chronic, occasional leeching, perseverance in gentle laxatives, a nourishing, but mild and bland diet, a long perseverance in contra-irritation on the surface of the abdomen, by means of the tartar-emetic ointment, and an occasional warm bath, are the best remedies. If there are evidences of effusion into the abdomen, with a scanty secretion of urine, a preparation of calomel, squills, and digitalis, in doses proportioned to the age and strength of the patient, will be found serviceable, together with drinks acidulated with cream of tartar. Many of the students attending my Dispensary, have seen remarkable recoveries under the plan of treatment above described, even in cases which at first appeared to be almost hopeless.

REMITTENT AND CONTINUED FEVER.

Cullen and others maintain, "that there is no such disease as that which the schools have called a Continued Fever." There can be no doubt, however, that there is such a class of diseases, if we look at nature; and that Cullen would have seen it if he could have looked through any other medium than that of his own erroneous theories. Cullen's definition—"*Fevers, without intermission, and without being produced by marsh miasmata, but with remissions and exacerbations, though not always considerable, continuing; two paroxysms in each day.*

Often have I seen slight continued fevers terminate in regular intermittent, and intermittent in continued fever, at least as much as any fever can be said to be continued; continued until death closed the scene, or rather I should have said, till that stage of collapse took place which precedes death. This definition must be admitted to be too finely spun; for if there be no continued fever, it may be also said there is no continued inflammation of the brain, or of any other organ. In all fevers, as in all diseases, there are intervals in which the patient is easier, and appears, perhaps, rather better; and there are also nocturnal exacerbations, which may be partly attributed to the sick being worn out and made worse by fatigue, heat, light, and noise during the previous day.

All the fevers which are to be described in this class, are called "idiopathic," as well by those writers who have identified in their own minds fever with inflammation, but who will not allow the existence of "*any primary local disease,*" unless that disease be one of inflammation, as by others, who deny the existence of local inflammation in fever. Cullen belonged to this last class, and he states that he never had seen a case of inflammatory fever but one; therefore he endeavoured to place these fevers altogether beyond the pale of pathology. In this spirit has he framed the definition of fevers: "*After languor, lassitude, and other signs of debility, pyrexia; without any primary local disease.*" The reader will see at once the absurdity of this symptomatical pathology, which denies to any fever whatever, except hectic, any primary local disease: for Cullen is subsequently compelled to place inflammatory fever as one of his orders; and although he gives a very common-place reason for calling inflammatory fever "*synocha,*" and an explanation that this term is not to be used in its "*vulgar acceptation;*" yet we are not to be told in the present day, that the pathology of a disease can be changed by a mere name, which any one may invent. All Cullen's disciples will be found to fall into the same error, but they become caught in their own net in describing the order synochus, which, according to them, is a compound fever, of an inflammatory nature in the first stage, and typhoid in the second.

Cullen, in the 141st paragraph, makes the following statement:

"In the case of synocha, (*inflammatory fever,*) therefore, there is little doubt about the propriety of blood-letting; but there are other species of fever, as the synochus, in which a violent reaction

and phlogistic diathesis appear, and prevail during some part of the course of the disease; while, at the same time, these circumstances do not constitute the principal part of the disease, nor are to be expected to continue during the whole course of it; and it is well known that, in many cases, the state of violent reaction is to be succeeded, sooner or later, by a state of debility, from the excess of which the danger of the disease is chiefly to arise. It is therefore necessary that, in many cases, blood-letting should be avoided; *and even although, during the inflammatory state of the disease*, it may be proper, it will be necessary to take care that the evacuation be not so large as to increase the state of debility which *is to follow.*

It was Dr. Baillie's opinion, that typhus was as rare as Cullen states inflammatory fever to be. The truth is, that much depends upon the class of people among whom a physician practises, and the period of the disease at which he generally sees his patients. Our army and navy surgeons have to treat fevers in subjects well fed and clothed, and whose regularity of conduct is enforced by military discipline, which physicians cannot expect among the inhabitants of St. Giles in London, and the Cowgate in Edinburgh. Therefore, they seldom see pure typhus in their practice; and they will have to blame themselves if they often meet with synochus; for they are too bold and intelligent, and are too well versed in military tactics, not to attack the enemy before he gets possession of their strongholds: and they will rarely be found guilty of declining an engagement from fear of another enemy which *may* appear when they are weakened by the combat. Soldiers and sailors can very rarely conceal a fever; so that they are brought at once to the medical officers, who, therefore, see the disease early, and before it becomes complicated. A great deal, also, depends upon the treatment pursued in the first stage. If a physician were always afraid in the first stage of fevers to apply the proper remedies when inflammatory symptoms presented themselves, lest a low or putrid tendency should subsequently occur, he will, of course, frequently see the compound fever "synochus" in its worst form.

I have now to treat, *first*, of fever from functional derangement; *secondly*, fever from inflammation; *thirdly*, fever from congestion; *fourthly*, a mixed form of fever, consisting of a combination of these three, but in which congestion generally predominates at last, commonly called typhus and synochus.

FEVER FROM FUNCTIONAL DERANGEMENT.

All ages and classes of society are liable to this form of fever; but more particularly children, and those who have the inclination and means to overload the stomach and bowels with too much nourishment. It is not, in general, very formidable; but cases are occasionally met with which are abundantly alarming, and difficult to treat, from the impossibility of fixing upon any one organ which can be said to be affected severely, and yet all organs are out of order, giving rise to considerable constitutional disturbance. In some cases the symptoms are exceedingly slight for a week or ten days. The

patient often feels chilly, which he is apt to attribute to the weather —increasing weakness and languor, which he thinks are owing to impaired appetite; he has restless nights, with burning heat in his hands and feet, and some thirst. At last his whole surface is hot; he perhaps goes to stool once a day or even twice, and he passes something, which satisfies him that his bowels are right, when all the time they are constipated; and when a medical man is called, he will find him much in the following state;—skin parched; thirst considerable; tongue loaded with a yellow fur; without appetite; and the pulse, perhaps, about 95 or upwards; the urine scanty and high coloured. He complains of restlessness, particularly at night; and general uneasiness, with oppression at the præcordia; he has slight headache; but complains most of pain in the lumbar region. The stools, when examined, will be found fetid, scanty and adhesive; or watery and dark coloured, containing small hardened portions of feces, often mixed with a good deal of mucus. He loathes the articles of food which, in a state of health, he most relished, even tea and coffee, milk, beer, &c. During the night, his mind wavers; if he falls asleep, he appears restless and disturbed, and awakens with a start, the effect, perhaps, of a terrific dream; occasionally, there is delirium. In some cases these symptoms continue even in a slighter degree for fourteen or fifteen days, and at last terminate in local congestion, or in inflammation of some organ, and in the end assume the type which is termed typhoid; in fact, these are the cases, particularly where there is delirium, which many people call "typhus mitior."

Sometimes the fever is very sharp, and there is considerable excitement, with increased heat, general uneasiness, and delirium; the pulse above 100, full and strong; much oppression at the præcordia; the respiration hurried; the tongue loaded, perhaps dry and parched; and the bowels very much disordered.

Treatment.—I have a great dislike to treat this form of fever, and for the following reasons: First, the patient has been long ill before he confined himself and sought for medical advice. Secondly, the symptoms even then are apparently mild, while internal organs are seriously impeded in their functions. Thirdly, if inflammation have taken place in any internal organ, it is more difficult to treat than in pure inflammatory fever, in consequence of the exhaustion occasioned by the previous indisposition. Fourthly, nothing can be beneficial if the greatest attention be not paid to the moral management of the patient, giving him laxative medicines at regular periods, and rigidly withholding improper articles of food. This is the kind of fever which is in general cured by confinement to bed; a steady perseverance in gentle laxatives, repeated two, three, and even four times a day; quietness and abstinence from solid food. These are the cases in which wine is often prescribed by Brunonians, with far less detriment than solid food or beef tea. These are the cases in which the cold affusion has been so serviceable when used in the early stage, because there is as yet no local inflammation.

Bleeding is certainly not necessary in all cases, but it is serviceable in many. I have had several cases of this description on my

hands at one time during the autumnal months; and I have chosen patients resembling each other as closely as possible in habits, temperament, &c. Blood has been drawn from some of these and not from others, and I never had reason to regret bleeding, but have often had to lament not doing it. It may be here mentioned, that bleeding is often employed from other motives than to cure inflammation. It is sometimes employed to moderate excitement, to diminish plethora, to alter irregular determinations of blood, and also to remove venous engorgements; but the only period for the lancet is the first days of the disease.

In such cases bleeding may be objected to, as it has been even in inflammatory fevers, but I am sure it is safe in a majority of cases; and this conclusion has been strongly impressed upon me by observing the manner in which this kind of fever, in particular, frequently terminates. First, it sometimes terminates upon the appearance of an eruption, which eruption is generally urticaria, sometimes erysipelas. Secondly, it often terminates by epistaxis. Thirdly, by diarrhœa. Fourthly, by profuse night-sweats. And fifthly, by small boils, and even abscess. Taking a common sense view, in reflecting upon these matters, I cannot help coming to the conclusion, that it is best for the practitioner to take the law into his own hand, and to deplete in cases which require it, before the strength of the body is reduced by the natural effects of diseased action. If in doubt about the propriety of general bleeding, the practitioner can have recourse to leeching; and in the class of cases now under consideration, the best place to apply the leeches is upon the abdomen or loins. Experience has led me to this practice, even in cases in which, although the symptoms ran high, no local inflammation could be detected, and I can speak strongly of its success—the number of leeches to be proportioned to the age and constitution of the patient, as well as the severity and duration of the disease. Emetics are very serviceable in the first stage of this fever, in order to unload the stomach of any crudities it may contain. It has been already stated, that laxatives frequently repeated are highly necessary—to an adult I give powders consisting of two grains of calomel, and six or eight of jalap or rhubarb, or a pill with the same quantity of calomel and four grains of the compound extract of colocynth. A child of six years old will require the same quantity of calomel, and four grains of jalap or rhubarb—the dose to be repeated every second, third or fourth hour, according to circumstances, till evacuations are produced, or till a fourth dose has been given, when the medicine is to be assisted by the administration of mild injections. Fomentations may also be applied to the abdomen. If the body be hot, it should be sponged with cold or tepid water, as may be most agreeable to the patient's feelings. Opiates are rarely admissible in this form of fever.

In neglected, or ill-treated cases of this class of fevers, affections of the brain, or bronchial membrane, are greatly to be dreaded.

FEVER FROM INFLAMMATION.

It will be recollected that, in a former part of the work, the arbitrary doctrines of fever promulgated by different individuals, viz., that fever depended upon inflammation of one particular viscus or set of viscera, were rejected; and my own opinion was distinctly stated, that inflammation of every tissue of the body, occasionally gave rise to febrile disease.

Symptoms of inflammatory fever.—In this disease the combination of symptoms denominated fever is present, and depends upon inflammation of an acute or sub-acute nature, of some organ or tissue of the body. Cullen's definition: "*Heat much increased; pulse frequent, strong, and hard; urine red; the animal functions but little disturbed.*"

Although this fever sometimes takes place without any cold stage, yet it is generally ushered in with a rigor. During the early stage, the patient feels drowsy, yet cannot sleep; he is reluctant to move from one room to another, from a feeling of languor and debility; there are loss of appetite, vitiated taste, thirst, loaded but moist tongue, which soon becomes dry; general soreness is complained of, and there are nausea and vomiting; headache, and pain in the back; occasionally a combination of all these symptoms is present. Sometimes, after the first rigor, heat of skin, and all the other symptoms of fever, immediately set in; on other occasions, there are alternate chills and flushes of heat for several days, till at last the heat predominates, and is permanent; the face is flushed, the skin intensely hot, with thirst, restlessness, general uneasiness; in most cases there is more or less delirium at night.

It is necessary to observe that the symptoms vary according to the organ principally affected; but in all cases where there is great excitement, the breathing is quick and anxious, the belly costive; the tongue becomes parched, but it may be loaded, or very red, with its papillæ much raised—or intensely red only at the tip and round the edges; the pulse is generally full, strong and bounding, beating above 100, perhaps even 130 in the minute; there is also oppression at the præcordia. In very acute cases, the skin has been observed to be not only parched and burning, but red, making a considerable approach towards an exanthematous affection.

Inflammatory fevers occasionally terminate by hæmorrhages from different parts of the body, particularly from the vessels of the nose and bowels; by diarrhœa—collections of matter in various parts of the sub-cutaneous cellular membrane, and by profuse sweats. But these natural terminations are not to be depended upon.

If the fever go on without proper treatment, disease of structure ultimately takes place, in severe cases as early as the seventh or eighth day; in slighter, not before the twelfth or fifteenth; and in still slighter, not till between the twentieth and thirtieth. Whenever this event happens, all the symptoms of typhous gravior, with petechiæ, &c., take place, and then the case is called synochus. It has been stated that the symptoms vary not only according to the nature, but more particularly the seat of the disease; and it is necessary

in this place to give a description of these, which may be made applicable to the other kinds of fever.

There are several general symptoms which are common to a great number and variety of diseases; as headache, heat and dryness of skin, thirst, nausea, restlessness, anxiety, oppression at the præcordia, dyspnœa, scanty urine, small fetid stools, &c.; but there are some symptoms which particularly announce disease of particular parts.

If the brain be affected with inflammation, the symptoms will vary according as the inflammation affects the membranes, or the substance of the brain itself. If the membranes, there will in general be delirium, increase of strength, so much so, that it will require some care to keep the patient from starting out of bed; the eyes vascular, with the pupils contracted or dilated, and the countenance may present a ferocious expression; the patient will, perhaps, complain of pain of head, by gesture if he cannot by words; the carotids will throb; there will be great restlessness. The face is not always flushed; it is sometimes pale; the pulse will be various, the tongue dry, and perhaps in constant motion. Subsequently, starting of the tendons, picking the bed-clothes, and sometimes convulsions, take place, particularly in young subjects; the patient shows a disposition to sleep, and then becomes comatose, which state gradually increases; the pupils are dilated, and squinting often occurs. The respiration becomes more and more rapid and irregular, with an occasional interruption, immediately followed by a sigh; the pulse, which had been quick at first, and had afterwards become slower, is now again rising in frequency; it is irregular, and intermits. The coma becomes more profound, and death takes place, with or without convulsions.

If the substance of the brain be inflamed, the heat of skin may not be increased; the pulse may fall under the natural standard; perhaps it will beat 60 or 50, and I have seen it even slower. The extremities may be in constant motion or not; they may be rigidly contracted, particularly the forearms, or if not so, they become contracted the moment the arm is touched even to feel the pulse. The rigidity may be confined to one arm with or without paralysis; the pupils are generally dilated, and the eyelids half or fully open; sometimes one is shut and the other open; the tongue is not dry till towards the last stage of the disease.

In both varieties the respiration is much in the same state. The bowels are generally bound, and when stools are procured they are passed involuntarily in bed, as is the urine; sometimes the bladder loses its powers completely, and becomes greatly distended.

If the lungs be affected, the respiration will become more laborious; there may be cough, with more or less expectoration; the patient may complain of a sensation of rawness under the sternum and in the windpipe, or perhaps a stitch in the side may be felt; but here, as in all affections of the chest, we must make use of our ears in addition to the other symptoms, in order to discover whether any inflammatory affection is going on in the respiratory organs. The advantages of the grand discovery of auscultation will be stated more at large when treating of the diseases of the chest; but it may

be now mentioned, that even before I had been much used to the stethoscope, I was enabled to point out "*primary local affection*" to exist in the lungs, in cases which were supposed to present the pure idiopathic fever.

If the seat of the inflammation be within the abdomen, it will in general be announced by one or more of the following symptoms:—pain, increased on pressure; but it must be remarked, that when the mucous membrane of the intestines is the seat of the phlogosis, frequently little or no pain is experienced even upon pressure. The patient will prefer that position in which the abdominal parietes are most relaxed; there is more or less tympanitis; and the heat is greater over that part of the body than any other. Nausea and vomiting are more or less severe; the patient drinks large quantities of cold fluid, although he knows it will produce an increase of pain, and, perhaps, will be immediately vomited. The most extensive inflammation, and disorganizations of various kinds, may be going on in the mucous membrane of the stomach, and bowels, without producing redness of the tongue or elevation of the papillæ. Nevertheless, when the tongue is in that condition, or when it is covered with small ulcers, or numerous fissures, or when it looks red and glazed, or as if skinned, with or without patches of white fur, we are enabled to determine that the lining membrane of the alimentary canal is in a diseased condition.

Appearances on dissection.—It may safely be said that there is not an organ or tissue of the body which has not been seen disorganized in fevers, and particularly in inflammatory fevers; and after what has been stated, and from circumstances which are still to be stated, it is thought unnecessary to dwell at present on this subject.

Treatment of inflammatory fever.—Sydenham, whose works are among the greatest ornaments which medical literature possesses, recommended, above a hundred and sixty years ago, the same, or nearly the same practice, which stands good in the present day. He was led by his great wisdom and experience into a proper line of treatment, although he had not the advantage which we enjoy, of examining morbid appearances after death, to confirm his views. He had erroneous notions, it is true, in consequence of his imperfect acquaintance with morbid anatomy, but he was the first who pointed out the impropriety of treating all fevers alike, by showing that different organs are affected in different cases. He pointed out also very precisely, that a fever requires different treatment in every stage as it advances. He likewise made pointed observations against the farrago of medicines which were generally prescribed, and his own plans were exceedingly simple. It was he who first introduced the plan of purging in fevers. His chief hope seems to have been on the lancet, laxatives, and opiates, the strict antiphlogistic diet, and allowing no solid food. If he could have proved his opinions by an appeal to dissections, it is probable there would not have since been so many changes in practice.

An emetic followed by gentle laxatives; a bland liquid diet; small doses of solution of the tartrate of antimony; and perfect quietness, will produce a cure in very slight cases. But in severe cases, it is

necessary to open a vein, and take away as much blood as will make an impression upon the disease, without reference to quantity. Young practitioners are often prevented from using the lancet, because there is no decided fixed pain; but they may rest assured, that in fevers, and more particularly in inflammatory fevers, some internal part in particular is suffering, although it does not exactly appear to their inexperienced eyes. Local inflammation is often concealed by the general irritation and uneasiness which prevails; and it does not show itself to a superficial observer till it has become very severe. But we must not bleed in the manner recommended by the French, at least in inflammatory fevers. Boisseau, urging the necessity of general bleeding, says, p. 99 of his work, entitled Pyretologie Physiologique, ed. 1824: "Less than 8 ounces should not be taken at each operation; but this quantity will rarely suffice; it is necessary in general to draw 12 ounces; one may carry it even to 16 ounces, in subjects of whom I shall speak, *but one ought never to exceed this quantity. It is better to repeat the bleeding.*" I would also beg to refer to the cases and dissections published by M. Andral, in the 1st vol. of his Clinique, in which the deplorable effects of similar undecided practice are too evident to require being pointed out.

The causes of the failure of bleeding in this, and other diseases, are: *First*, most physicians order the precise quantity of twelve or sixteen ounces of blood to be taken from all adults, without reference to sex, age, peculiarities of constitution, or the actual pathology of the disease. *Secondly*, By the long period which is allowed to elapse between the bleedings, the strength is diminished, valuable time is lost that cannot be recalled, while little progress is made in eradicating the disease. *Thirdly*, No difference is in general made between bleeding a plethoric individual, and one who is in the opposite condition of system. *Fourthly*, The period of the disease influences a pathological physician, while it does not one who never looks at the inside of a dead body. *Fifthly*, The good effects of a general bleeding are very frequently lost, by not following it up, in proper time, by a second evacuation; or *by local bleedings*, which are often found to be most efficacious. *Sixthly*, The good effects of bleeding are often marred by neglecting to employ contra-stimulation and contra-irritation, as well as by loading the patient with too many bed-clothes, and by errors of diet.

The patient should be seen within a few hours after the first bleeding, and the operation should be repeated at a short interval, if necessary. If this be done, particularly if followed by laxatives, blisters, and the use of the tartar-emetic, it will rarely be necessary in an inflammatory fever, however acute, to bleed a third time. But if, at the second or third visit, we find the patient so well as not to require further loss of blood, we are not to conclude that he is out of danger; and it is necessary to impress upon the minds of students and young practitioners, that if they are to do good in such a case, the greatest attention must be paid at the very commencement of the disease: vigilance at this period will save much subsequent trouble and anxiety. When leeches are necessary, they should be applied as near the affected part as possible, which is generally the epigastrium, the ileo-

cœcal region, or the brain. With regard to antimony, objections are very justly entertained against its use, when the stomach and bowels are either irritated or inflamed.

[We propose, in this place, to make a few observations on the treatment of fevers in general, and especially in respect to the stage of exacerbation. There can be no question that the latter is often aggravated by the improper or ill-timed interposition of medicine; and it should be the constant object of the practitioner to quiet the irritation and preserve the retentiveness of the stomach by every possible means. With this view, the whole class of diaphoretic remedies is objectionable, until the active symptoms are allayed or mitigated. When we may venture upon their use, they should be given in very limited doses and carefully watched in their effects. One of the safest of these preparations is the effervescing draught, (prescrip. 60,) or the solution of citrate of potassa. Two drachms of the latter dissolved in six ounces of water with a little sugar and two or three drops of the oil of lemon, constitute one of the least irritating and most efficacious formulæ, to which a little spirits of nitre may be added or not, according to circumstances. A tablespoonful, or half that quantity may be taken every two hours. The best mode of administering tartrate of antimony is to give the twentieth part of a grain dissolved in water, at the intervals just named. The action of either of the above preparations may be much augmented by adding small quantities of sulphate of morphia, or any other preparation of opium to each dose, and especially where there are restlessness and want of sleep. But if these or any other medicines are found to occasion heat or other distress in the region of the stomach, or to add in any degree to the general excitement, let them at once be discontinued. It is far wiser to administer no medicine whatever, than to give it to the manifest aggravation of disease. The anxiety of the physician to do something, or of the patient or his friends to have something done, is often one of the greatest obstacles to the management of fever. If active general remedies are promptly used in the incipient stage of inflammatory fevers, as our author has judiciously advised, the resort to any plan of *coercive* internal treatment will be unnecessary; and, on the contrary, mild, persuasive measures, combined with repose, and the exclusion of the ordinary sources of physical and mental excitement, will, in the great majority of cases, lead to a favourable termination of the febrile symptoms. These truths cannot, I conceive, be too often or too emphatically repeated; and they are, if possible, yet more applicable to the fevers of infancy and early childhood, wherein diagnosis is often conjectural, because the patient cannot convey by language any idea of the nature or seat of disease.

If there be heat and thirst, give cold drinks freely, as our author has advised. Is there sickness, or irritability or pain of the stomach? apply leeches, or cups or a blister to the epigastrium, and give the patient ice in small pieces. Is the head painful and the skin hot? In addition to any applications to the part affected, let the feet and legs be immersed in a tepid bath, for twenty minutes or half an hour;

and repeat this as often as it affords relief or is grateful to the patient. Pediluvia to be efficacious should be prolonged.

If the bowels are confined and the stomach irritable, resort to simple enemata; if the skin is hot, let them be of cold water in large quantity; and by frequently sponging the limbs and head with the same element, much may be accomplished towards the mitigation of distress and the abatement of disease.]

Some practitioners do not allow their patients to use fluids freely, particularly cold drinks; but I believe this is a most injudicious prohibition, and that they may, in general, be allowed to gratify themselves in this respect.

The practitioner should be regular in his visits in all acute cases, as sick people watch the hours, and become impatient and dissatisfied till he makes his appearance; and he should be careful how he expresses himself, for one word, or even a slight alteration of countenance, may rob the patient of all hope.

When the state of collapse comes on in fever, the patient should be carefully watched, that he may have his nourishment and medicines at proper intervals, and that the heat of the body may be properly supported.

Stimulants are frequently necessary at the termination of this class of fevers; but nothing in the practice of medicine is more difficult than to determine, whether a stimulant given in such a case is to do harm or good. When it is given, let it be in small quantity, closely watching the effect. If I were compelled to state, whether more mischief would follow the exhibition of stimulants in every case, or withholding them, I could safely say, that giving them in every case would be highly prejudicial. For although marked benefit is sometimes produced by stimulants, yet I have more frequently observed mischief; they are most beneficial when exhibited to patients with either a compressible, or a very quick and irritable pulse, and to those who experience profuse perspirations.

CONGESTIVE FEVER.

This is a fever, in the most severe form of which the pulse and the heat of the skin are generally below the natural standard. In slighter cases, the extremities are cold, or have a tendency to be cold, while the heat of the trunk of the body is increased. The best examples of congestive disease, are to be found in those individuals who die in the cold stage of the intermittent and yellow fevers.* The existence of congestion is well displayed in the first stage of intermittent fever; and I have seen many cases of pure congestive fever succeed the cold stage of an intermittent, when full reaction could not develop itself.

Congestive fever is a common form of disease in this climate, and is usually denominated "typhus." It is a disease which Sydenham

* Before I had an opportunity of seeing the Asiatic cholera, and examining into its nature and seat, I was led to suppose it to be the purest example of congestive disease. But I shall show the error of this opinion when treating of that disease in the proper place.

knew well, and treated in the most judicious manner.* After stating that the invention of the term "malignity," has been far more destructive to mankind than that of gunpowder, he describes as decided a case of congestive fever, as is to be found in any modern work.

This case proves, beyond all doubt, that Sydenham must have had very good notions of the pathological condition of the body, from the expressions he uses, as well as from the practice he employed.

"But if it be inferred," says Sydenham, "that there is some malignity in the case, not only from the purple spots, but also from finding the symptoms of fever milder sometimes than should seem agreeable to its nature, whilst, notwithstanding, the patient is more debilitated than could be expected for the time—I answer, that all these symptoms only proceed from nature's being, in a manner, oppressed and overcome by the first attack in the disease, so as not to be able to raise regular symptoms adequate to the violence of the fever; all appearances being quite irregular. From the animal economy being disordered, and in a manner destroyed, the fever is thereby depressed, which in the true natural order generally rises high. I remember to have met with an instance of this kind, several years ago, in a young man I then attended; for though he seemed in a manner expiring, the outward parts felt so cool, that I could not persuade the attendants he had a fever which could not disengage and show itself clearly, because the vessels were so full as to obstruct the motion of the blood. However, I said that they would soon see the fever rise high enough upon bleeding him. Accordingly, after taking away a large quantity of blood, as violent a fever appeared as I ever met with, and did not go off till bleeding had been used three or four times."

This disease has been described by several tropical physicians, but particularly by Dr. Jackson; and it was in warm climates that I first obtained correct notions upon the subject. But the profession is much indebted to the late Dr. Armstrong, for the very excellent manner in which he has illustrated its nature and treatment.

Symptoms of congestive fever.—We shall find, upon inquiry, that the patient has had a threatening of indisposition for perhaps ten days, a fortnight, or even three weeks, previously to confining himself—that his appetite has been gradually impaired, with irregular action of the bowels; and that he has occasionally complained of alternate chills and flushes of heat, till at length the chilliness prevailed. This is the history which we in general receive of the progress of the severe cases. Even in mild cases, the heat of the skin is diminished; the pulse is weakened, or it is oppressed, and beats, perhaps, not more than 50 or 60; the prostration of strength is very considerable; the tongue is in general moist, and more or less loaded; the patient is lethargic, rather than comatose, though coma may subsequently take place; he can be roused, but the sensibility is evidently diminished; he complains of giddiness, confusion of intellect, heaviness, pain or sense of weight, either at the crown of the head or forehead. The general functions of the body will be found to be more or less im-

* Swan's edit. p. 567.

peded; but disturbance of some particular organ, in general, manifests itself, and the symptoms must of course be thereby considerably modified, as in other febrile diseases. In congestive fever, as well as in others, the brain may be the seat of disease in one person; the lungs in a second; the liver and mesenteric vessels in a third; and so on, the disease being essentially the same, but modified according to the principal seat of the congestion.

In congestive fevers there is generally a peculiar expression of countenance—it looks besotted; the manner of the patient is undecided, with an appearance of carelessness, and his words seem, as it were, to hang in his mouth; the cornea looks dim; the pupil, in the first stage, is rather dilated, and is not much affected by light. If the patient attempts to walk, he staggers like a drunken man. There is always more or less prostration of strength, and in severe cases, he is unable to stand upon his legs, or to move his hand to his head, even from the first. The respiration is short, quick and weak. He often signifies that he has a great load in the præcordial region. As the disease advances, he becomes more and more comatose; picks the bed-clothes; and is always found lying upon his back, slipping down by imperceptible degrees to the foot of the bed; the surface becomes more cold; the breathing more difficult; the face assumes a leaden hue; and, occasionally, though rarely, convulsions take place; sometimes there are nausea and vomiting, and sometimes diarrhœa; most frequently, however, the patient is constipated.

It may be shortly mentioned, that the appearances on dissection are much the same as those described in intermittent fever.

With respect to the causes, they are the same as in other fevers; but I have seen several very severe cases produced by bathing in the sea, and remaining too long in the water; by taking a drink of cold water; and by a weakly person exposing himself to a damp cold wind, when his body had been previously heated.

Pathology of congestive fever.—No one can tell which is the first link in the chain of diseased action. The balance of the circulation may be destroyed, and congestion thereby produced, upon hearing disastrous news, which some say, proves that a peculiar action in the brain is the first phenomenon; but then, exactly the same circumstance may happen from taking a cold drink, or remaining too long in the water when bathing. Therefore it must be confessed there is much ambiguity about this part of the pathology. But it is unnecessary to go over the same observations which were made when treating of intermittent and other fevers, further than to state shortly, that when the head is the chief seat of congestion, there are early symptoms of lethargy, coma, and a diminution of sensibility, frequent chills, followed by other well-known nervous symptoms, and occasionally by convulsions. When the heart and lungs are loaded, there are an oppressed, irregular, or intermitting pulse; weak and hurried respiration; cough; marks of impeded circulation in the face, and a difficulty in supporting the heat of the body; and, in some rare cases, violent pain in the region of the heart, and along the arms, is complained of. It may be remarked, that whenever the pulse feels weaker than natural in a severe disease, it is an excellent

plan to place the ear to the region of the heart, for we shall often find it acting most powerfully when the pulse is weak in the extremities. When the congestion affects the viscera within the abdomen, there is generally a sense of fulness and distension about the stomach; the bowels are irregular, being either too loose or bound; and in either case, when stools are procured, they are found to be clay-coloured and very fetid, with very little bile, or very dark.

This opportunity may be seized for the purpose of noticing the most probable means which the animal system possesses, to prevent the balance of the circulation from being lost. *First*, There is a power possessed by all animals, of preserving to a certain extent a proper degree of heat under every condition of atmospheric vicissitude—thus the heat of the body is not a degree higher under a burning tropical sun than in this country, which so far prevents cold from producing a lost balance of the circulation. *Second*, The elasticity of the coats of both arteries and veins, tends also to prevent the state of congestion, because they are capable of considerable distension, and are still contractile. These are assisted by the free anastomosis which subsists between the vessels of a part. This is well illustrated by the experiments which have been performed on the frog's foot, to determine the nature of inflammation. When a part is first irritated, the momentum of the blood is greatly increased; at last a vessel becomes obstructed, a globule of blood cannot pass through it, but it is seen to make a retrograde movement, and to find its way by another branch.

The pathology of this fever is happily illustrated by comparing the symptoms with the phenomena which occasionally take place in eruptive fevers, and to which I shall now make only a short allusion. In some cases, when the eruption is tardy in making its appearance, alarming symptoms, and even convulsions, take place. After the eruption has made its appearance, it sometimes suddenly and prematurely disappears, when congestive symptoms occur. Let the inquirer ask himself, where has the blood receded to, which a moment before rendered the skin as red as the shell of a boiled lobster?

Treatment of congestive fever.—In considering this part of the subject, it is very useful to remember the efforts which are made by the powers inherent in the constitution to remove internal accumulations of blood, if they be in any way short of that degree which kills the patient instantly. The first of these, and the most common, is the state which in medical language is called reaction, which in its turn may create inflammation of the organ most affected with the congestion. We have next increased secretion, as a natural means of removing the congestion.

In the treatment of all diseases, the physician has to determine whether it will be most advisable to leave the case to the natural efforts of the constitution, assisting them a little in their operations, or whether he is by a bold decisive measure to step in to relieve the system at once. In this case, he is apprehensive that the heart and other vital organs may be too much overloaded and oppressed to create *full* reaction, or that the system will sink under the task. He

has also to fear the effects of the reaction, which may terminate in extensive local inflammation. Anxious to escape these evils, he will follow the plan pursued by Sydenham in the case recently quoted, and he will open a vein with a view of at once restoring the lost balance of the circulation. The quantity of blood necessary for this purpose, in any given case, cannot be previously estimated. A stimulant may be at the same time necessary to rouse the action of the heart a little, and make the blood flow from the orifice. I have frequently proved, before a number of witnesses, that it is not inconsistent with good pathology to bleed and stimulate at the same time.

When a vein is opened, the blood will, perhaps, only trickle down the arm at first; on other occasions it will spring from the orifice in a large stream, and suddenly stop before a table-spoonful is evacuated. Some think this is owing to an alteration in the position of the arm—others, to the tightness or slackness of the bandage. Physicians frequently attribute this phenomenon to debility, and they take it as the most certain sign that the patient will die in their hands, were they to carry the operation farther. But it must be recollected that the blood is moving very slowly in the arteries, while the veins are gorged. When an opening is made in the vein, it suddenly empties itself, and as a supply is not quickly at hand, it is some time before the blood begins again to flow. Let the finger be placed on the orifice, the vein will be filled, and the blood will spring again. Heat is also to be applied, and, if possible, the patient should be placed in a warm bath; if that cannot be obtained, the feet and legs should be plunged into very warm water, and hot bottles placed round the body. The patient is to be rubbed with stimulating fluids, such as heated spirits of turpentine, and aqua ammoniæ; drachm doses of ether may be given, or a solution of the carbonate of ammonia, in the proportion of eight or ten grains to an ounce of water. He should be encouraged to drink warm fluids. The caution and discrimination which ought to be pursued in drawing blood in such critical circumstances, need not be insisted on; suffice it to say, that a stimulant ought to be at hand, and a finger should be on the pulse of the opposite arm, to watch the effects of our practice.

If every thing goes on well after the bleeding, the bowels being in a proper state, two grains of calomel and one of opium may be given in a pill, and repeated every three or four hours.

General bleeding is admissible only in the earliest stage of congestive fever, unless in cases in which the pulse is still strong and full. Should the proper time for venesection have passed, stimulants are sometimes found serviceable, but must be administered with caution, and relinquished for perhaps debilitating remedies, upon the first appearance of reaction. If, at any time in the subsequent progress of the case, there should appear signs of local disease, the application of leeches and blisters should be had recourse to; and the patient is to be treated during convalescence in the same manner as in any other fever.

MIXED FORM OF FEVER BETWEEN THE LAST MENTIONED THREE, BUT IN WHICH CONGESTION PREDOMINATES.—THIS IS USUALLY DENOMINATED TYPHUS AND SYNOCHUS.

In the disease which is now to be sketched, there is a combination of the last three described fevers, appearing under three forms:

1*st*, Severe cases of congestive fever, in which there is slight or suppressed reaction, followed by inflammation.

2*d*, The functional fever, subsequently united with congestion, and consequent accumulation of blood in different organs; this forms, I apprehend, the typhus of authors.

3*d*, The inflammatory fever, subsequently united with congestion; this is the synochus of authors.

As to the first variety, it has been fully explained in the last article, and the same remarks need not be here repeated.

The second variety begins in the manner which has been already described in fevers from functional derangement, but subsequently, an accumulation of blood takes place in the centre of the system. When the circulation becomes so much embarrassed, all the symptoms of congestive fever take place, the patient having been debilitated by the previous diseased action.

The third variety commences in the manner which has also been already described in inflammatory fevers, but subsequently the balance of the circulation becomes more and more lost, and congestion follows; in which state of the system, the inflammatory action is suppressed, but not extinguished. This takes place when debility and exhaustion have been already produced by the previous disease.

The brain, lungs, and organs in the abdomen, are liable to be implicated, and in the worst cases which occur, they generally are all affected, either simultaneously or in succession. Hence there is a complication of symptoms, and as the disease principally affects the poor, who are ill-clothed and badly fed, and as medical advice is not in general sought during the first stage of the disease, we usually find it very difficult to manage.

In the early stage of the second variety, and when alone any thing like active practice should be had recourse to, the symptoms certainly denote debility, which are as yet occasioned by oppression and obstructed action only; and often have I seen cases immediately and permanently benefited by drawing blood, in which, had the operation been postponed for twenty-four hours, it would have been quite inadmissible. It may likewise be remarked, that much of the oppression and debility also depends on the condition of the lungs, which, besides being congested, and therefore unable to perform their functions properly, are subsequently still further embarrassed by an inflammatory affection of the bronchial tubes. Both these conditions tend to prevent the changes in the blood, which are well known to be elaborated in the lungs; therefore, all organs must suffer additionally, and the brain of course among others. The bronchitic affection in fever has attracted my attention for many years, and I am led to believe, that few instances of febrile affections take place without

bronchitis appearing in some stage of the disease, and very often it is the primary affection. In all the fevers which are called putrid, and which are accompanied by dark-coloured spots on the surface of the body, termed petechiæ, it will be found, I am almost inclined to say invariably, that bronchitis prevails to a great extent. The somewhat livid and circumscribed redness which is seen so often on the cheeks in the fevers called typhoid, is principally owing to the embarrassed state of the lungs; and exactly the same circumstances take place in synochus.

In the third variety, bleeding may be had recourse to with benefit, later in the disease than in the others, and often have I seen it decidedly beneficial when cases were going wrong under the injudicious use of stimulants and tonics. In proof of these statements, the reader is referred with confidence to Dr. Mason Good's account of typhus, in his second volume, (from page 230 to 258.) According to his views, this, being "a disease of sensorial debility, leading on to putrescency," is to be treated by tonics; "bleeding and purging are among the foremost objects of prohibition." Nevertheless, in the next page, the following contradictory statement is advanced; "hence the fever will be aggravated from local irritation, and the affected organ will be in danger of inflammation, if not of gangrene."

There is no class of diseases in which the stethoscope is of more practical advantage than in fever; for, as has been already mentioned, the heart may be found beating violently, whilst the pulse at the wrist is so weak as scarcely to be felt, and when symptoms of general debility appear to be very great, and the extremities cold. To a patient in such a state, most medical men would naturally be led to give wine, beef tea, and animal jellies, which they would not do if they were aware that the action of the heart was strong. During the last twelve years, I have seen many severe cases of fever, in which marked benefit was produced by withdrawing stimulants, and the patients have ultimately recovered after being leeched and blistered. Let it not, however, be supposed that I am an enemy to stimulants in all cases of fever; on the contrary, I have seen patients occasionally snatched from the grave by their judicious employment. What is wished to be impressed upon my readers is, that in all fevers we have to dread local congestions and inflammations more than debility and putridity. That I am in the habit of using stimulants in fever, I can appeal to the gentlemen who have been my pupils, and who have witnessed my practice, who can at the same time verify the following statement:—that much mischief has occasionally followed, and that therefore I feel fully as anxious about the result of a stimulant as of bleeding. When a stimulant is necessary, wine is the best; and experience has taught me, that wine, or any other stimulant, is far less likely to do harm than beef tea and animal jellies.

Cases no doubt can be quoted, where stimulants, in large quantities, have been administered from the beginning of the disease, and the patients have recovered. But the best way for any one to come to right conclusions regarding this question, is, to judge from the general result of what he has himself seen. I have had many op-

portunities of observing that recoveries were slower, and relapses more frequent, in cases treated upon the stimulating plan, than the antiphlogistic.

Emetics cannot be too highly extolled in the last stage of some cases of fever, particularly the varieties called typhus and synochus, but only in those in which the bronchial tubes become filled with muco-purulent matter. This happens in consequence of the patient being too long asleep, or not coughing up the matter before too great an accumulation has taken place. Many of my friends have seen the happy results of administering emetics in such cases, and more particularly, my dispensary pupils will not forget many instances of this among our poor patients during the late epidemic fever in Edinburgh.

Cleanliness, free ventilation, and quietness, are three great and essential circumstances to be attended to in the treatment of fever. The alvine evacuations should be removed instantly out of the room; and it is of great consequence to attend that the quantity of bedclothes be not too great in the first and second stages of fever when the skin is parched, or too small when the patient is approaching to the state of collapse. The extremities should be examined at every visit by the physician, as sometimes the symptoms are aggravated in consequence of cold limbs, which will perhaps require no other remedy than the application of heat. The state of the bladder should be attended to, for although the urine is generally suppressed, yet occasionally it is not so. The temperature of the room can scarcely be too cold in the first stages, but much injury has been produced by keeping it too low in the stage of collapse. Many patients have been strikingly benefited in less than half an hour after their bodies were made warm, and perhaps their lives ultimately saved without the assistance of any other means. Some owe their death to being removed from a warm and ill-ventilated room into the cold ward of an hospital; so frequently has this happened, that I am obliged to run all hazards from bad air, bad nursing and filth, rather than send my patients to the infirmary of Edinburgh, which is ill constructed for any class of patients whatever. The sick are also badly classified, which is, perhaps, no fault on the part of the medical attendants, who ought to be well aware that the temperature of a ward calculated for fever cases in the first stage, is too cold for those in the last. Every fever ward of great extent should be warmed by means of heated air, and provided with water closets for the use of convalescents.

For a considerable time it baffled me to account for the discrepant histories of fever which have been handed down to us, and for the confidence with which opposite practices have been recommended to our notice; but further experience has convinced me, that this discordance of opinion may be accounted for by one or other of the following circumstances:

1*st*, A difference in the character of the prevailing epidemic, and the constitutions of the persons affected; for example, a functional fever will bear stimulating remedies which would kill a person labouring under an inflammatory fever, particularly if the inflamma-

tion affected a vital organ. A stimulant given in congestive fever may operate beneficially; whereas, in functional fever, or in inflammatory fever it would be very injurious. A well fed, and previously healthy soldier, who has no cares, will in general have a high-toned fever; whereas a poor, ill-fed, and badly clothed labouring man, worn out by cares and anxieties, and living in an ill-ventilated and filthy apartment, will be affected with one of an opposite character.

2d, An arbitrary and too often empirical practice, which has hitherto been too frequently followed. One physician always bleeds in every case of fever—another stimulates; and when the results are analyzed, perhaps it will be found that the proportion of deaths is the same, and even these results will vary to support the one practice or the other, according to the habits and constitutions of the patients: for instance, if our army and navy surgeons were to stimulate throughout the course of the fevers they have to deal with, they would scarcely save a patient; and if practitioners, entrusted with the care of the sick poor, were to bleed all their cases of fever, they would be quite as unsuccessful.

3d, Writers are too often guilty of an error which all medical men are liable to commit, viz., of mixing up their own opinions with matters of fact in their statements.

4th, The prevailing habit of drawing sweeping conclusions from one or two facts.

5th, Unphilosophical attempts to bolster up erroneous views by special pleadings.

The proportion of deaths in fever, in my dispensary practice, from the beginning to the termination of the last severe epidemic in Edinburgh, was as follows:—Out of the first hundred and forty cases, there was only one death. This patient was anxiously attended by a highly respectable practitioner in this place, who was then my assistant; he died during a relapse after he had sat up. The proportion of deaths, however, subsequently increased, so that in November (1827) the calculation of deaths was 1 in 37. This includes several individuals who were in the last stage before we were applied to; also the case of a girl who died during a relapse from accidental loss of blood after the application of leeches; an old Highlander, who would take no other medicine than his own mountain dew; and an old woman, above 60, who, when convalescent, took a shivering fit and died immediately.

The appearances found on dissection, in our fatal cases, were as follows:—In two cases there was well marked arachnitis, viz., by extensive effusion of coagulable lymph, which was deposited between the arachnoid and dura mater. In both there was great vascular turgescence; some effusion into the ventricles; and in one of these there was white ramollissement in the centre of the brain. In two men, and one old woman, the vessels of the brain were found very much gorged with blood and the pia mater, throughout its whole extent, had its vessels amazingly distented with dark blood. The preparations were dried on glass, and can even now be seen in this state. In these three last-mentioned cases there was some effusion under the arachnoid, and the ventricles; and on slicing the brain,

an unusual number of large bloody points were observed: there was also bronchitic effusion, and in one of them a considerable portion of the lungs was in a state of softening and intensely red. In the old woman, who died so suddenly during a rigor, when apparently convalescent, there was little disease in the mucous membrane of the stomach and bowels; but in one of the men, there was extensive vascularity of this membrane, but no ulceration; the mucous membrane of the stomach corrugated, and the whole of the splenic extremity was studded with red points, which were seen through a great quantity of thick viscid mucus, which, being washed off, and the stomach stretched, these red points were discovered to be vessels, which existed in immense numbers; the vascularity was greater, however, in the mucous membrane of the bowels, particularly throughout the whole of the ileum, and a great part of the colon. In the other man, when the abdomen was opened, the small intestines had a black appearance, as if in a state of mortification; they were found filled with a bloody-looking exudation, which, from its weight, had borne them down into the cavity of the pelvis. It was thought at first that this matter was the sole cause of the discoloration; but, upon cutting open the intestine, it was found that they owed this colour principally to great vascularity; there were no ulcerations. There are dried preparations, and drawings of the appearances in this case, in my museum. In other cases, there were ulcerations in the ileum and colon, of which also the preparations and drawings are in the museum; and I am inclined to believe that, if these appearances were properly looked for, they would be more frequently seen. In one case, the left kidney was enlarged, as well as the ureter; its pelvis, on being cut open, was found to contain about six ounces of pus, and the inner membrane was very vascular. In the body of the old woman, who, it has been above stated, died suddenly during convalescence, the diseased appearance was, that both lungs were found as black as they usually are when affected with melanosis. I was not at the dissection, being engaged at the time in delivering a lecture; but Dr. Crellin, who conducted the examination, sent for me, and it was proved to the satisfaction of all present, that this appearance was not melanotic, but produced by venous engorgement. I had never before seen the whole of both lungs so completely engorged; they sank in water, but after being washed, they regained not only their natural appearance, but their proper degree of buoyancy. The characters of the ulcerations shall be stated in the second part of the work, when treating of inflammation of the mucous membrane of the stomach and bowels.

[Elaborate investigations into the phenomena of that form of continued fever which resembles the *typhus of camps*, have been made by MM. Louis and Chomel; and the joint labours of these two distinguished pathologists, have presented to the public a mass of facts which greatly enrich the history of this prevalent febrile affection. The term *typhoid fever* is preferred by both these authors, as being most applicable to the protean shapes of the disease, and as reconciling the conflicting names under which it has hitherto been described. It has also the advantage of not originating in any preconceived idea,

founded upon groups of symptoms which are merely incidental. Typhoid fever, according to the signification which is given to it, embraces a wide range, and includes various modifications which hitherto have been considered distinct.

Upon consulting the records of endemic and epidemic fevers which have assumed the form of typhus, the minute details of their exterior symptoms will be found sufficient to convey accurate ideas of their more prominent characteristics; but when we search for information as to the extent, the precise nature, and the location of the anatomical lesions accompanying them, the descriptions will be found exceedingly defective.

The peculiarity of the researches of Louis and Chomel into the nature of typhoid fever, consists in drawing the attention of the profession to certain symptoms referrible to existing lesions which had not before been regarded as peculiar to this affection. From these they deduce a diagnosis established upon the sure basis of nature; and, from the certainty which exists of an invariable diseased condition of particular organs, direct the attention to the consequent dangerous results. The prominent and material facts are all that we can now present; but these shall be given as faithfully as the occasion will permit.

The invasion of typhoid fever is not always the same, nor are the symptoms invariable. Precursory indications of the attack may exist, or they may be wanting, but most commonly the attack is sudden. Of 112 cases, 73 were attacked suddenly, and 39 laboured under premonitory symptoms. The phenomena of invasion were as intense in those who were warned of its approach, as in those who were not; viz., intense headache, sometimes preceded by diarrhœa; alteration of the features, stupidity, muscular weakness, abdominal pains, &c.

Chomel has divided the march and progress of the disease into three periods, each including seven days, and characterized by particular manifestations; these are called septenary periods.

Symptoms occurring during the first period.—Headache in all cases, debility and stupor, *diarrhœa*, *meteorism*, increased sensibility of the abdomen, *especially in the right iliac region*, gurgling when pressure is made upon the lower part of the belly, *epistaxis*, and finally the *eruption* designated by the name *typhoid eruption.* During the first period, the change of countenance is very striking: the features are without expression, and evince an indifference and apathy which are peculiar, and from which the patient can scarcely be roused. In consequence of great weakness, the patient sleeps upon his back, and, if forced to sit upright, dizziness and vertigo compel him to resume the horizontal state. Insomnia is a frequent attendant, partaking of that form of disturbed rest which is called *coma vigil.* The mouth becomes sticky, its humidity diminishes, the saliva is thick and small in quantity; this is the first degree of dryness, which afterwards becomes complete. The colour of the tongue is far from being as uniform as is stated, or of as much consequence as some imagine. It is, at the commencement, red at the tip and edges, with a white film on each side; but for the most part,

this reddening of the tongue does not present itself until the termination of the first period, and is preceded by a whitish, suburral condition. The lips and teeth become dry and incrusted at the same time that the mouth is parched. Sore throat is not an unusual symptom. Loss of appetite, nausea, and vomiting are frequently noticed. Great thirst is an usual attendant.

Diarrhœa is one of the most constant symptoms of this period, appearing in nearly every case; it may, however, be postponed to the commencement of the second. It differs as to the number of the evacuations, and the character of the matter voided. Meteorism or flatulent distension, is owing to the presence of gas in the bowels, and in obscure cases can only be detected by percussion; but at times the abdomen rises above the level of the thorax, and considerable uneasiness is the consequence. Gurgling noises are owing to the combined effect of gas and the liquid contents of the bowels, passing from portion to portion, favoured by the peculiar condition of the ileo-cœcal valve.

At the commencement the general reaction is high, with well-marked inflammatory symptoms, but these in a few days diminish; the pulse retains its frequency, but loses its fulness and force, becoming small and weak. The skin is aridly hot, and frequently continues so throughout the disease. The heat is in the first instance accompanied with moisture, but soon becomes dry and mordicant. Epistaxis is an important circumstance, and its frequent occurrence is peculiar to this affection. The respiration is affected with the sibilant râle; there are cough, and expectoration of transparent, viscid, tenacious mucus. The last phenomenon we shall mention is the *typhoid eruption*. Of 54 cases in 1831–32, but two presented this symptom as early as the sixth day; in the remainder, it was witnessed during the second and third periods. Death is rare within this first term; it happened once in 42 fatal cases.

Symptoms of the second period.—At this time we have new symptoms submitted to our inspection, and modifications of those which already exist. Generally, upon the seventh or ninth day, the typhoid eruption makes its appearance. This consists of small, rose-coloured spots, from half a line to two lines in diameter, of a rounded or oval form, scarcely elevated above the skin, and which are readily removed by pressure, but return immediately when it is withdrawn. These spots are scattered over the abdomen, sometimes upon the chest, and rarely upon the thighs, arms and other parts. To characterize typhoid fever, the number of them should at least amount to five-and-twenty. Their continuance is by no means uniform, disappearing in two or three days, or remaining twelve or fifteen. When they are about to disappear, their colour becomes less intense, and finally fades away entirely. No conical form or vesicular condition is ever apparent. Of 70 cases, 16 were without them. The time of appearance may, however, be late in the progress of the disease, and it has even been observed as late as the 39th day.

Another eruption is witnessed during this period, characterized by the form of vesicles called *sudamina*. They are minute, elevated and transparent, and can be more readily perceived upon viewing

them obliquely, and although not exclusively confined to typhoid fever, they, for the most part, appear twice in the progress of the disease, first at its commencement, and again towards its termination. There exists a remarkable disposition to the formation of sloughs, and the production of foul sores upon different portions of the body, especially where pressure is kept up, or irritating substances have been applied. Ulceration, however, is not confined to the external parts, but is observed in the mouth, throat, and on the tongue and lips. Leech bites and minute incisions, may exhibit the same tendency to ulceration, but this circumstance is rare. It is at this time that previous stupor and prostration become more marked, occasioning perfect helplessness, and involuntary discharges from the bladder and bowels. Finally, difficulty of deglutition, consequent upon organic lesions of the throat, or upon weakness; spasmodic action of the muscles of the face and extremities, or complete rigidity of them; delirium; increase of meteorism and diarrhœa; bloody alvine discharges, together with great fetor of the perspiration and pulmonary exhalations, are the most essential symptoms of this second period.

Symptoms of the third period.—The phenomena of this period vary according to the change which may be undergone, whether to a safe state of convalescence, or to a still more alarming condition, shortly terminating in death. If the former event is about to happen, all the symptoms are gradually ameliorated. But should the contrary termination threaten, symptoms indicating the near approach of dissolution will be apparent. The stupor becomes profound; the mouth secretes a grayish, sanious, fetid discharge. The urine has an unnatural, disagreeable smell. Respiration is more and more embarrassed; the pulse is small, weak, and fluttering; the skin becomes cold and clammy, and the countenance has that peculiar expression which is designated *facies hippocratica*. In this condition the patient dies, or convulsions may precede the concluding scene.

Of forty-two cases which terminated fatally, ten died during the two former periods; the remainder, after the third had been entered.

Anatomical lesions.—There are peculiar organic changes so constantly attendant on this disease, that an exception rarely occurs; but there are others, found in different organs, which are not so invariable, and which may be regarded as accidental. The anatomical leisons may, therefore, be separated into two classes, constant and inconstant. The first occupies the *mucous follicles* of the intestines and the *mesenteric ganglia*. The follicles are of two kinds, isolated and clustered; and their mode of alteration and appearance is by no means the same under all circumstances, but varies according to the period of the disease and the form which it may assume. It is a difficult matter to determine when alteration of the follicles commences, as death never happens prior to the seventh day. Of 55 subjects inspected by M. Louis, the earliest period at which death took place was the 8th day. When under these circumstances an incision is made into the abdomen, the intestines are noticed distended with gas, which augments their transparency, and permits us to distinguish exteriorly numerous opaque spots corresponding to the diseased follicles. Examining into the nature of the change in

the latter, they will be found prominent and swollen, and from having their edges brought into relief, present somewhat the form of mushrooms. Their colour varies in intensity, but is always more or less marked, exceeding the redness of the surrounding mucous coat. Their size and form retain as little uniformity as their colour: the largest are elliptical, exceeding, in rare instances, two or three inches in length, and half or a whole inch in breadth; these occupy the glands of Peyer. The smaller ones are round, and have their seat in the same glands; but besides these there exist isolated and scattered prominent follicles, rounded and swollen; the latter are the glands of Brunner. The usual location of these appearances is upon the side of the intestine, opposite the mesenteric attachment, and they are more numerous, denser and larger near the valve. The plates (placques) give to the feel a sensation as if a solid, elastic substance was introduced between the intestinal tunics. Upon the seventh day, in a single case, and at periods not long after in other cases, the mucous membrane covering them had undergone no appreciable change; if any thing, its thickness was rather diminished than increased. If these enlarged glands are cut into perpendicularly, the mucous membrane is first divided; then a layer of yellowish-white matter, homogeneous in consistence, firm and brittle, the cut surfaces being smooth and shining: the thickness of this matter varies from one to two lines, and beneath is found the cellular tunic. An orifice is rarely noticed in the clustered follicles, but is readily detected in the isolated.

At this stage the mesenteric ganglia, situated between the lamina of this attachment, which are nearest to the diseased follicles, are increased in size and become red. They are even observed as large as a pigeon's egg. There is sometimes complete softening, while at others their firmness is rendered greater. These are the most important lesions, but in their development an uniform state of progression is observed. Ordinarily those nearest the ileo-cœcal valve are the first to become affected: and, in the early stages, as they recede from this focus, a greater degree of healthiness is noticed: but, as the disease advances, a greater number become affected. The same circumstance holds both with regard to the follicles and the ganglia. Sometimes several feet of intestine are implicated in this manner. Later in the disease, other conditions are perceived: the mucous membrane investing the follicles becomes rugose, hollowed out, and disappears entirely, *leaving an excavation which penetrates more or less deeply into the subjacent layer;* but as this latter is not entirely removed, there remains a portion of the gland to show the progress of the alteration. According to the combined observations of Louis and Chomel, it was determined that ulceration commences from the eighth to the fifteenth day. Ulceration pursues the same course as tumefaction; beginning at the same place, and being more frequently observed in the glands of Peyer. The aspect of the ulceration presents two varieties: in one, it commences in the mucous membrane, originating at a minute point and extending until the whole gland is involved: in the other the ulceration begins with softening of the yellowish matter, and a process is gone through re-

sembling gangrene, by which the whole substance is removed: the remains are evident by inspection, but diminished by suppuration, while the investing mucous coat is in a comparatively healthy condition, or only partially displaced. This latter variety is more frequently met with in the clustered follicles. Fully formed ulcers assume conditions which it is important to notice: their edge or bottom presents no remains of the substance of the follicle in a partially broken down state; it has entirely disappeared, leaving a vacuity in the mucous membrane. The form of the ulcers is various: some being elliptic, others round: they are also equally dissimilar in size; and in some cases the borders are so smooth as to convey the idea of their being made by a punch. In some, the mucous membrane alone has been removed, the bottom of the ulcer consisting of cellular tissue; but in others the cellular and muscular layers of the intestine are likewise deficient, the exterior peritoneal coat preventing complete perforation. During the first and second periods, it is rare that the ulcers are as numerous as the prominent follicles.

Opportunities are sometimes afforded of witnessing the mode in which these ulcers heal. It is precisely the same mode that ulceration of the skin undergoes in the process of cure: minute granulations sprout up, and are converted into the reticulated tissue, which forms a true cicatrix. Cicatrization, after it has been completed, is plainly demonstrable; but after a length of time it becomes confounded with the untouched mucous structure, and no trace of it is to be detected. Corresponding to the advanced change in the follicles, is a condition of the ganglia closely allied to suppuration, and in some cases pus is found in their substance.

Lesions of organs, inconstant as to their presence or absence, appear at times as accidental accompaniments of the pathological conditions which have been somewhat minutely described. They are, ulceration of the mouth, tongue, pharynx and œsophagus—injection, softening, alteration of the relative thickness of the mucous coat of the stomach, very rarely ulceration: similar changes occur in the intestines; alteration of the size, consistence and colour of the spleen; and less frequently of the liver: varied conditions of the pulmonary apparatus are occasionally present, for the most part the consequences of inflammation. And lastly, lesions of the brain and its appendages.*

A few words with regard to the diagnosis, the nature of the affection, and one or two interesting facts connected with the peculiar anatomical lesions, will conclude this very brief account of the researches of Louis and Chomel. At the immediate onset of the disease, it is extremely difficult to determine the character which will be assumed, and some time must elapse before the precise symptoms

* [The preceding remarks on the morbid conditions of the gastro-intestinal mucous membrane, are republished with little variation from our first edition. Nothing of the kind was embraced in the *first* London edition; but in the *last*, some of these facts were embodied by the author in his chapter on the "Inflammatory affections of the organs contained within the cavity of the abdomen." As I have considered these lesions in their relations to fever, and as the author, on the other hand, has viewed them chiefly in respect to local inflammation, I have thought it better to let both expositions appear separately, than attempt to combine them in a single chapter. *See Chap. VII of the present volume.*]

enable us to form an accurate opinion. Nevertheless, even during the first few days, a pretty correct conjecture may be drawn from the occurrence of several attendant circumstances. Thus, if the attack be sudden—if, from the first, persistent headache be established, with giddiness and tottering in the gait, combined with well-developed fever, suspicion will be awakened; but if, still further, upon the second or third day, there exist diarrhœa, prostration, commencing stupor and nasal hæmorrhage, this suspicion will be almost converted into certainty. But it is most prudent to suspend our decision until more fully determined symptoms appear; and these are meteorism, typhoid or rosaceous eruptions, low muttering delirium, sudamina, fuliginous aspect of the mucous opening, &c.; which remove all doubt and obscurity.

A question presents itself, how far the disease termed typhoid fever is connected with the lesions which have been described. To determine this, we must recur to the division which was made of the anatomical derangements into two classes, constant and occasional. Now it being conceded that the latter are but accidental, important truly as complications, but not necessary to the existence of the disease, the constant lesions will constitute the objects of our inquiry. Are they so uniformly present in all cases as to warrant the appellation *constant?* In all but a very few rare instances they have been found. These instances have occurred in the hands of such able observers as Andral and Louis; and it may still be regarded as undecided whether they were true forms of typhoid fever, or depending upon circumstances which were wholly independent of it. As to the secondary or primary nature of the lesions, a great deal could be said. The intensity of the symptoms, however, bears no proportion to the number of diseased follicles, inasmuch as numerous cases occur in which these are deranged but to a small extent: in two cases, but a single ulcer could be detected. M. Chomel is inclined to the idea that in this respect the affection is allied to the exanthemata.

A remarkable termination sometimes happens in this affection: it is the sudden and unexpected occurrence of peritonitis, which frequently succeeds the exhibition of cathartics: the cause of its production is dependent upon intestinal perforation, and consequent escape of the liquid contents of the bowels into the abdominal cavity; an event which is almost necessarily fatal.

Critical days.—There are certain changes, as the author has already observed, (page 67,) which occur in most forms of remittent and continued fever, such for example, as the increased exacerbation on the alternate day, the increase of the febrile symptoms, once or twice in each day, and lastly, there seems to be a law of nature by which fevers tend to a termination on certain days in preference to others. This doctrine, which originated with Hippocrates, was denied by Celsus, and is still the subject of great diversity of opinion. It is remarkable, however, that De Haen has put Hippocrates to the test on his own data; for on analyzing all the cases of fever recorded by the "father of medicine," he finds the doctrine of critical days to be sustained by the results; for of 168 terminations of fever, 107, *or more than two-thirds,* took place on the critical days. The latter

are the third, fifth, seventh, ninth, eleventh, fourteenth, seventeenth and twentieth; and the fourth and sixth have always been regarded as frequently but secondarily critical.

I think it will be admitted by most practitioners who have given attention to this question, that when we can unequivocally establish the day on which fever commences, the disease will, in the great majority of cases, be found to terminate on some one of the assumed critical days. "The following table," observes Dr. Tweedie, "constructed from 630 cases where the commencement and termination of the fever could be fixed with tolerable precision, certainly presents a remarkable correspondence with the ancient doctrine.

DAYS.			DAYS.		
Critical	Non Critical	Cases.	Critical	Non-Critical	Cases.
3		6	14		63
4*	4*	18		15	10
5		80		16	11
6*	6*	34	17		34
7		129		18	2
	8	26		19	4
9		80	20		0
	10	17		21	15
11		69		22	3
	12	80		23	0
	13	15			

Dr. Tweedie further remarks that of these 690 cases, (which occurred under the observation of Dr. Welsh, in the Edinburgh epidemic of 1819,) the crisis took place in 470 on critical days; in 52 instances on the subsidiary critical days, and in but 108 cases on the non-critical days; and he adds, that these data are founded on the several types of remittent or continued fever, at a time when synocha and synochus were prevalent diseases.*]

HECTIC FEVER.

Hectic fever is generally supposed to be symptomatic; even Cullen embraces this opinion. It may be defined to be febrile symptoms, occurring in the course of some internal chronic disease, when the patient is much debilitated. Heberden states that irritation in any diseased organ will give rise to it. An opinion has been pretty general, that hectic fever is produced by no other cause than the absorption of pus; and when pus was not found upon dissection, it was hastily concluded that it had existed, but was all absorbed; or that hectic fever is sometimes idiopathic. My own belief is, that this combination of symptoms has no necessary connection whatever with pus; and according to my experience, it most frequently (al-

* Library of Practical Medicine, Vol. I. p. 143.]

though certainly not always) depends on inflammation of the mucous membranes, and more particularly that of the stomach and bowels.

Symptoms.—Hectic fever is attended with great and increasing debility; a weak quick pulse; each paroxysm commences with chilliness, succeeded by reaction, which is soon followed by copious perspiration. Indeed, sweating is at all times easily excited by any exertion. The surface is pale, except the cheeks, which present what is very aptly styled the "hectic blush;" and there is frequently great wasting of the muscles. The appetite is impaired, the stomach occasionally very irritable, and in nine fatal cases out of ten, diarrhœa comes on during the course of the disease. The discharge from the bowels is always very fetid. The breathing is anxious. The patient is generally restless, and frequently complains of pains that are ascribed to rheumatism.

[It is, however, remarkable, that with all the general disturbance of the functions, the tongue is often perfectly clean to the last, the appetite good, and the digestion seemingly unimpaired. In many instances, moreover, I have observed the absence of headache or any cerebral excitement or distress, even during the height of the febrile paroxysm. The latter usually comes on in the afternoon or early in the evening, and continues through the night; but towards morning it passes off with colliquative perspiration, leaving the patient in an exhausted condition, both of mind and body. Beside this principal paroxysm of fever, there is often a second and milder one in the morning, which runs its course more rapidly, and is less depressing in its effects.

The period between the paroxysms is almost invariably a mere remission and not an intermission of fever, and the pulse continues at ninety or upwards, abating in force, but not much in frequency.

The advanced stage of hectic fever is often marked by ulcerated throat, an aphthous state of the mouth, with a remarkable transparency of the citeguments, and a preternatural brightness of the eyes.]

It is said that this disease is liable to be confounded with intermittent fever; but the history of the case, and the appearance of the patient, will readily distinguish them.

Treatment.—As hectic fever depends upon a morbid condition of some structure of the body, our attention must be directed to the seat of the disease. Surgeons very often cure patients of hectic fever, by cutting off a diseased limb which had produced the constitutional symptoms. There is no case in which the difference is so strikingly shown between routine practice, and that which is directed by sound pathological views. The routine practitioner will be invariably found to treat some of the symptoms thus:—Has the patient no appetite? Give him a tonic.—Is he purged? Prescribe an astringent.—Is he griped? Give him an opiate.—Is the urine scanty? He must have a diuretic.—Has he profuse perspirations? Let acid drops be exhibited.*

[* Yet it must in candour be confessed, that there are numerous modifications of disease in which we can do little else than palliate symptoms. Thus, every practitioner must have met with examples in which life has been prolonged and suffering

A pathologist, it must be admitted, is often obliged, in the present state of our knowledge, to act empirically; but his remedies will always be found to be few in number. If the patient have diarrhœa, he will endeavour to ascertain upon what morbid state that symptom depends; if there be pain in the abdomen previous to an evacuation, if the pain be increased by taking a cold drink, if the tongue be red and glazed, if there be aphthous ulcers in the mouth and throat, if the stools are mixed with mucus, or are watery and fetid, he knows he has to treat inflammation, and probably ulceration of the intestines. This leads him to apply a few leeches to the abdomen, if the patient's strength be not greatly reduced, followed by contra-irritation; and then, if there be any remedy that he knows will relieve the patient, that remedy he will prescribe. It is truly lamentable to see the symptomatical physician, one day treating the diarrhœa with astringents, and the next waging war against the perspirations. —This subject will be more fully illustrated hereafter. Opiates are frequently of considerable use in soothing the patient's sufferings.

GENERAL PATHOLOGY OF ERUPTIVE FEVERS.

The diseases, which fall to be described under this head, are to be considered as fevers, attended during part of their course by eruptions. Whatever difference there may be in the appearance and form of the eruption, they have a certain general character common to all, viz., that febrile symptoms precede the eruption.

According to the humoural pathology, the fever is produced by a concoction of the humours, by which a peccant matter is thrown to the surface, forming the eruption. Other pathologists look upon these diseases as peculiar and essential affections of the epidermis, sometimes *followed* by inflammation of the chest and its accompanying fever; and they account for the sore throat which occasionally occurs, by its continuity between the skin and the diseased internal organ.

My own opinion is, that the eruption ought to be regarded as a mere symptom of this class of diseases. Yet it cannot be denied that there is something very peculiar in it—peculiar inasmuch as the eruptions present external characters, differing from each other, as well as from other eruptions, and that the diseases occur only once in a lifetime. After a long and patient investigation, comparing the symptoms with the appearances found on dissection, I have come to the opinion that the mucous membranes are the seat of the disease, the nature of which is inflammation, more or less acute and extensive; and that the part generally most implicated, is the mucous membrane of the lungs, particularly in measles and small-pox; while

mitigated, by checking a diarrhœa, or a colliquative perspiration, by direct and what might be called empirical remedies. These observations will be practically applied in the chapter on Phthisis.]

that of the bowels is the part chiefly, if not principally, affected in urticaria, roseola, and military fever.* The eruption is merely to be regarded as a symptom, and by no means a universal symptom. It is well known that many cases of eruptive fevers are very mild, and require little treatment, while others are extremely severe and fatal; and that a great deal depends upon the eruption, whether it comes out at the usual period, and whether it remains out, or prematurely and suddenly recedes. The eruption, in point of fact, ought to be regarded as a natural blister, acting as a contra-irritant. It is produced by powers inherent in the constitution, that enable it to remove so much of the diseased action from an internal organ, the functions of which are more immediately necessary to life. In slight cases, I conceive the eruption is in proportion to, if it does not exceed, the amount of the internal disease. This may be stated without reference to the quantity of the eruption, except, perhaps, in small-pox. There can be no doubt that the eruptions are produced by inflammation of the cutis, which consequently must take off so much of the determination of blood, and so much of the diseased action from internal organs.

These circumstances, it appears to me, are clearly proved—

1. By attending to the constitutional commotion and oppression of the whole system, and the morbid changes in the functions of various organs, for many days before the appearance of the eruption.
2. By the relief afforded, in general, after the free development of the eruption.
3. By the increased suffering and danger which exist when the eruption is deficient, or when its repulsion suddenly and prematurely takes place.
4. By the relief which follows proper treatment; and,
5. By the appearances observed on dissection.

With respect to the first of these points, it may be stated, that the eruption does not appear in general till the third, fourth, or fifth day of the complaint, and during that time, the patient labours under the combination of symptoms denominated fever, and suffers from the impeded functions of all the organs; all the symptoms denote internal disease. That the respiratory organs suffer very considerably may be discovered by the state of the respiration, the cough, the anxiety and colour of the countenance, but more particularly by auscultation, which will announce bronchitis in its first stage. In this stage, which is called the eruptive, there are frequently affections of the brain announced by the patient suffering from delirium, lethargy, or even coma; and it is by no means uncommon to see convulsions, or other serious nervous symptoms, come on, at the period when the eruption ought to have been fully developed, but has not yet appeared, or has only partially come out.

As to the second point, which has been offered in proof, it is to be observed, that the symptomatical physician will not be inclined to

* ["Measles and scarlatina begin by gastro-enteritis, and by an acute catarrhal inflammation of the eyes, nose, throat, or bronchiæ. These phlegmasiæ constitute the whole danger of these diseases, by becoming violent, and attacking the brain and all the viscera.—*Broussais.*]

receive it as evidence in favour of the views which I wish to establish. He will say there is no relief; and in so far he will say truly. The eruption being occasioned by extensive inflammation of the skin, produces great irritation, and very often an increase of the febrile symptoms; that is to say, the person will complain more of thirst, restlessness and uneasiness, than previously. But still a pathological eye will discover relief—relief produced by the translation of a part, and perhaps a great part, of the diseased action from internal organs to the surface. The symptomatical physician will point out to us that the respiration is still hurried and short, but we may be able, after an examination of the lungs, to assure him that there is less congestion of the lungs, and less inflammatory action in their mucous membrane, than before; and that the state of the respiration which he has noticed, is now produced principally by the hurried circulation through the lungs; so that, pathologically speaking, the patient is relieved. A common blister, when it is sufficiently large, very frequently increases the patient's sufferings, while it has mitigated the disease.

The third point of proof is the acknowledged danger which exists when the eruption is deficient, or when its repulsion has taken place. Dr. Gregory, in his lectures, when treating of scarlatina, used to make the following statement: "We find a connection similar to that between the efflorescence and other symptoms in this disease, existing between the eruption and general affection in measles; for there it is not critical, but is accompanied with an alleviation of the symptoms, which is greater or less according to the degree of the eruption; and all the symptoms are very much aggravated by the repulsion of it." Indeed, if the reader will refer to any author who has written upon this subject, he will find, that in the severe forms of the disease, which are commonly described under the terms *scarlatina maligna*, *scarlatina anginosa*, and in *rubeola putrida* also, the eruption is either wanting, or it appears at irregular periods, but is seldom permanent; and it is in these severe cases that we meet with what are called typhoid symptoms, diarrhœa, and hæmorrhage from the nose, mouth, or bowels. The first question which it is natural for an inquirer to ask, is, by what cause is the danger produced? It appears to me, that the reply is very easily made. There has been lately an extensive inflammatory action in the skin, which required a determination of blood to support it. During this time the symptoms were not very severe; but the moment that the blood forsook the surface, it was marked by increased internal distress; the respiration became more laborious, and the patient more or less comatose; perhaps convulsions appeared. Is it not quite natural, therefore, to conclude that these effects are produced by the sudden determination of blood taking place towards internal parts, producing engorgements, and ending in inflammation of one or more organs, if the eruption be not speedily brought back? But it will frequently be that kind of inflammation which has been described as suppressed, and which cannot fully develop itself. The external symptoms will lead a symptomatical physician to stimulate and give tonics, when the pathologist would try the effect of the warm bath, stimu-

lating frictions, and bleeding by leeches, if he could not open a vein; and he would also apply blisters.

The fourth point in the evidence, is the relief afforded by proper treatment. When the eruption is repelled from the surface, we use all the means within our power to recall it: the warm bath and stimulating frictions are first employed. The warm bath, which is the principal means to be depended on, may not be at hand, or we may have tried these remedies and failed; but we ought not to delay long under any circumstance, to open a vein, if the eruption be not speedily re-produced, particularly if the patient be above two years of age, and a vein can be found; if not, we must depend upon leeches, warm bath, and blisters. By opening a vein, however, we prevent a great deal of mischief and risk to the patient. If we cannot recall the blood to the surface, we reduce the quantity of it in the whole system, and thereby remove the accumulation from internal organs, alter the determination of blood, and then assist the system in creating reaction, if necessary, by the addition of a stimulant. But all this, to produce benefit, must be done instantly; every moment lost, diminishes the chance of relief. I am entitled to speak strongly, from the great success which has attended the treatment here recommended, not only in my own practice, but also in that of many of my pupils. Although many of these cases might be quoted in detail, yet the perusal of the following case, translated from the Clinique Médicale, by M. Andral, vol. iii. p. 72, will perhaps make a sufficient impression upon the minds of my readers. The case is entitled, "*Acute bronchitis; Measles; Premature disappearance of the eruption; Fatal dyspnœa.*"

"A baker, æt. 20, of a strong constitution, was affected within the last five or six weeks with slight diarrhœa; presented on the 10th April, all the precursory symptoms of measles, redness of eyes, flow of tears, coryza, hoarseness, cough; and continued in this state for the three following days. On the 14th, the eruption appeared, and the patient took to his bed. On the 15th, his whole body was covered, and in the evening he was admitted into the Charité; when he had a confluent, well-marked eruption; hardness and quickness of the pulse; redness of the tongue and lips; and a strong cough; there was otherwise no alarming symptom. Towards the middle of the night, the patient experienced, all of a sudden, an oppression, which rapidly increased, and on the following morning we found him in a state of partial asphyxia; the eyes prominent; the face of a violet colour; respiration short and very frequent; cough nearly constant; little mucous expectoration. Percussion elicited the natural sound through the whole of the chest, but the mucous rattle was audible, in different points, by means of the stethoscope. There remained only a few pale spots of the cutaneous eruption, which were fast dying away. The pulse preserved its frequency and *hardness*, and the tongue its redness. This train of symptoms seemed to indicate the existence of pneumonia; nevertheless, the pathognomic signs of this complaint were completely wanting.

"Could a simple bronchitis occasion, by its extreme acuteness or sudden exasperation, so much dyspnœa? and might not this inflam-

mation, joined to that of the alimentary canal, account for the complaint with which the patient had been so violently attacked? Be this as it may, the indications of treatment were clear;—to lessen the internal inflammation,* and *to effect a return of that on the skin.* With this object, twenty leeches were applied to each side of the chest, and ten to the epigastrium. After the blood had ceased flowing, a blister was applied to each leg, and the skin rubbed all over with liniment of ammonia. Marked relief followed the use of these means; in the evening the respiration was much less impeded, the cough less frequent, and the tongue had lost its redness. The eruption, however, had not returned.

"17*th*, The patient presented the symptoms of a severe bronchitis, accompanied with fever; the respiration was only slightly accelerated.

"18*th*, The fever was reduced to almost nothing, and the opaque expectoration announced the speedy termination of the bronchitis. In the evening, the respiration suddenly became very difficult, and twelve ounces of blood† were abstracted from the arm. The next morning the dyspnœa was still very considerable, and the pulse had become more quick. Two blisters to the thighs. During the whole of the day, the sense of suffocation continued to increase.

"20*th*, Face extremely livid, violent colour of the lips, orthopnœa; from the appearance of the patient, one would have thought that he was dying of aneurism of the heart.

"*Inspectio cadaveris.*—The mucous membrane of the larynx, trachea, and bronchial tubes, and of the smaller ramifications, were of a scarlet red. In a few points at the beginning of the division of the bronchia, there were some white concretions, resembling the false membrane found in croup.

"The lungs were sound and crepitated throughout their whole extent; posteriorly they were gorged with blood. Heart natural; clots of blood of a deep black in the right cavities; stomach white, as well as the smaller intestines, which contained a great number of ascarides and lumbrici in the lower portion; the cæcum contained several worms, (tricocephales); its mucous membrane presented a red spot near the valve, from which arose three or four small conical vegetations, three or four lines long. The rest of the large intestine white, and filled with liquid fæces. Liver gorged with blood. Spleen large and firm. A great quantity of serum infiltrated into the subarachnoid cellular tissue; the cerebral substance was not at all injected; the lateral ventricles, especially the right, were distended by much limpid serum."

The fifth point of evidence rests upon the appearances found on dissection; and it may be shortly mentioned here, that these consist of all kinds of lesions of the brain and membranes, usually produced by acute and subacute inflammation. The same observation may

* Had the distinguished author used the term "congestion" instead of inflammation, and had he employed venesection without delay, instead of applying leeches, he would have altered the determination of blood, and probably relieved the diseased organs. This ought to have been his practice, from the hardness of the pulse.

† It is to be regretted that this was not done two days earlier.

be made respecting the organs in the thorax. Within the abdomen, the chief diseased appearance to be observed is in the mucous membrane, particularly of the large intestine, which is inflamed, sometimes ulcerated. But in no case does the pulmonary system escape. The appearances in the brain and abdomen are not so universal, and may occasionally depend upon the impeded functions of the lungs, as will be shown hereafter.

If these observations be not fallacious, bleeding to a sufficient extent ought not only to relieve the constitutional symptoms during the eruptive fever, but after the eruption has appeared, ought to destroy it. Observations and experiments frequently performed and repeated by myself, and by my pupils, enable me to state, that these are facts which I shall not be afraid to repeat before the highest authorities in the profession, and stake my professional reputation upon the general result of the plan; having already seen recoveries take place, under this treatment, in cases in which such a happy termination was scarcely to be anticipated. It also follows, if these things be true, that even in ordinary cases there are two periods more critical and dangerous to the patient than any other; these are, the period at which the eruption ought to make its appearance, and that at which it should naturally disappear. In the first case, the internal disease has gradually become extensive and severe, and wants relief by means of the eruption. In the second, the disease which had existed at first, having been relieved by the external irritation, is now in danger of being reproduced by its cessation; and this of all others is the period at which, in the slightest form of the disease, the patient stands most in need of care and vigilant attention to the condition of internal organs.

This pathological description, if it should appear deficient, is so only, I am convinced, from the want of sufficient illustration, which would require a separate treatise on the subject. It is introduced in this place to prevent repetition, when treating of each of the diseases which fall now to be described.

SCARLET FEVER.—*Scarlatina.*

This term is employed to denote a disease attended by a fever, sore throat, and a red rash on the surface; which rash appears sometime between the second and fifth or sixth days of the disease, first upon the face and neck, and progressively spreads over the body, terminating between the seventh and tenth days. The rash has very much the appearance of the shell of a boiled lobster, and frequently there are minute vesicles. The inflammation of the throat sometimes runs into ulceration and sloughing.

The literary history of this, or of any other disease, is of little importance in comparison to an intimate acquaintance with its pathology, and proper means of treatment. Therefore, I shall proceed to

describe the phenomena, without caring from whence the disease came, or in what century it first appeared, further than to notice that scarlatina and measles were formerly confounded, from their mutual pathological resemblance. Sydenham appears to have been the first who gave this disease the name of scarlet fever, as well as a distinct description of the affection, pointing out the circumstances, with sufficient precision, in which it differs from measles.*

The term scarlatina, notwithstanding the philippic of Dr. Mason Good, is quite as good as his term *Rosalia;* it affords us an example of what is by no means rare, a disease receiving its name from a single symptom.

Scarlatina has been divided into three species, viz.

Scarlatina simplex.

——— anginosa.

——— maligna; which last includes the disease termed cynanche maligna. My chief objection to these terms is, that they do not spring from pathological considerations; and it may be said in the language of Dr. Hamilton, sen., that "it is altogether foreign to my purpose to engage in this controversy; and more so, as the distinction begins to lose ground as our knowledge of the disease becomes more comprehensive and accurate. The time may not be far distant, when scarlatina will be received as the generic disease, the full history of which will include the more aggravated symptoms as they appear in scarlatina anginosa, and in cynanche maligna; in the same manner as the history of variola comprehends the varieties of the distinct and confluent small-pox."

Scarlet fever is a fatal disease. The plague is scarcely more dreaded at Constantinople than scarlet fever is in Edinburgh; not because the disease is peculiarly severe, but that the notions taught in a dark age still prevail, and that certain individuals have not kept up their knowledge with the improvements since made in pathology.

Symptoms.—In eruptive, as well as other fevers, there are two great varieties, which may be named the congestive and the inflammatory; and subdivisions might be made of different combinations of these two.

In the congestive form of scarlatina, the patient complains of oppression, and so much debility, that he cannot support himself. Rigors more or less severe accompany or precede these symptoms. The face is pale, the features sharp, the eyes hollow, and deprived of their accustomed animation; the surface cool, particularly the extremities, while perhaps considerable heat is felt on the trunk of the body; the breathing is performed with more or less difficulty; the pulse varies, being sometimes soft, and perhaps weak, although it is occasionally strong; the tongue has a whitish and shrunk appearance. If the patient utter complaint, it will be of universal prostration and of headache, or weight on the top of the head, together with oppression at the præcordia, and difficulty in swallowing. On examining

*[A. D. 1670. It was called *Morbilii confluentes*, by Dr. Richard Morton and *Rubeola rosalia* by Hoffmann. The peculiar characteristics of scarlet fever as distinguished from those of measles were first pointed out by Dr. Withering, towards the close of the last century.]

the fauces, the parts may appear somewhat swollen, and of a dark colour; and should there be any ulceration, it will, perhaps, be ash-coloured, and look indolent. It may be stated, and with some plausibility, by that class of practitioners who are led only by symptoms, that those just described do not denote the existence of scarlatina; to which it may be replied, that one individual of a family will display such symptoms, while others are labouring under the disease in the ordinary form. Similar appearances have also come on in the course of scarlatina, upon the sudden disappearance of the rash, and further, the cessation of the congestive symptoms has been witnessed upon the reproduction of the rash; which phenomena have occurred so often, that I am compelled to receive them as part of the medical evidence. I have had one opportunity only of examining the body after death, in a subject who fell a victim to this form of the complaint. The throat was found to be very slightly ulcerated. There was considerable distension of the veins in the abdomen, the lungs were much congested, and the vessels of the head were remarkably full of dark-coloured blood.

[It is the congestive form of scarlatina which is most usually attended by convulsions, which constitute one of its most alarming complications. These are generally preceded by coma; but the latter sometimes continues until death, without any spasmodic action. When the convulsions are sudden, however, they are even less to be feared than those spasmodic affections of the extremities which come on insidiously, indicating a lurking affection of the brain, and always giving just cause of apprehension. They are usually preceded by some thickness of the voice and spasmodic flexion of the fingers or toes; and these symptoms may last for days, when they become general and end in paralysis, coma and death.

The most malignant varieties of scarlet fever in the United States are often wholly unaccompanied by the characteristic eruption. They commence with vomiting, followed speedily by purging, and both symptoms are often from the first intractable. The skin assumes a livid, cadaverous hue, the features shrink, the surface is cold, and the patient dies within ten or twenty-four hours, in a state of restless and muttering delirium.

Another very dangerous complication is that of croup, from which I have witnessed but a single recovery. Yet it is also to be observed that these forms of scarlet fever which are mild in their accession, often become slowly but progressively intractable, pervading the whole system like an insidious poison, impairing the function of every organ, and finally exhausting the patient between the fifteenth and thirtieth day from the commencement of the disease.

Scarlatina is proverbially a disease of infancy and childhood, and comparatively unfrequent in adults, in whom, however, the symptoms are commonly of a more aggravated character.

Fortunately for the human race, this fearful malady very rarely attacks the same individual more than once, nor have I ever met with an unequivocal exception to the rule.]

The pure congestive disease is rare; but it is very common to see the mixed disease, that is, a combination of the inflammatory with the congestive symptoms.

The inflammatory form of scarlet fever generally makes its attack in the following manner:—rigors, or only slight chilliness, followed by more or less pyrexia, restlessness, want of appetite, thirst, want of sleep, headache, some degree of nausea, oppression at the præcordia; tongue at first slightly loaded, red, with raised papillæ; or it may be much loaded with a yellow fur, and intensely red at the tip and round the edges. [The appearance of the tongue is characteristic. For the first few days it is usually covered with a white fur, as in ordinary fevers; but this sooner or later gives place to a uniform shining red colour, while the whole surface is studded with the inflamed papillæ which appear to take on the eruptive irritation, becoming elevated, sensitive and intensely red. In fact, the tongue, under these circumstances, has been aptly compared to a piece of raw beef. As the eruption declines on the surface, the tongue, in favourable cases, resumes its healthy appearance; but if the disease should be protracted and typhoid, the tongue becomes dry, brown and cracked or fissured; or perhaps assumes a smooth, glossy aspect, which is usually indicative of slow convalescence.] Soreness of the throat is complained of, which is sometimes the first cognizable symptom; it is either slightly swollen and much inflamed, or of a dusky hue, without much swelling; ash-coloured ulcerations may often be discovered, but we must be upon our guard not to mistake exudations of coagulable lymph for ulcerations. In the generality of cases, there are evidences of subacute inflammation in the larynx and bronchi, which is announced by difficulty of breathing, cough, and hoarseness, and more particularly by auscultation; but the inflammation in the bronchial tubes is not so decidedly marked in all cases of scarlatina, as in measles and small-pox. Sometimes there is delirium, but perhaps during the course of the night only, and sometimes some degree of coma. These symptoms may continue for 2, 3, 4, 5, or 6 days, before the rash makes its appearance. Sometimes, indeed, the eruption is the first symptom which announces the complaint, but this happens in the mildest cases only.* In general, the eruption appears on the 4th or 5th day.

The eruption is of a scarlet colour, first to be observed on the face and neck, and in the course of twenty-four hours becomes pretty generally diffused, patches appearing here and there more intensely red than the surrounding parts; on pressing with the finger a white mark is left, but the redness returns in a moment afterwards.

[The rash begins in points or dots, and from these centres it soon spreads over the surface, first appearing on the face, breast and neck, and subsequently pervading more or less the body and extremities. On the latter, it sometimes causes an obvious elevation of the papillæ which feel rough to the touch and present some analogy to the eruption of measles. The rash begins to decline about the fifth day. I have, in some rare cases, observed the eruption to be attended at its very commencement, with an intolerable itching of the skin; and in one instance I was led to pronounce a patient affected with

[* I have met with a remarkable exception to this rule in a child, in whom the efflorescence appeared among the earliest symptoms, and yet the disease suddenly assumed a most aggravated form.]

the nettle-rash, who was actually labouring under scarlet fever, which in the end proved to be one of the most violent cases I have ever known to recover. Dr. Rush and others describe another eruption which they have sometimes observed about the fifth day of the ordinary rash, and constituted of semi-globular vesicles, containing a thin pearl-coloured serum, whence, in some of the older nosological works is derived the name of *Scarlatina variolosa.* I have never seen a case of this pustuloid form of the disease.]

After the eruption has existed from three to five days, it begins to decline; the cuticle subsequently separates and peels off. This is a very dangerous stage of the disease, and would be still more so, were it not that the eruption declines gradually, and that the circulation on the surface is still actively employed in the formation of new cuticle for the whole surface.

[The desquamation in scarlatina is peculiar. On the body, face and scalp it mostly takes place in bran-like scales; but where the epidermis is thicker, as on the hands and feet, the cuticle sometimes comes off entire like the fingers of a glove, leaving the subjacent papillæ distinct and sensitive for many days.]

Dr. Gregory, in his lectures, used to state, that "a copious efflorescence is a favourable symptom: when it is deficient, the symptoms are more severe; and when it is repelled, it never fails to aggravate both the general fever and the topical affection of the throat." "It is not an easy matter," continued he, "to explain the connection which subsists between the efflorescence and the other symptoms; it is not critical, but all the symptoms are much relieved by its coming out copiously."

Occasionally anasarca, and more rarely ascites, follow in the first or second week, and are attended with constipation, scanty urine highly albuminous, languor, nausea, general uneasiness, and other symptoms which have been denominated secondary fever.

[It is also not unusual to see inflammation and suppuration of the glands of the neck, sometimes extending to both sides, and causing great destruction of the parts involved. These glandular enlargements commonly take place subsequent to the inflammation of the throat; the extension of the one being proportionate to the violence of the other. This affection is sometimes very rapid in its development, the glands becoming hard, isolated and egg-shaped: and when this happens simultaneously on both sides of the neck, the larynx suffers greatly from mechanical compression, even to a fatal degree; the patient dying with all the symptoms of suffocation, owing, however, in part, to the tumefaction of the tonsils.

There is another appearance not so often met with, but much more to be dreaded—the *hæmorrhagic form* of scarlet fever. It usually commences by small purpurous spots under the cuticle of the chest and extremities. Some oozing of blood next follows from the mucous membrane of the mouth and nose, which sooner or later becomes profuse, and the patient eventually bleeds to death. If a vein has been opened in the arm, or an abscess lanced in the neck, the incisions become a source of hæmorrhage; and in a case that occurred in my practice in the winter of 1834–5, and which was seen

by Drs. J. Rhea Barton and Wood, the abscess in the neck suddenly filled with blood, and the latter making its way through a leech bite, flowed out as if from a divided artery, and destroyed the patient in a few hours.*]

Appearances on dissection.—In the dissections which have fallen within my observation, the inflammation and ulceration in the throat have not appeared so extensive and important as had been imagined before death. The most constant diseased appearances have existed in the air passages, presenting inflammation in its different stages; viz., vascularity of the mucous membrane, thickening, and occasionally, ulceration; in two cases I have seen the epiglottis nearly destroyed by ulceration; and also effusion of thick, tenacious matter, filling up the air passages to the bifurcation, and often lining the trachea. Sometimes the substance of the lungs is seen inflamed, and occasionally the pleura, but traces of inflammation in these two tissues are not so frequently met with, and are to be regarded more as examples of acute action, extending from one tissue to another by contiguity, than as forming essential parts of the disease. The lungs are sometimes so much gorged with blood, as to have lost in a great degree their natural appearance and buoyancy. In the brain there is sometimes arborescent vascularity, with turbid effusion between the arachnoid and pia mater, and the ventricles are occasionally filled with serosity. On opening the abdomen, the peritoneal coat of the stomach and bowels generally looks healthy, except in the congestive cases, when the smallest blood-vessels will be seen distended with dark-coloured blood. In different parts of the mucous membrane, we frequently see considerable vascularity, sometimes ulceration. The liver is often gorged, or soft in texture.

"From a cautious survey of the symptoms during life," says Dr. Armstrong, in his work on scarlatina, &c., page 16, "and from the examination of several bodies after death, I am warranted in affirming, that the brain, the liver, the stomach, the intestines, and the lungs, are the parts most often inflamed, and that the inflammation in these parts is generally the cause of death, together with the affection of the throat."

Treatment.—In scarlatina, as in other diseases, differences in pathological opinions have of course given rise to dissimilar methods of treatment. Some, considering it a disease of debility, recommend bark, and wine, or brandy, with nourishment, and condemn antiphlogistic means as highly dangerous; in this class of symptomatical writers stand Underwood and Dr. James Hamilton, jun. It will not surprise my readers, that the first named individual, who did not live long enough to profit by modern pathology, should have taught the doctrines that prevailed in his own time; but considering the account which every author gives of the symptoms and course of this disease, and the appearances on dissection, it is lamentable to reflect that there is one author of the present day, who speaks doubtfully even of local bleeding in scarlatina, and who recommends cordials and nourishment, and even wine itself, in large quantity. But

[* See Purpura, vol. 2, Pt. VII, chap. 7.]

all this does Dr. James Hamilton, jun.;* he goes even the length of quoting a great medical authority, *the head master of a boys' school in Yorkshire*, in whose practice, among the said boys, "*it was found that children under fifteen years of age, affected with this disease, required, within the twenty-four hours, sometimes not only a bottle of port-wine, and another of raisin, but also a proportion of brandy.*"†—Poor boys!

Underwood, in describing the treatment necessary in this disease, makes the following extraordinary statement: "Should the affection of the throat, therefore, be evidently inflammatory, or should a case occur where the fever may seem to be of that kind, (which may be better ascertained by the hardness of the pulse than any other symptom,) it will very rarely bear bleeding, even in the beginning of the disease, as symptoms of debility generally attend in some period of the scarlet fever, and will allow only of that middle course of treatment hinted at above. In a general way, a cordial plan is required throughout the disease."‡ And yet, on turning to the next page, it will be found he recommends bleeding in the secondary fever; and he also tells us, that a critical bleeding from the nose has saved life, when the patient's state "has appeared very hazardous, and the prostration of strength been considerable."

In the slighter forms of scarlatina, very little treatment is necessary, further than confinement, attention to the bowels to keep them free, and the antiphlogistic regimen. In such cases, however, the medical attendant should be careful to watch diseased action, at the period when the eruption naturally declines, for reasons already mentioned. Formerly, I saw many fatal cases of scarlatina, when I practised according to the opinion of the schools, carefully abstaining from blood-letting, and using all the means recommended to support the strength; but I occasionally observed patients snatched from the grave by considerable bleedings from the nose, and at times when it was thought the loss of an ounce of blood would prove destructive. These circumstances, together with the appearances found on dissection, led me to bleed in many subsequent cases, and I have never had occasion to regret it. Blood has been drawn at all periods of the disease, in cases where the state of the lungs and brain required it; and should the operation be performed during the period of the eruption, it will disappear, if a sufficient quantity of blood be taken. When the inflammation of the throat runs very high, I know no remedy productive of such certain and immediate good effects as general bleeding, but should the patient's strength be already reduced, leeches are to be preferred.

Dr. T. P. Lucas, of the royal artillery, and Dr. Wilson, cannot have forgotten the case of Ann M'Farlane, aged 18, which they treated, when they were my pupils in the year 1824, from whom they took above ℥xx of blood, with instant good effect, on the fourth day of the disease, when she had a large sloughing ulcer occupying the

* Vide his work on the Diseases of Children, p. 380.
† Management of Children, p. 381, ed. 1824.
‡ A Treatise on the Diseases of Children, p. 289.

whole of the right tonsil. She afterwards required no other remedies but laxatives, and in a fortnight returned to her usual occupation.

A great many other gentlemen, who have been pupils at my dispensary, can be appealed to, and I may refer in an especial manner to the testimony of my talented colleague Dr. Robertson, who was opposed to the practice of general bleeding in scarlatina, till he saw the success of it. [The medical profession in the United States is much divided in opinion with respect to venesection. In my own practice, I have resorted to it sooner or later, in every severe case, and thus far I have no disposition to change my plan. What else can we interpose in those violent inflammatory attacks, in which the burning skin, swelled throat, excited brain, and universal distress, call aloud for relief at the hands of the physician? How yet more imperative does this mode of depletion become, when convulsions are added to the frightful category? I am far from recommending the free bleedings which are advocated by the author of this work; because they would be unwarrantable in the disease as seen in this city and its vicinity. But moderate venesection at the outset, repeated, if necessary, has been of all other remedies, that which has produced, in my hands, the most gratifying results. The only two cases of fatal consecutive dropsy which have occurred in my practice, were patients who had not been bled; and I have thought that effusion is more liable to occur in those who, having had the inflammatory form of the disease, were not treated by venesection. Once for all, I would exhort the practitioner to discard any proscriptive rule with respect to bleeding in scarlet fever.

In that appalling variety of scarlet fever which is marked, as we have shown, by comatose delirium, a cadaverous skin, and the other evidences of an essentially malignant disease, every mode of treatment seems equally unavailing; and I have sometimes been unable to satisfy myself that the use of medicines had even the effect of retarding the progress of disease. When, therefore, malignant congestion takes place, our safest course is to apply leeches to the head, to maintain the capillary circulation, and consequent warmth by every available means, and to give internally, but with great circumspection, such medicines as the nature of the case may seem to demand. It is a great point, under such circumstances, *to do no harm*.] When general bleeding is either inadmissible, or not thought necessary, or when the child is under two or three years of age, local bleeding by leeches will be found highly serviceable. When the throat is extensively inflamed, although the accompanying symptoms may be mild, I always think it right to reduce the inflammation by the application of leeches, followed or not by a blister, according to circumstances. Laxative medicines, frequently repeated, are very necessary. [Yet blisters, especially when applied to the throat, are apt to become gangrenous, and therefore require to be resorted to with caution. The safest plan is to leave the blister on until it merely reddens the skin, (having first covered it with a fine gauze,) then remove it and apply a soft poultice, which will complete the vesicatory process with the least possible irritation.] Sponging the body either with tepid or cold water, produces good effects, by allay-

ing restlessness. Cold affusion may do no harm in the slighter forms of scarlet fever; but in the severe cases which invariably display marks of internal disease, and in which congestion has taken place, its use cannot be defended. [In children, especially, the use of a warm bath is particularly salutary, both in the hot stage of the fever and during the period of desquamation. Warm pediluvia should be frequently resorted to; and when intolerable itching of the skin comes on, it may be greatly allayed by sponging with equal parts of tepid whiskey and water. I have also found this form of irritation to be vastly relieved by the application of any animal oil, and also by combining the latter, as lard for example, with lime-water, so as to form a preparation resembling the cold-cream of the shops.]

The tartrate of antimony has been long employed in this country in the treatment of fevers and inflammations, and it has been found very serviceable in this disease, by controlling the action of the heart, and relieving uneasiness. It may be used in the diseases of children, by dissolving a grain in four ounces of water, a teaspoonful for a dose as often as may be thought necessary. [The safest diaphoretic is, perhaps, the citrate of potassa, as recommended in remittent fever, to which a little spirits of nitre may be added. If this, however, should not be admissible, small doses of the bi-carbonate of soda, dissolved in mint water, or some other agreeable fluid, I have found to answer a salutary purpose. All the milder alkaline preparations seem to be peculiarly adapted to scarlet fever; whence also the use of the chlorate of potassa, as recommended by Dr. Watson and other practitioners. A drachm of the salt should be dissolved in a pint of water, and this quantity may be taken by an adult, as a drink, during the twenty-four hours.*]

Gargles may certainly be employed, and those of a stimulating nature are much lauded; but it appears to me that the best gargle is a little warm water; and I particularly caution young practitioners against attempting to syringe the throat of a young child. Inhalation of the vapour of warm water, will be found to ease the throat more than any other gargle. [But after ulceration or sloughing commences stimulating gargles contribute greatly to convalescence. Nothing has been found more efficacious in the United States than Cayenne pepper, either infused in water, or mixed with vinegar, and frequently used. Diluted port-wine, the black-oak bark, and common green-tea may also be used with salutary effect. The too early use of such applications, however, is hurtful for obvious reasons. There are other cases in which the application of nitrate of silver has the happiest effects, especially in arresting gangrene. It is often best put on in the solid form; but if a solution is desirable, ten grains to the ounce of water will be sufficiently active, and this should be applied with a camel's hair brush twice or thrice a day.] Opiates

* [The following are Dr. Watson's exact directions for preparing this medicine. Two drachms of the chlorate of potass are to be dissolved in two ounces of hydrochloric acid, previously diluted with two ounces of distilled water. The solution must be put immediately into a stoppered bottle, and kept in a dark place. Two drachms of this solution, mixed with a pint of distilled water, constitute the *chlorine mixture*, of which a tablespoonful or two, according to the age of the patient, may be given for a dose, and frequently repeated.]

are often serviceable in the last stage, and during convalescence, to allay irritability, and procure sleep. [When the glands of the neck become much inflamed and swollen, leeches should be at once applied to them, followed by emollient poultices, and gently stimulating liniments. I have often by these means arrested the inflammation, but it will sometimes go on to suppuration, and form large abscesses: when there is no hæmorrhagic tendency, these should be opened with a lancet, to prevent a scar and circumscribe their ravages.]

Since the alteration which I have adopted in practice, I rarely see secondary fever or dropsy; but too great care cannot be taken during recovery, and the patient should be cautioned against the risk that he will run from exposure, errors of diet, and neglecting the state of the bowels. Should dropsy take place, it will in general be found to be of the acute kind, with coagulable urine, with a specific gravity of about 1010°, and will sometimes require the lancet, although brisk purgatives, with diuretics, will in general suffice.

Dr. Lewins was called to see a little patient of mine, who, after scarlatina, had dropsy with coagulable urine. Convulsions suddenly appeared when he was much debilitated. Dr. Lewins opened a vein, and allowed the blood to flow till the boy (whose age was ten years) was relieved; the blood weighed two pounds. No debility followed, and the boy from that time made a rapid recovery, and has ever since been healthy.

In conclusion, it may be mentioned, that various affections occasionally follow scarlatina, as inflammation and swelling of the glands, and perhaps more particularly of the parotid, which must be treated upon ordinary principles. Inflammation often attacks the internal ear, leaving a fetid discharge followed on some occasions by incurable deafness, which must also be treated by appropriate means. [Such, for example, as injections of the solution of bicarbonate of soda, or sulphate of zinc; or, where the discharges are fetid, a weak preparation of creosote water will answer an excellent purpose. A blister behind the ear, repeated from time to time, according to circumstances, will aid much in the radical cure of this troublesome affection, which not unfrequently terminates in incurable deafness. We often, also, see acrid discharges from the nostrils, which not only inflame the schneiderian membrane so as to cause great distress and pain, but they also excoriate the adjacent surface of the lip, and sometimes continue month after month with various degrees of irritation. The best corrective I have found to be the internal use of iodine and sarsaparilla; with injections into the nostrils of distilled creosote water, largely diluted.] These and other appearances following scarlatina, are commonly known by the term "dregs" of the disease.

[*Preventive measures.* Much has been said and written on belladonna, as a prophylactic of scarlatina. It was first employed for this purpose by Hahnemann, who was led to its use from observing that in small and repeated doses it produced a slight erythematic eruption, some tumefaction of the salivary glands, and dryness of the mouth; whence he inferred, from the resemblance these symptoms bear to those of scarlet fever, that it might counteract the infection of

that disease. He directed three grains to be dissolved in a fluid ounce of water, of which three drops were to be given to infants under a year old, and to older persons in proportion.

The use of this preparation as a preventive is purely hypothetical, nor is there the least reason to place reliance upon it. Had it been employed in the following case, its efficacy would have been, in the opinions of some practitioners, perfectly well established.

A young lady was attacked with high fever, which, at the end of the second day, proved to be scarlatina of a severe type. Her parents, seven brothers and sisters, and several servants, became apprehensive of the consequences, and inquired into the propriety of a part of them leaving the house for protection against the disease. I gave it as my opinion, that as they had been so much in the same atmosphere with the patient, it would be useless to fly; inasmuch as if they were any of them susceptible to contagion they must already have imbibed it. They all, in consequence, resolved to remain at home; and although they communicated freely with the patient, and assisted in nursing her until she recovered, not another member of the family took the disease.]

RUBEOLA.—MEASLES.

Measles may also be defined to be a disease attended by fever and an eruption, which appears at various periods, but generally at the termination of the fourth, or beginning of the fifth day, and continues for three, four, or five days; after which, some discoloration is left on the surface of the body, and occasionally the cuticle separates, but not so invariably as in scarlatina.

Measles has been divided into four varieties:

1*st*, Rubeola vulgaris.
2*d*, ——— sine catarrho.
3*d*, ——— nigra.
4*th*, ——— putrida.

Pursuing the same pathological plan, which has been adopted when treating of scarlatina, I shall also mention two great varieties of measles, the congestive and the inflammatory.

In the first species which has been so well illustrated by Dr. Armstrong, reaction does not take place; or if it do, it is slight, the eruption is trivial; the pulse is feeble and oppressed, perhaps quick; and the surface is free from that redness and heat which give such a striking external character to the pure inflammatory disease. This is, no doubt, one form of the complaint called *putrid*, and which has been described by Morton, Huxham, and Watson. The same pathology that was maintained in scarlatina, and also in the general statement concerning eruptive fevers, equally applies to this case, and renders it unnecessary to repeat the observations.

Capuron, in his treatise on the diseases of children,* makes the

* Page 293.

following statement:—One of the most dreadful complications of measles, is that with an ataxic or malignant fever. Individuals naturally lively and delicate, as those in infancy, are more subjected to it. It is one of those unlooked for anomalies in the vital properties. The functions of the brain are disturbed; respiration is deranged, and becomes extremely constrained; in a word, the patient is *quickly* reduced to the last extremity, if something be not done for his relief. The most active treatment is here indispensably necessary to sustain life, which is shaken to its very foundation." Subsequently he states: that "infants naturally weak, or who live under the influence of debilitating causes, are exposed to an adynamic or putrid fever during the course of the measles. One detects this dangerous complication by the change in the form and colour of the spots;—from being at first prominent and of a lively red, they become more depressed, pale, and livid; in which case, we must prevent the prostration of strength in good time, *and direct the eruption back again towards the surface of the body* by the use of tonics, such as wine, bark, and camphor; the greatest advantage may be also obtained by epispastics, and above all by blisters." At p. 294, he again observes, "there are infants in whom the progress of the eruption is arrested, the spots disappear, and pains in the chest, more or less severe, manifest themselves; respiration is oppressed; peripneumony declares itself; suffocation is threatened."

Mr. Burns, of Glasgow, in detailing the symptoms of measles, states, that "sometimes the eruption suddenly and prematurely recedes, or never comes fully out. Both of these cases are unfavourable; the fever is high, and the oppression great." It will be seen, by consulting the report of diseases treated at the New Town Dispensary of Edinburgh, during the last six months of the year 1816, published in the 13th vol. of the Edinburgh Medical and Surgical Journal, that this form of the disease was very prevalent, and that few children recovered; most of those attacked were of feeble habit, or weakened by previous illness, "but others appeared to have been quite healthy when exposed to the contagion." Those affected in this way were chiefly infants, but a few were children from four to seven years of age. They were ill longer than usual, generally five or six days, before any eruption appeared, having the usual catarrhal symptoms, with much debility and drowsiness; frequent vomiting; generally frequent, and sometimes bloody stools; quick pulse, and white tongue, *without much heat of skin.* When the rash appeared, it was at first less distinctly circumscribed, and afterwards less elevated than usual, of a darker colour, and attended with less heat of skin. After its recession, the patients were more or less distressed with cough or dyspnœa, generally with diarrhœa, and almost always with a frequent ineffectual attempt to vomit. The pulse and breathing became very quick; the tongue, after losing the white crust which had covered it at the beginning of the disease, became dry and hard; the posture indicated much debility; the countenance had the languid, vacant expression of typhus; and a dark-coloured fur usually gathered on the lips and teeth. In all these cases, there

was a degree of drowsiness approaching to coma; and in a few, this state appeared to be blended with delirium.

In two or three instances, infants exposed to the contagion of measles, became affected with catarrhal symptoms, fever, drowsiness, quick and oppressed breathing, and died, without any eruption being observed.

In the cases of speedy recession of the rash, if the cough and dyspnœa were urgent after its disappearance, *death almost universally ensued* from the first to the fourteenth day after that change. But those in whom the pectoral symptoms were less distressing, recovered from the state above described, under the use of wine and cordials, which, as far as we could judge, were as decidedly beneficial in these as in any other cases in which we have seen them used. It should be mentioned, however, that one or two, who could not be prevailed on to take either food or medicines, gradually mended without any crisis being observed.

On opening the bodies of those who had died of this form of measles, a considerable accumulation of mucus in the bronchia was always found. In two infants, under a twelvemonth, there were marks of inflammation of the lungs, (which in one of these had proceeded to ulceration,) and a good deal of water was found in the pericardium. In one child, four years of age, there was such a congestion of blood in the lungs, that a large portion of them sunk in water.

In several cases, in which the eruption had almost or entirely disappeared on the second day, it reappeared that night, after the use of the warm bath, and an opiate, and continued nearly the usual time.

An aphthous state of the mouth and tongue occurred pretty frequently, but was not confined to the unfavourable cases.

The circumstances of the livid colour and rapid recession of the eruption, of the succeeding typhoid state, and the irritability of the stomach attending that state, seem to point out a resemblance between the cases of measles now described, and the worst cases of scarlatina.

I scarcely think that such symptoms and morbid appearances support the wine and cordial treatment, which, we are told, was had recourse to in these cases. It has fallen to my lot to treat a considerable number of cases of this kind; and the plan which experience has led me to adopt, is first to try the warm bath with stimulating frictions; but if the symptoms be very threatening, such as coma, convulsions, or asphyxia, or an approach to these states, the best practice, if the patient be an adult, or even a child, if a vein can be found, is to bleed at once. Many interesting cases might be detailed, showing the advantage of this plan. The following is a short sketch of one. A few years ago, I was called suddenly to see a child in measles on the first day of the eruption; every appearance had been so favourable up to the moment of the sudden recession of the rash, that the family had not applied for medical advice. On my arrival, the eruption, which had been extensive, and of the usual colour, was not to be seen, although it still was to be felt. The child was under

three years of age, and of good constitution; it had had three or four strong convulsions in the course of rather less than an hour, and was now comatose; one pupil dilated, while the other was of the natural size; the hands were clenched. A good-sized vein being found in the arm, was instantly opened, and from eight to ten ounces of blood abstracted when the breathing and every other appearance became more favourable; the pulse, which was under sixty, rose gradually as the bleeding went on; and the child soon became quite sensible. So far from debility following, it was necessary, from the appearance of cerebral irritation, to apply leeches next day to the head; the child made a rapid recovery, and was running about in the course of a week.

In every respect the treatment must be conducted in the manner detailed in congestive fever, as well as in the congestive form of scarlatina.

The inflammatory disease is the form most generally met with; we have the usual eruptive fever, preceded by rigors, depression, and debility, along with the fever; the patient has a dry cough, with hoarseness; frequent fits of sneezing and coryza. He also complains of giddiness and pain in his forehead, as well as in the back; his pulse is various, sometimes frequent and small, or frequent and strong; often it is irregular and oppressed; the bowels are generally confined, and the evacuations fetid. In the course of the second, third, or fourth day of the fever, the symptoms run higher; the eyes are tender, red, watery, and inflamed; the dyspnœa, which was slight at first, is now more severe; the patient complains of tightness of the chest, pain and oppression at the præcordia. The eruption appears first on the face and neck; in twenty-four hours it is found on the breast, and afterwards gradually spreads over the rest of the body; it consists of small red papulæ, slightly elevated, resembling recent flea-bites; these soon form themselves into extensive patches, irregular in shape, their margins having somewhat of a crescentic appearance. [The eruption on the face and body is much more elevated than in scarlet fever, and of a darker red colour.] The eruption is sometimes very extensive, at others slight. The throat, when examined, will be observed to be covered with small red patches, occasioning difficult deglutition.

Sometimes, immediately before the eruption comes out, the patient is seized with violent sickness and vomiting; sometimes with convulsions; but if the eruption subsequently comes out freely, these symptoms abate.

In a great majority of cases, the disease is rather slight, and the internal disturbance, which is discovered by the symptoms already described, is generally very much appeased soon after the appearance of the eruption, particularly if it come out freely and plentifully. Occasionally, however, the symptoms are very severe from the beginning; the cough is frequent and harsh; there is considerable dyspnœa, with hot skin, thirst, and a quick pulse; and the child is occasionally so lethargic, that this symptom early attracts our attention.

As the embarrassment of the lungs increases, which may happen in any stage, the face becomes discoloured, and sometimes presents

a purple appearance, and occasionally the eruption over the whole body assumes a dark colour; this is the state which is called *rubeola nigra*, and is probably that form of the complaint described by Dr. Watson, under the term putrid measles.

After the natural disappearance of the eruption, the fever, dyspnœa, and cough, in some cases increase, attended or not with considerable gastro-intestinal irritation and diarrhœa: occasionally inflammation of the eyes, and enlargement of the glands of the neck, succeed. Blistered surfaces frequently slough; and it has been remarked by Dr. Watson, Dr. Ferriar of Manchester, and others, that an ulceration of a particular character attacks the pudendum of girls, from which few recover; four cases have fallen within my observation, three of which proved fatal; and it is my opinion that death is not owing to this ulceration, but to internal disease. Dissection, in two of these cases, displayed extensive disease of the lungs, but more particularly ulceration of the mucous membrane of the intestines, of which the preparations and drawings are in my museum.*

Appearances on dissection.—Morgagni notices the following case, which, he says, has been transferred from Ballonius into the Sepulchretum: "On examining the body of a person to whom it was suspected that poison had been given, the stomach was found beset with exanthemata, and the physicians were upon the point of asserting that the appearance was owing to poison, when they were informed that the person died of measles, which began to appear on the skin, and suddenly vanished."

In the examinations at which I have been present, effusions and other marks of inflammatory action have been found in the brain, and sometimes ulceration in the mucous membrane of the bowels; but I have seen no dissection in which the pulmonary system escaped. The lining membrane of the bronchi, trachea, and larynx, has not only been found in a highly vascular state, but it has been thickened, softened, and occasionally ulcerated; the ulcers are small, and generally situated near the bifurcation; the bronchial tubes are more or less filled with a matter like pus or thick mucus, as in bronchitis; the colour of this secretion varies; and it is sometimes tenacious. This condition of the air passages has always existed on both sides of the chest. In many cases, the lungs are found emphysematous: in others inflamed in different degrees; the inflammation rarely affecting both lungs, and it is frequently confined to one lobe. Occasionally there are extensive inflammations of the pleura, indicated by effusion of serum and exudation of coagulating lymph, besides thickening of the pleura and recent adhesions. In cases of longer standing, tubercular formations are observed in different degrees of advancement; sometimes even excavations of the lungs are seen.

It ought to be noticed, that the inflammatory appearances in the brain and bowels, together with the disease of the substance of the lungs, and the pleuritic effusions, are to be regarded as accidental

* This is the disease which has been described in the 7th vol. of the Med. Chir. Trans. of London, by Dr. Kinder Wood, who saw twelve cases, of which only two recovered. The case of recovery which I have noticed, was under the care of Dr. Moffit, of the 7th Hussars; the patient was a soldier's child. The disease followed a very slight attack of measles.

circumstances; whereas, the inflammation of the bronchial membrane is an essential part of the disease, and may be traced from the beginning of the complaint.

Treatment.—In the slighter forms of this disease, as in scarlatina, very little treatment is necessary, further than confinement to one room, the exhibition of gentle laxatives, and low diet. The medical attendant should be still more watchful in this disease than in scarlet fever, at the period when the eruption naturally recedes, for reasons already mentioned. In the severe forms of measles, bleeding is often necessary during the eruptive fever, when the pectoral symptoms run high and appear threatening; and also when coma and convulsions take place, both of which are more likely to happen, but particularly the latter, if the child be suffering from difficult dentition. I was called to see a fine boy of two years of age, who, during the eruptive fever, was seized with convulsions in the night, at the period when the eruption ought to have made its appearance, and from whom nine ounces of blood were taken. Next day he had nine or ten leeches applied to his head: the symptoms were afterwards exceedingly slight, and he made a rapid recovery. He bore the bleeding without any tendency to syncope, while his brother, a boy of twelve years old, labouring also under the same disease, and who required blood-letting for pectoral symptoms, fainted upon the loss of two ounces.

When bleeding is necessary, it ought to be performed in the manner already described when treating of inflammatory fever; a sufficient quantity should be taken as early as possible in the disease, and the operation ought to be repeated at short intervals; but when the bronchitic symptoms have been allowed to go on neglected till the air passages are gorged with mucus, bleeding is a very questionable remedy, and no doubt often does irreparable mischief, for reasons which will be fully noticed when treating of bronchitis. Leeches are to be employed as directed in scarlatina, and also blisters.* Antimony is also highly serviceable; and opiates in the last stage, when there are restlessness and irritability, if the air passages are not filled with mucus. The warm bath affords much comfort to the patient in all the exanthemata, every night, or every other night, after the eruption has declined, and when the cuticle is exfoliating. During recovery, great attention should be paid to the diet, clothing and state of the bowels, so as to avoid the disagreeable circumstances which so often follow the exanthemata, viz., the formation of tubercles in the lungs; inflammation and ulceration of the mucous membrane of the bowels, producing the disease which is called tabes mesenterica; and also glandular affections of the neck, inflammation of the eyes, and chronic eruptions of the skin.

This is a very different line of treatment from that which is still recommended by Dr. James Hamilton, jun., and which is founded upon the most curious notion that can well be conceived, viz., that the bad symptoms in measles are not occasioned by inflammation,

* When a blister is applied to a child, under any circumstances, the part should be carefully examined daily by the medical attendant, but more particularly in the eruptive fevers.

but by "*torpor of the lymphatics.*" But as this statement may not be credited, Dr. James Hamilton, jun., shall be allowed to speak for himself. At page 377 of the work already quoted, last edition, the following passage will be found: "As the debility which always attends and follows measles is the most prominent feature in the progress of the disease, it is not easy to understand the reasons why practitioners have been led to overlook so obvious a circumstance. The objections to wine and nourishing diet, which it is so often necessary to combat, probably arise from the supposition, that the frequency of the pulse and the cough are the effects of inflammation, when in fact they are occasioned by *the torpor of the lymphatics!*"

[*Inoculation in measles.*—Many experiments have been tried at different periods, for the purpose of testing this important operation; but they have, for the most part, been fruitless and unsatisfactory. It has recently been asserted, however, that Dr. Von Katona, of Borsoder, in Hungary, has succeeded in inoculating 1122 persons by taking the fluid from the vesicles, or a drop of the tears from a patient labouring with the disease. The operation is said to have been performed in the same manner as the inoculation for small-pox. It failed in seven per cent. of those on whom it was tried; but all the others took the disease in a mild form, and not a single death occurred. The puncture was immediately surrounded by a red areola, which soon disappeared. On the seventh day the fever set in with the usual premonitory symptoms of measles; on the ninth day the eruption appeared; on the fourteenth, desquamation commenced, with decrease of fever and eruption; and by the seventeenth day the patients were, in general, well again.]

SMALL-POX.—VARIOLA.

[It is an interesting and remarkable fact, that small-pox does not appear to have been known to the Greeks or Romans, although there is abundant evidence of its having prevailed in China and other parts of Asia from the remotest times. It appears, indeed, to have been introduced from India into Arabia, about the sixth century of our era, and then spread rapidly into Syria and over the whole of Europe. In later times it has been conveyed by trading vessels and overland caravans to every part of the habitable earth, constituting the most widely spread pestilence to which the human species is subject.]

Small-pox is generally divided into three varieties, viz., 1. Distinct; 2. Confluent; 3. Modified. The first obtains that name when the pustules are distinct, and do not run into each other; the second is denominated confluent when the pustules are very numerous, and coalesce; the third variety is so named from the influence of certain

well-known causes that modify the disease, and render the symptoms less severe, and the cases less dangerous.

This disease commences with rigors, followed by febrile symptoms, which continue from forty-eight to sixty hours, and even longer before the eruption appears; and it is no uncommon thing for children to be seized with convulsions during this period. The attack is frequently very sudden; vomiting generally occurs; there is pain in the head and back; and the patient complains very much of oppression at the præcordia, and pungent pain in the pit of the stomach, much increased on pressure; there are also decided marks of general disease of the mucous membranes, and more particularly that of the bronchi, announced by dyspnœa, cough and wheezing.

The eruption first appears on the face, in the form of small red papulæ and afterwards extends over the rest of the body. About the third day, a vesicular appearance is observed on the top of each spot, which is soon depressed in the centre, and is found to contain a transparent fluid, with an inflamed circular margin. About the sixth day the eruption loses the depression in the centre, and instead of serum, will now be found filled with a puriform matter. When the pustules are numerous, the parts swell much, and the neighbouring skin is of a red colour, from the extension of the inflammation. About the seventh day, some of the pustules on the face burst, and upon the eighth or ninth they begin to dry and scab over the rest of the body. The swelling, which affects the face, hands, and feet more severely than other parts of the body, gradually declines; the skin remains of a dark-brown colour after the scabs fall off, and it is many weeks before the surface recovers its natural appearance.

This is the course which the distinct small-pox generally runs, and when treated properly it is rarely fatal, every thing depending upon the state of the lungs and brain.

In the confluent small-pox, all the precursory symptoms are more severe; the eruptive fever runs higher; pain in the epigastrium; and dyspnœa are more complained of; convulsions and delirium also more frequently take place; and the patient runs more risk of secondary fever, and danger from extensive inflammation, ulceration, and sloughing of the skin.

In both varieties, but particularly in the confluent, copious salivation sometimes takes place, and soreness of the throat is a marked symptom; upon examining the mouth and fauces, vesicles or pustules may be observed on the tongue and as far down the pharynx as the eye can reach. I have seen the same appearance on the mucous membrane of the rectum, in a case of small-pox in which there was prolapsus ani; and in the year 1823, a great number of my pupils had an opportunity of seeing a similar case. I am not aware whether this appearance in the fauces and rectum follows an increase and declines simultaneously with the eruption on the skin. In some severe cases, petechiæ are seen, when the eruption has begun to decline; bloody vomiting and diarrhœa, with tenesmus, take place, and the dyspnœa frequently increases as the disease advances.

The inflammation in the skin is frequently so deep and severe, that the death of a portion takes place, perhaps of the cellular sub-

stance, as in carbuncle, and this is one cause of what are called pock-marks.

In small-pox, as well as in other acute diseases, there is a congestive form, in which the system is unable to raise sufficient reaction; there is consequently more oppression; the surface is pale; the eruption flat, and never matures properly; the dyspnœa is very considerable; and I verily believe this is the form which is called the most malignant.

In severe cases, death takes place before the eighth day; but generally speaking, the fatal event happens sometime between the tenth and seventeenth days. The proportion of deaths is said by Dr. George Gregory, who must be a very good authority upon this subject, to be about one in every six persons who receive the small-pox in the natural way. But during the prevalence of an epidemic, the mortality is sometimes one-half. Indeed, it appears that during a severe epidemic at Ceylon, in 1819, the number of native inhabitants taken into hospital at Kandy, amounted to 931; of these 525 died. Since the publication of the first edition of this work, I had occasion to attend 50 cases of small-pox, all of which were distinctly traced to the imprudence of a woman who exposed her unvaccinated child to the contagion, when visiting a sick friend. Of these 50 patients 35 had gone through the process of vaccination; 15 had never been vaccinated, (they were infants under one year of age.) All the protected cases recovered. Of the 15 unprotected cases, 10 died. Three only of the 15 had the disease slightly. Of the 5 children who survived the attack, one did not recover perfectly, and died of chronic bronchitis some months afterwards.

Appearances on dissection—Head.—I have seen marks of inflammation of the membranes, evinced by a considerable arborescent vascularity on the surface of the brain; the vessels of the pia mater being greatly loaded with blood, together with effusion under the arachnoid, and into the ventricles. But it becomes me to speak with diffidence with respect to this part of the subject. Dr. George Gregory says, at page 105, that he has "never been able to trace any morbid appearance in the head," which is rather at variance with the results of my limited experience, and with a statement which he subsequently makes at page 108. In directing the mode of treatment, he says, "It is to be remembered also, that in small-pox, fully as much as in any other form of fever, there is a tendency to congestions and inflammations in the head and thorax." "A patient," (says Batting, p. 76,) "During the cure of a very extensive fracture of the skull, was seized with small-pox, &c. It was curious to observe in this patient the appearance of variolous pustules upon the granulations of the dura mater."

Although I have been prevented, by the impatience of surviving friends, from opening the head as often as I could have wished, yet many opportunities have been afforded me of examining the contents of the thorax and abdomen. I have seen pustules in the pharynx, larynx, trachea, and œsophagus, in those who died on or before the twelfth or thirteenth day, on some occasions closing up the larynx; the mucous membrane of the bronchi very vascular, and the air tubes

completely gorged with matter, most frequently of a reddish colour; but in no instance have I been able to discover a pustular appearance below the bifurcation; the substance of the lungs gorged with blood, and in the first and second stages of inflammation; and in one instance there was pleuritic effusion. On examining the body of a deformed girl, who died under an attack of confluent small-pox, the peritoneum and pleura were studded with small circular spots, which looked like a faded eruption, but perhaps they might have been produced in the manner which we sometimes see in cases of purpura. I have observed nothing in the stomach to account for the severe burning pain complained of in the epigastric region; the mucous membrane has certainly shown vascularity, and has been covered with a viscid exudation, the follicles being much increased in size, which appearance often extends throughout the whole intestinal tube. In three or four instances, I have seen ulcers having a pustular appearance, with a depression in the centre, in the jejunum, ileum, and also in the large intestines, of which the preparations and drawings are in my museum; and some of them were surrounded by an inflammatory areola.

Treatment.—Small-pox under every form is a serious disease; for however mild it may appear in its attack, its consequences are always to be dreaded. The confluent, however, is a very dangerous disease; and we are to be guided in the treatment by observing the state of the brain, and the organs contained within the thorax, as well as the condition of the surface of the body.

It was formerly the custom to keep patients very hot, and to employ stimulants; and the consequence was, that the mortality was immense: but for many years past, patients have been kept cool, and the antiphlogistic regimen recommended, but, I fear, too little practised, from the dread of putridity. Bleeding has been often employed, and strongly recommended, in this disease, particularly during the eruptive fever; but it has as often been condemned, because it destroyed that strength, which, it is alleged, is so much required in the latter stages of the disease. But the same language is used in the purest inflammatory fevers. In all the successful cases of confluent small-pox occurring in adults, which I have treated, except one, amounting in all to about eighteen, bleeding was employed, and largely employed, in the eruptive fever, to moderate what was thought to be local inflammation, without suspecting that they were cases of small-pox; several of the sufferers were my pupils, who had had themselves bled before they sent for me. In a number of instances, blood has been drawn even after the appearance of the eruption, and with decided benefit; but upon the whole, it is, perhaps, best at that period to trust to leeches for relieving local inflammations. The state of the throat and air passages requires daily and minute examination; and after the eruption comes out, the application of leeches is often necessary to the neck, and also to the chest, to reduce inflammation. Bleeding before the appearance of the eruption may be expected to moderate that symptom, which is of the greatest consequence, as many die from the severity and extent of the external inflammation. The appearance of petechiæ

does not prevent me from ordering the application of leeches, in cases which require this practice. With respect to other points of treatment, they are similar to those which have been recommended in scarlatina, measles, and other febrile diseases. I may be allowed, however, on this occasion, to insist on the propriety of trusting to nature a little more than is generally done, when the patient begins to convalesce; avoiding attempts to hurry it on, and restore the strength, which, in a great proportion of cases, is the cause of secondary fever. A number of disagreeable circumstances often take place as sequels of small-pox, and the most painful one is the formation of boils on various parts of the body, and sometimes even carbuncles, of which there are successive crops tormenting the patient for weeks. Glandular affections also frequently follow, as well as *ophthalmia tarsi* and *ophthalmia purulenta*. I can state from experience, that it is a good plan to open the pustules on the face early, in order to prevent marks. [It is somewhere suggested that this object may also be attained by keeping the patient in a *dark* room, a practice which I have not found to produce any sensible effect. A plan I have adopted with great success, is to have the face frequently wet with spirits of hartshorn, which keeps down the inflammation, and prevents the pustules from becoming either large or irritable. M. Velpeau asserts, and I have confirmed the truth of his statement, that if the pustules of small-pox are cauterized within the first two or three days, or even somewhat later, their duration is abridged, and no marks ensue. The best mode of applying the caustic, is to cut it to a fine point, and pierce it through the centre of each pustule. Other practitioners have recommended the free application of mercurial ointment to the pustules with a camel's hair brush when they are distinct, or put on with a feather in confluent cases. Dr. Olliffe, of Paris, speaks in the strongest terms of the *plaster of vigo*, of the French Pharmacopœia, an article which is composed chiefly of mercury made into a soft plaster with styrax and other ingredients; but notwithstanding the preference ascribed to this preparation, it can have little, if any advantage, over simple mercurial ointment.

Dr. Midaveine has used sulphur for the same purpose with satisfactory results. His formula consists of two drachms of sulphur to an ounce of lard, which ointment is gently applied to the eruption three times a day.

Gold leaf is employed by the Arabs and Egyptians to prevent the cicatrices of small-pox; and on the testimony of Baron Larrey it is highly efficacious. The gold leaf is applied on the first appearance of the eruption on the face, hands, neck, &c., and is kept in contact with the skin by means of gum-arabic mucilage. Baron Larrey also derived evident advantage by simply anointing the face freely with olive oil. Some of these articles appear to act simply by excluding the atmospheric air.]

VARIOLOID.—MODIFIED SMALL-POX.—There are several circumstances which are said, in medical language, to modify this horrible disease. The mysterious power of vaccination in preventing small-

pox is now admitted; experience, however, has taught us, that this antidote does not always succeed; but the generality of cases of small-pox, which follow vaccination, are very mild. Individuals are sometimes attacked also a second time with small-pox, and in my comparatively limited experience, I have known upwards of twelve well-authenticated instances. The first attack is generally supposed to modify the second, and to render it milder; but it is curious, that all my cases of secondary small-pox, with the exception of two, were remarkably severe; whereas, I have rarely seen a severe case of small-pox after vaccination.

Previously to the great discovery of Dr. Jenner, respecting the power of vaccination in preventing small-pox, the disease was modified, and rendered less severe and fatal, by inoculation. This practice had been long followed in the East, and was introduced into this country from Turkey, by Lady Mary Montague.*

An interesting question arises, to determine why the inoculated small-pox should be so much milder than the natural?

This is, perhaps, easily answered. A proper season of the year is chosen for the operation; the patient undergoes a certain preparation, and his bowels are particularly attended to.

In the modified disease, the stages are all shorter, and the eruptive fever is slighter; the convalescence is less tedious, and the sequelæ are not so troublesome.

This disease must be treated according to the general principles already laid down.

[Varioloid.—The modification of disease, to which this name has been given, has excited a deep interest for many years past; yet, notwithstanding the zeal and talent of the many observers who have turned their attention to it, it remains a disputed question, whether variola and varioloid spring from an identical contagion. For, although I am myself convinced of this identity, many distinguished physicians, in all parts of the world, are of a contrary opinion. Let us now examine into the prominent facts connected with this inquiry.

The accession of varioloid in persons protected by vaccination, is usually in the form of a mild small-pox. Thus, the fever, though sometimes considerable, is seldom violent, and subsides greatly, or even disappears on the occurrence of the eruption. The latter appears first in a papulous form; in other words, in small red, conical elevations of the cuticle, with some inflammation at the base. In some cases these papulæ fill rapidly with a turpid or milky fluid, and are dry and disposed to desquamate by the fourth or fifth day. Examples of this kind bear a close resemblance to varicella, and have, no doubt, been mistaken for that disease.

In other cases, however, the eruption differs little or nothing, in its physical characters, from that of genuine small-pox: for the limpid fluid at first noticed in them, becomes purulent,† the pustules are

* A. D. 1721.

[† Dr. Albert, a German physician, and several other authors assert, that the pustules of varioloid never contain pus—a statement too much at variance with common observation to require an argument to disprove it.]

large, well defined and flattened, and have a distinct central depression. Although the desquamation is usually completed within the sixth day, it is sometimes extended to the sixteenth.

The scabs are thin and diaphanous, of a dark straw or light brown colour; as they fall off, they leave the surface marked by a tuberculated elevation, rough to the touch and obvious to the eye; but pits or scars are of extremely rare occurrence.

Secondary fever seldom or never occurs; and the patient is usually convalescent from the completion of the eruption.

The pustules are almost invariably distinct in their character, nor have I ever met with an approach to the confluent form. They are most numerous on the chest, neck, at the bend of the arm and on the face; but in many instances the whole eruption has been confined to a very few pustules, and sometimes to one pustule only. The eruption, moreover, is apt to assume a mixed character; some of the pustules continuing papulous throughout, and never becoming purulent: while others, in the same person, will have all the appearances of true variolous disease.

In persons, who have had the genuine small-pox, the varioloid does not differ materially from the form just described.

It is remarkable, however, (and the fact constitutes a stumbling-block in the study of this disease,) that varioloid sometimes occurs in persons who have had neither variola nor vaccine. Dr. Thomson has recorded his experience in several cases of this nature; and later observers have incontestably corroborated his statements. For my own part I have never seen an example of this kind, and shall therefore quote from Dr. Thomson a few remarks on this particular modification. He observes that in this class, the eruptive fever has in general been severe, though in some cases mild and of short duration; but usually continuing three days before the eruption came out. The latter was sometimes papulous at first, soon becoming vesicular; but, in a majority of cases, the papulæ became distinctly pustular at an early period of the eruption, assuming the characters of *distinct* small-pox; the pustules, however, varying in the time of their appearance, sometimes coming out simultaneously over the whole body, and in other instances appearing in successive crops. Even in these unprotected constitutions, the disease is much milder than casual small-pox; the fever is of shorter duration; the pustules often want the central depression, and are mostly matured by the sixth day; cicatrices seldom follow the desquamation, and secondary fever is unusual.

The preceding facts have led some pathologists, erroneously, we think, to consider variola and varioloid as distinct contagions; but they at least overthrow the familiar postulate, that varioloid is always and only small-pox modified by *vaccination;* unless from the comparatively small number of cases we assume that the exception proves the rule.

It is also said, by some pathologists, that whilst in variola the chorion, or cutis vera, becomes the seat of a phlegmonous inflammation, ending in suppuration, and followed by loss of substance, varioloid is a lymphatic phlogosis of the most superficial layer of the

integuments; hence, also, the groundless inference that the two maladies are developed under the influence of different contagious agents.

The following brief history will serve to illustrate the identity of small-pox and varioloid; and there are, perhaps, few physicians in extensive practice who have not met with analogous examples. I was called to see a black man servant with a violent fever, which soon developed the characteristic small-pox eruption with great severity, and of the mixed, distinct and confluent kind. This man had never been successfully vaccinated. The gentleman of the house, a man of forty, who had been carefully vaccinated in infancy, was next attacked; he had a high fever, followed by a plentiful eruption, which, however, was distinct, and the recovery took place at the usual time. There were, also, in the house, three children from five to nine years of age, all of whom had been vaccinated in early infancy by my own hand; they all had an active fever; two of them had about a dozen or twenty abortive pustules, and the third had a solitary pustule on the forehead. In the servant, who was unprotected by previous vaccination, the cicatrices left by the small-pox are everywhere abundant. In the gentleman there is no remaining trace of the eruption, nor is there any in the children. All these various modifications of disease were derived from the same contagion, influenced solely by vaccination or its absence, and the period of time which had elapsed since its use. What was confluent small-pox in one became a mild disease in another; while in the children, in whom the vaccine was yet active, the disease was so slight, that but for the collateral circumstances, it might never have been identified even as a varioloid infection.

The treatment of varioloid is such as would be resorted to in mild small-pox—saline aperients and diaphoretics, and a light, cooling regimen.]

[COW-POX.—VACCINATION.]

[We owe the discovery of vaccination to Dr. Jenner. He observed that those persons who milked cows affected with the disease called *cow-pox*, were exempt from the small-pox—whence he inferred that an equal immunity might be derived from the artificial insertion of the virus of the former eruption. Experiments proved the truth of this inference, and vaccination is now justly regarded as one of the greatest benefactions that medical science has bestowed upon the human race.

Dr. Jenner's discovery was first published by him in 1798, and vaccination was introduced into the United States the year following.

It had long been known that a disease called *the grease*, in horses, was sometimes communicated to the cow by persons employed in dressing the heels of the one, and afterwards in milking the other.

Dr. Jenner, in the outset of his inquiry, supposed this disease to be the *origin* of the small-pox. "This idea he lived to correct; but the prejudices it excited, and the erroneous views to which it gave birth, have unhappily been perpetuated. It is ascertained that the horse is liable to a vesicular disease of a variolous nature as well as the cow, and equally protective. The error consisted in believing that this affection was *the grease*, and that it required to be transmitted through the cow to give it efficacy."—But it is now well ascertained that the horse, as well as the cow, in different ages and in various countries, has suffered both from the mild and malignant variola; that the latter, when inoculated from the cow, for example, may produce an aggravated disease in man; that the human small-pox can be communicated to the cow; and that the matter thus obtained produces in man the most perfect form of vaccination. "In other words, the direct inoculation of the cow *with human small-pox*, has produced a mild and mitigated disease; and that such disease, reproduced by inoculation on man, accords entirely, in its character, in its progress, and in its protecting influence, with the *varola vaccinæ* as described by Dr. Jenner; thus irresistibly proving his fundamental proposition, that cow-pox and small-pox are not *bona fide* dissimilar, but *identical;* and that the vaccine disease is not the preventive of small-pox, but the small-pox itself;—the virulent and contagious disease being a malignant variety."*

Dr. Stephen Brown had early, in this discussion, declared it to be his opinion, that the cow-pox is the variola or small-pox of the human system; and that it was originally excited in the cow in the form of cow-pox, and in the horse in the form of *grease*, by the direct application of small-pox virus to these animals. Such, also, were the matured views of Dr. Jenner himself; and they have been remarkably sustained by the recent experiments of Mr. Ceely and others.

It may be added, as a curious fact in the history of vaccine, that various animals, besides the horse and cow, have been vaccinated with complete success, as the ass, buffalo, sheep, and even poultry.

Vaccine matter is, perhaps, most certainly efficacious when taken before the tenth day of the eruption; but experience has amply proved, that a mature scab is capable of retaining all its virtues for many weeks after its separation from the arm.

Whether we use the fluid matter from the pustule, or the dried crust, the best mode of inserting it is on the point of a lancet, about the middle of the arm; care being taken to make five or six obliqne punctures into the cutis vera, without drawing blood. These punctures should be confined to a very small area, say about two lines in diameter. If the dried scab is used, it must be rubbed to a thin paste with water, and after its insertion, the spot should be allowed to dry without interruption. With these simple precautions, vaccination is performed with almost uniform success, and with the following appearances:—

No obvious change is observed until the third day after the insertion, when a minute inflamed spot is seen. As the inflammation

* Medico-Chirurg. Review, No. 56.

proceeds, a small, circular, flattened and slightly elevated tumour is formed.

About the sixth day, the pustule begins to assume the vesicular character, the secretion of matter taking place in the centre, and increasing until the tenth day, when the perfect vesicle is produced, having the following characters:—It is circular or oval, with a distinct, smooth, turgid margin, and a depression in the centre:—the contained matter being of a uniform pearl colour.

After the eighth day, the vesicle is surrounded by a bright-red areola, varying in diameter from less than an inch to two inches, and accompanied by a radiated tumefaction and hardness of the subjacent parts.

It is at this period of the disease that the febrile and other constitutional symptoms appear, sometimes very slight, and again in a more active form, such as occur in common infantile remittents. It is also at this time, as Dr. Gregory remarks, that the child's body is covered partially or generally with a papular eruption, which continues for two or three days.

On or before the twelfth day, the areola begins to decline; at which time the vesicle becomes discoloured, and of a greater firmness, and in a few days more is converted into a scab of a dark mahogany colour, which becomes blackish as it dries, but retains its smooth surface. This scab separates about the fourteenth day, leaving a cicatrix which is circular and slightly depressed, and presents a number of minute pits or depressions. The constitutional symptoms are usually so slight as to require little or no attention:—they consist in a slight fever about the eighth day, with some tumefaction of the axilla, which pass off with the local affection. A drowsiness, which is one of the most common appearances, is often remarked within forty-eight hours after the matter has been inserted.

These are the appearances, and the order in which they occur, in unequivocal vaccination. Slight aberrations may take place without lessening confidence in the result; but there are some deceptive appearances against which it is necessary to provide. These, which have been called spurious vaccination are enumerated by Dr. Willan as follows:—merely premising that it is not unusual to see a common conical pustule, having no character of the vaccine, and of course readily distinguished from it.

"The *first* is a single pearl-coloured vesicle, set on a dark-red base, slightly elevated. It is larger and more globate than the pustule above represented, but much less than the genuine vesicle; its top is flattened, or sometimes a little depressed, but the margin is not rounded or prominent.

"The *second* appears to be cellular, like the genuine vesicle; but is somewhat smaller, and more sessile, and has a sharp angulated edge. The scab is smaller and less regular than that which succeeds the genuine vesicle; it also falls off much sooner, and when separated, leaves a smaller cicatrix, which is sometimes angulated.

"The *third* irregular appearance is a vesicle without an areola."*

[* Bateman's Synop. p. 206.]

With respect to the areola, however, it should be remembered, that it may have existed without being noticed by the attendants or the physician: it may have been trivial in its development, of partial duration, and occurring at night, when it would not be noticed. The mere asserted absence of the areola, all the other characters being perfect, is not conclusive evidence that the disease has been abortive.

When considerable inflammation ensues, at an early period after vaccination, and especially if suppuration takes place, the disease may be reasonably suspected. "Now and then" says Dr. Hooper, "it happens, that after the spurious pustule, or more properly, the phlegmon, has run its course, which is within a few days, a vesicle begins to appear, bearing every characteristic of the genuine vaccine disease, and yielding a limpid and efficient virus. In this case the patient is as perfectly secured from all danger of the small-pox, as if no festering of the puncture had preceded."

Inflammation and suppuration will occasionally follow a rupture or other injury of the vesicle, from which cause its characters are rendered more or less imperfect and doubtful. In such cases the development should be assiduously watched; and if any ambiguity remains, the operation should be repeated.

The characteristics of a genuine vaccine pustule soon become familiar to the practitioner, and are not easily mistaken. But in doubtful cases, the safest plan is to re-insert the vaccine virus in a short period after the first operation.

The causes of spurious vaccination are various; the matter used may be itself spurious, or it may have lost its virtue by long keeping. But the most common cause of failure is the presence of cutaneous disease: and again, there are some children of perfectly healthy constitutions who are wholly unsusceptible to the vaccine influence.

It is not to be denied, that the real small-pox has occasionally occurred in persons who have been, to all appearance, perfectly vaccinated; and the modified disease has been much noticed of latter years. But the former is extremely rare; and the latter, as has been elsewhere shown, is so much less severe than the variolous contagion, as to be a source of little apprehension.

Amongst a mass of evidence on this subject, I may adduce the facts set forth in the Report of the English Vaccine Institution, viz: that among several hundred thousand persons who had been vaccinated, no well-attested case of fatal small-pox had occurred: but on the contrary, that, when the latter disease did appear, it uniformly takes on a mild and manageable form. From these and other facts it has been assumed, that *the vaccine disease is a perfect security against* DEATH *from the small-pox.*

This axiom in medicine is strikingly supported by the following summary, from an authentic report made to the Medical Society of Philadelphia. "We may, without the least want of candour, come to the conclusion, that only one death from small-pox, after vaccination, has occurred in Philadelphia during the year 1827, among eighty thousand vaccinated persons, and during the prevalence of a most malignant and mortal small-pox; while several individuals have lost their lives by small-pox, after they had already gone once

through the disease. It appears, then, clearly, that vaccination ought to lose nothing of the public confidence; and as a protection from the fatal effects of genuine small-pox, it may safely be asserted that it is in every sense to be preferred to inoculation."*

Some authors contend that the protection afforded by vaccination does not extend beyond seven, or at most twenty years. In some constitutions this appears to be the case; although it may not be so general a rule as many suppose. I have repeatedly vaccinated persons with the most unequivocal success, who had beyond all doubt gone through the same process from fifteen to twenty years before. In one family I saw five persons, the eldest not more than thirty, all of whom had been vaccinated in the most cautious manner in childhood: three of them in succession took the varioloid in a mild form, during which period the remaining two requested to be re-vaccinated, which was done with entire success; the vesicles passed through their characteristic stages, and the patients escaped the dreaded contagion. Some physicians consider it possible, by repeated vaccination, to *saturate* the system so as to obtain a perfect immunity from any form of small-pox. As a rule, this proposition is subject to many exceptions, in proof of which we may cite the following statement from a recent medical journal: "Whilst sufficient facts are wanting in favour of the reputed effects of what is termed *saturation* of the system, to produce a more perfect exemption from varioloid, evidences of the insufficiency of such a practice exist, of which the occurrences on board one of our public vessels, the North Carolina, offer a striking example. In a cruise made by this ship up the Mediterranean, she shipped at Norfolk a crew of 900 men, most of whom had been vaccinated or had the small-pox; but were nevertheless twice vaccinated, prior to the ship's sailing, a third time at Gibraltar, and a fourth time at Port Mahon. Dr. Henderson, who repeats these facts, states that, notwithstanding this *ultra* re-vaccination, under such various circumstances of virus, climate, &c., 157 of the crew had the varioloid."†

It is a prevalent opinion, that much of the asserted uncertainty of vaccination has originated from a deterioration of the virus in passing through a long succession of individuals. Experience, however, is adverse to such an hypothesis: and Dr. Thomson observes —"that the establishment of such a point, either by experiment or observation, would present an anomaly in the history of contagious diseases; for I am not aware that any thing analogous to this alleged deterioration, has ever been observed to occur in any of the other contagious diseases that are capable of being communicated, by contact or inoculation, from one human being to another. I know, in point of fact, that the vaccine virus, which has been used at the Royal Dispensary here, and in other parts of Scotland, for a series of 18 years, still continues to produce, on those who are inoculated with it the very same appearances which it produced on the first trials

[* "Report of the Com. of the Philad. Med. Soc. appointed to collect facts in relation to the recent occurrence of small-pox in this city." North Amer. Med. and Surg. Jour. 1828.]

[† Amer. Jour. Med. Sci. May, 1836.]

that were made with it; and that these appearances agree exactly with those which have been delineated and described by Dr. Jenner as characteristic of cow-pox: and I know, also, that the appearances of the vaccine vesicle produced by this matter, which must have passed through a succession of at least 900 individuals, agree exactly with those exhibited by vesicles by inoculation with the more recent equine matter, with which I have been lately favoured by Dr. Jenner."*

Drs. Mitchell and Bell,† in an able investigation of this subject, corroborate the sentiments of Dr. Thomson: and it may be added, that vaccine matter, in its most recent state, possesses no more preventive efficacy in reference to varioloid, than that which has been in use since the discovery of vaccination.

It would appear that some persons are wholly insusceptible to vaccination; the operation may be repeated over and over again, without effect. In other cases the susceptibility is restored or evolved in a short period of time, and the disease goes through all its stages in perfection. The inability to take the vaccine, however, is no guarantee against small-pox; for the latter has occurred, in an aggravated form, in those persons in whom vaccination could never be accomplished: and, moreover, it has been observed, that persons in a variolous atmosphere are very insusceptible to the vaccine disease.]

CHICKEN-POX.

This disease, known also by the name of Varicella, has been often confounded with small-pox. Those who maintain the identity of the two diseases, and who have figured in the controversy that has been so long carried on, have, nevertheless, completely failed in proving their position with respect to one point, while they have succeeded in another, apparently without being aware of it. Looking at the diseases symptomatically, there is no doubt a striking difference. The symptoms are all much slighter in chicken-pox; the eruption is vesicular, and there are repeated crops; and further, this disease is rarely attended with danger; but a pathological eye cannot fail to discover a marked resemblance. The only questions to be determined are the following: Does an attack of the one disease prevent the other? Will matter taken from small-pox produce varicella, or from varicella small-pox? Extensive experience enables us to answer both in the negative, and therefore they cannot be identified any more than measles or small-pox.‡

[* On Varioloid, p. 320.]

[† N. Amer. Med. and Surg. Journal, vol. 2. p. 250.]

‡ Vide Dr. Hennen's papers and experiments, in Ed. M. and S. Journal, vol. xiv. p. 409. [Dr. Thomson, of Edinburgh, considers small-pox and chicken-pox to be varieties of the same contagion, as will be seen by reference to his elaborate work on Varioloid. It appears that Dr. Heberden, a distinguished physician of the last

["It has been ascertained of the genuine chicken pox, or *varicella lymphatica*, that it occurs only once to the same person; that it spreads by contagion; that, nevertheless, it is not communicable by inoculation; whereas, the matter of modified small-pox, when engrafted, produces genuine variola; that it occurs equally among those who have, and those who have not been vaccinated; that the vaccine vesicle and disease proceed with perfect regularity after the occurrence of chicken-pox; and that it affords no protection against small-pox, while, on the other hand, small-pox affords no protection against it."*

The pustules in varicella are mostly prominent and rounded; but, among a great number, a few will be noticed which are flattened on the top. The fluid they contain is at first transparent, becomes gradually milky, and then straw-coloured. Many of these pustules burst spontaneously about the third or fourth day, and form rough, dark-coloured scabs, which desquamate without leaving scars.]

With respect to the treatment of varicella, it is only necessary to mention, that it must be conducted in the same manner with other slight eruptive fevers; and it should be remembered, that some local inflammation may arise, even in the very slightest of them. I have known two fatal cases of varicella; one from inflammation of the substance of the lungs in an adult, the other from inflammation of the membranes of the brain in a child eighteen months old. Since the publication of the first edition, I have been reminded of a third fatal case which occurred in 1825, in a child five months old. Traces of inflammation were found in the chest and abdomen. The head was not examined.

MILIARIA.—MILIARY FEVER.

This disease is characterized by an irregular eruption of exceedingly small round vesicles of the size of millet seeds, and which feels, when the hand is passed over it, as if there were small grains of sand beneath the cuticle. Each vesicle is surrounded by a slight inflammatory blush.

[It is observed by Dr. Schedel, that the only disease with which miliaria can be confounded, is *eczema;* but in the latter, the vesicles are remarkably confluent, a large number being crowded into a small space, while in the miliaria they are larger and more isolated.]

This disease is said to be idiopathic, as well as symptomatic. There can be no doubt whatever, that an eruption of this character occasionally appears in the course of all fevers and inflammations; and in such cases, attention ought to be directed to the original dis-

century, entertained the same opinion, and calls the chicken-pox *variola pusilla.* The water-pox and swine-pox (Varicella globata,) are mere varieties of chicken-pox, which last is the varicella lenticularis of Willan.]

* [Watson's Practice of Physic, p 876.]

ease. It is also considered one of the diseases of child-bed. Since women in that state have been treated in a proper manner, by avoiding hot stimulating drinks, and by admitting cool air, it is not very frequently met with. It is described by authors to commence with rigors, sickness, and languor approaching to syncope, quick pulse, heat of skin, and thirst. The eruption does not usually appear till four, five or six days after the commencement of the febrile attack. Previously to its appearance, there is a sense of pricking, tingling, or itching of the skin, sometimes attended with a benumbed state of the extremities. The patient is greatly oppressed, and complains of a sense of weight about the chest; the spirits are low, and a profuse perspiration takes place, which is frequently remarked to have a sour smell. At length the vesicles form into small scales, and fall off in a few days.

The eruption is generally distinct, but sometimes confluent; it is said rarely to affect the face, and different crops may appear in the same fever; it attacks those most frequently, who have been previously weakened by disease, fatigue, or long-continued sweating or who have had a hot regimen. The miliary vesicles often occur during the course of many of the puerperal diseases, such as milk fever, inflammation of the brain and peritoneum.

Mr. Burns, in his Principles of Midwifery, p. 420, says, "Whether the miliary fever be idiopathic or symptomatic, the treatment is the same." If he mean to state, that slight miliary eruption is to be treated in the same manner as miliary eruption "depending (to use his own expressions,) on fevers connected with a morbid state of the peritoneum or brain, which generally prove fatal," I cannot concur with him, as the eruption is to be regarded only as an accidental symptom of another disease.

Treatment.—If this disease occur in the course of inflammation of the peritoneum, brain, &c., the particular disease ought to be treated in the proper manner, without reference to the eruption. If not, the bowels are to be regularly attended to, sweating is to be avoided, as well as every thing which heats the patient; and indigestible food must be prohibited. Whenever the patient is found perspiring, the linen should be changed in a careful manner, and the body properly dried and rubbed with a soft towel; in this case, sulphuric acid will be found very useful, and there can be no objection to the moderate use of wine and bitters.

ROSEOLA.—ROSE-RASH.

Roseola is a fever attended by a rose-coloured efflorescence, without wheals or papulæ; [but sometimes in blotches of a quarter of an inch or more in diameter, which continue from one to two, three, or even four days. It is a common disease of infancy, and more particularly in the summer season, when the itching of the

skin renders it very irritating. Also the eruption assumes a ring-like form, sometimes a consecutive, but followed by little or no desquamation,] and apparently not contagious. It has often been confounded with measles and scarlet fever, and I have seen the wisest heads baffled in determining the point; in one case in which such a division of opinion took place between two physicians, a third declared that the patient laboured under small-pox, and the result of the case proved that his opinion was correct.

This is a disease which may very frequently be traced to indigestible matter, and particularly fruit, in the stomach and bowels; therefore the treatment is very simple; so simple, that even in the higher ranks, medical men are seldom consulted; and they would probably be still less frequently called, only that parents are afraid that it is scarlet fever. Confinement, attention to the bowels, and avoiding solid animal food for a few days, are the best means which can be adopted.

Willan and Bateman have given an account of *seven varieties* of this disease, but no practical benefit can be derived from such minute hair-breadth distinctions as these and other skin nosologists have drawn.*

URTICARIA.—NETTLE-RASH.

This disease is known to the vulgar by the name of nettle-rash, and is distinguished from other febrile eruptions, by circular elevations of the cuticle, of a red colour, with a white spot in the centre, and is usually termed a wheal; [these wheals, however, are often very irregular, of a mottled character, either whiter or redder than the surrounding skin;] and here, again, Willan and Bateman have unnecessarily described six varieties.

The eruption is generally preceded by marks the most distinct of gastro-intestinal irritation and fever; and the patient is affected with restlessness, oppression, languor, and want of appetite; his tongue, however foul, will in general be found red at the tip, and round the edges. If the eruption be very general, the patient suffers much distress from the heat and itching of the parts, but the internal disorder will be found to be relieved. Sometimes the rash appears only when the individual is heated by exercise, or by wine, or when he is undressing himself; and it is also frequently excited in a fresh part, by friction or scratching. This is an affection which is often produced by eating particular articles of food, [especially, as Dr. Willan has remarked, by shell-fish, lobsters, crabs, shrimps, and the common mytilus or sea muscle. "In a few individuals," he adds, "in consequence of a peculiar idiosyncrasy, other substances when eaten, are

* It affords me great pleasure to refer to Mr. Plumbe's Practical Treatise on Diseases of the Skin. That gentleman has taken correct views of the subject, and treats of all the affections pathologically; therefore he has few subdivisions. It is the best work we possess on the subject.

followed by the same immediate affection of the skin ; such as mushrooms, honey, oatmeal, almonds, and the kernels of stone fruit, strawberries, &c. In some persons the internal use of valerian has produced the nettle-rash. The operation of these substances is almost instantaneous, and the symptoms are extremly violent for several hours."*

Sometimes nettle-rash is attended by the sensation of needles or other sharp points penetrating the skin ; these pains, which are at first limited to a spot or to a limb, extend to other parts, and cause extreme suffering and sometimes even severe cramps. The eruption is variable, and sometimes altogether absent in this form of the disease.]

It appears to me, that individuals who are frequently subject to this affection, and others of a smilar nature, during youth, are those who, in after-life, are liable to be affected with gout.

It is sometimes difficult to distinguish urticaria from another very painful and troublesome affection, which is known by the name of *erythema fugax;* but this is a matter of no practical importance, as both eruptions are produced by the same causes, and cured by similar remedies.

Urticaria may continue for an indefinite period, and may be reproduced in particular constitutions every time the stomach is disordered.

Treatment.—Nothing is more simple than the management of a case of urticaria ; but much more depends upon the patient himself than upon the remedies which a physician may prescribe. The patient must find out by experience, the articles of food which disagree with him, and he must have sufficient resolution to avoid them for a time. It should be impressed upon young practitioners, that danger sometimes proceeds from the repulsion of the eruption by cosmetics.

A very beautiful young lady was frequently troubled with febrile symptoms and this rash. She was attended by an eminent physician who gave her a large bottle of a strong solution of sugar of lead, with directions to sponge her body with the wash when her skin was very itchy. Upon the first occasion, she stripped herself, and applied it as extensively as she could, and it surprised her that the itching suddenly ceased; upon examination, the eruption, which was very vivid before, had now almost entirely disappeared. She instantly felt sick, oppressed, and fainted; and continued for such a considerable time in a state of insensibility, that her attendants were doubtful of her recovery. She survived, but has not since known what it is to enjoy a day's health.

[A case also came under my own care, in which the eruption, from causes unknown, receded early in the disease; it was almost immediately followed by an aphthous condition of the mouth and consequent ulceration of the tongue, which continued with much suffering and constitutional irritation for upwards of two months, and was seemingly cured by change of climate.]

Besides avoiding every thing that disagrees with a patient, it may be mentioned that gentle laxatives are essential remedies; and that an emetic is highly useful, if an indigestible matter be still in the stomach.

[* Synopsis, p. 87.]

[I have found the use of small and repeated doses of magnesia to be particularly beneficial in urticaria; and this, with a farinaceous diet and the avoidance of acids, will, in general, meet all the indications. The safest external applications are warm or tepid bathing, either with simple water, or whiskey and water mixed half and half. When the itching is local and very irritating, the application of laudanum affords great relief. I have known this disease to last with severity for several days, and to require free bleeding before the distress became in any degree tolerable.]

PESTIS.—THE PLAGUE.

The disease, which is now to be shortly described, appears to be an endemic fever, attended during its course by buboes, carbuncles, or some eruption on the surface of the body. It appears to be, under certain circumstances and seasons, highly contagious; and it would seem, also, to be occasionally epidemic.

The accounts we have of the phenomena of this disease are so contradictory, and the histories of morbid appearances are so few and meagre, that I have not sufficient data before me wherewith to form pathological descriptions.

The plague, it would appear, is sometimes very mild, at others very severe; and if it be a fever, of which I have no doubt,* the symptoms must not only vary in intensity, but they also must have a very wide range of character. The disease must have varieties and shades arising out of one organ being more severely affected than another, as well as from local congestions and inflammations. It appears to be modified, also, by season, situation, and habits of individuals. It is not to be wondered at, therefore, that different writers should have given different histories of the symptoms and progress of this disease; but, as yet, we have no pathological description that can be depended on; therefore my observations must be brief.

It seems to be the opinion of some physicians, that the plague is nothing more than a malignant typhus, and the only peculiar symptom that has been described is the bubo, carbuncle, or the appearance of some eruption on the surface of the body; and all writers agree in opinion, that the safety of the patient very much depends upon the suppuration going on speedily and kindly. The plague, therefore, seems to be closely allied to the exanthemata, and more particularly to small-pox.

The disease appears to be ushered in by rigors and oppression, followed by heat of skin, great prostration of strength, giddiness, and headache; the expression of the countenance is besotted, and the eyes have a muddy, glistening appearance. It is stated, however, that in some cases there is a ferocious aspect; in others, the patient's

* I have had the pleasure of enjoying several communications with Dr. M'Guffuc, who resided many years in Turkey, and who has had ample opportunities of seeing the disease. It is his decided opinion, that the plague is a fever attended by buboes, &c.

look is subdued. The pulse varies much; it is sometimes quick and full, at others, quick and small; sometimes described as being hard, at others soft. The intellect is sometimes clouded; at others, there are insensibility and fierce delirium; occasionally stupor takes place, and in some cases the functions of the brain remain distinct and clear. The patient, in general, seems indifferent respecting his fate; the tongue is at first moist, although it may be more or less loaded; there is sometimes constipation, at others diarrhœa; the stools are always highly offensive; the stomach is in general very irritable, every thing taken being almost instantly rejected.

In a few days from the first attack, generally the third, pains, often acute, are complained of in the groins and arm-pits; and, unless the swelling and suppuration of the glands go on quickly, death soon takes place. Sometimes carbuncles appear, with or without the buboes; but petechiæ more frequently than carbuncles. Discharges of blood from the stomach and intestines often take place in the last stage. Sometimes the disease is very rapid in its progress, running through its course in thirty hours. It is said, that if the patient survive the fifth day, the bubo being completely formed, he may be pronounced to be doing well, if not actually out of danger. As in the acute eruptive diseases, there are two periods fraught with greater danger than others, viz., that at which the bubo makes, or ought to make, its appearance, and that at which it ought to be matured.

The convalescence, as in all severe fevers, is very slow, which is attributed to the extremely debilitated state in which the patient is left; but there can be little doubt that a great deal is generally owing to bad nursing, and want, perhaps, of sufficient comforts.

It is a curious and interesting fact, that Sir James M'Grigor and Sir John Webb, the former the director-general of the medical department of the army, the latter director-general of the medical department of the ordnance, should have distinguished themselves in the same field of investigation, having been both employed with our Egyptian army above thirty years ago, when they displayed that talent, zeal, and humanity in the performance of their duties, which endeared them to all who were placed under their care. It was there these distinguished persons gave evidence of the great powers of mind and regular habits of business, which marked them out as men admirably qualified for the high situations in which they have been subsequently placed, and which they have filled with so much honour to themselves, and benefit to the service. Their statements respecting the plague, will be read with much interest and advantage.*

Treatment.—Sydenham recommended free and repeated venesection in this disease, during what may be called the eruptive fever, and it has occasionally been practised since his time: but even Sydenham himself seemed latterly to prefer sweating the patient, under the idea of withdrawing the pestilence in that way from the body, which weakened him less than blood-letting. Some individuals condemn

* Sir James M'Grigor's Medical Sketches of the Expedition from India to Egypt.—Sir John Webb's Narrative, 6th vol. Medical Transactions.

bleeding entirely. The same difference exists with regard to purging. Cullen condemns both, upon theory, but recommends the violence of reaction to be moderated, as far as it can be done, "*by taking off the spasm of the extreme vessels.*" The application of oil to the surface of the body is believed to be a preservative, and it has also been employed to cure the disease; but even upon these points, such opposite statements have been promulgated, that we have no means of forming correct opinions. A great number of other remedies have been strongly recommended—as mercury, wine and bark, opium and æther, emetics, diaphoretics, and the cold affusion; and, if my notions of the disease be at all correct, there are cases and stages in which several of these remedies, if not all of them, may prove highly beneficial; but there are others in which they must have the opposite effect. For example, if there be violent inflammation and congestion of the brain, no one will say that wine, æther, bark, or camphor, are the proper remedies; but in which cold applications to the head, and the action of mercury, might be beneficial. In the last stage of the disease, the lancet would be most improper, when wine, æther, opium, and even brandy itself, may snatch the person from the grave. If the stomach be irritable, which it almost always is in this disease, no one, I hope, would think of making it more so by exhibiting emetics and large doses of bark. It is to be feared that the recommendation and condemnation of various important remedies have taken place, without reference to the stage of the disease, the particular organ or organs affected, the peculiarities of the prevailing distemper, as well as the idiosyncrasy of the patient; but it becomes me to speak with diffidence upon a subject respecting which I must acknowledge myself to be profoundly ignorant.

The reader who wishes for more minute information, must peruse the various works published on this subject; or a most excellent abstract of them, in the third volume of Dr. Mason Good's Study of Medicine. The chapter on the plague appears to me to be the most meritorious part of his work.

[The following interesting particulars, respecting the plague in Egypt, are from the celebrated Clot Bey, in a letter to Dr. Chevrin, of Marseilles, dated Cairo, March 26, 1835.

The plague commenced in Alexandria, in November; for a month it was very fatal, and, altogether, 20,000 persons have died. It began in Cairo, in December, but, during the last fortnight only, has been of a serious type. The first symptoms are pain in the head, nausea and vomiting, injected eyes, staggering walk, as if from drunkenness, stupid expression, white moist tongue, full and frequent pulse. At this period, emetics and diffusible stimuli may be tried, but Clot Bey knows nothing of their effect. On the second or third day, there is mental confusion, sometimes delirium; the tongue is dry in the centre, with red edges; the skin hot; there is often pain in the epigastrium; rarely diarrhœa; buboes and carbuncles. There is now actually irritation in the digestive canal, brain, and lymphatic glands; and bleeding and cupping are employed, with cauterization to the buboes and carbuncles, to fix the irritation in the skin. On the fifth and sixth days, petechiæ and blue patches on the skin. Revul-

sives to the extremities. This treatment has apparently saved some patients. The corpses have not the hideous aspect which physicians have described and artists painted. The petechiæ are particularly on the neck, sides of the chest and limbs; the buboes in the groins and armpits; very rarely in the neck: all the lymphatic glands were enlarged in those who had no buboes; carbuncles in three cases only. No particular tendency to rapid decomposition; subcutaneous veins not apparent. Heart, and veins in the cavities, gorged with black blood, as well as the liver and spleen; this viscus was generally found doubled in size and softened. Arteries empty; kidneys of a deep violet, gorged with blood, hæmorrhage in their pelves. The stomach always contained a blackish fluid; its mucous membrane, much injected, exhibited red patches like petechiæ, which, sometimes, from the size, might be called ecchymoses; their last degree is ulceration. The intestines were in a similar condition, but less well marked: the lymphatic glands were always engorged, sometimes increased five or six times, softened, and of a colour like lees of wine, and sometimes black. Those of the groin, or armpit, by their agglomeration, formed a homogeneous mass of a colour almost always like lees of wine, with effusion of black blood into the surrounding cellular tissue. A similar change was seen in the chain of glands along the vessels of the abdomen and chest; and, in many cases, the extravasation of blood around them amounted to hæmorrhage. Sub-arachnoid veins and the sinuses gorged; parenchyma of the brain and spinal marrow natural, except in two or three cases, where it was softened.*]

[* From the British and Foreign Medical Review, No. 1.]

PART II.

DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

CHAPTER I.

DIFFICULT DENTITION.

Few children go through the process of dentition without some suffering; and, when teething is difficult, many complaints arise, which fall under the denomination of infantile diseases. These are, fever, determinations to the head, occasioning inflammation of the brain and its membranes, or convulsions, cough, and difficulty of breathing; bowel complaints; cutaneous and glandular affections; inflammation of the eyes, and sores behind the ears.

Authors have long remarked, that children who teethe at an early period, have least suffering; and the same observation has been made with respect to those who have a considerable flow of saliva. There have been instances of children born with teeth, which happened, it is said, to Richard III, and Louis XIV; and Haller has cited a considerable number of similar cases.

Some infants cut the first pair of teeth by the end of the third month; in other instances, not until they are sixteen or eighteen months old. In general, however, they are cut between the sixth and eighth month. The two centre incisors of the lower jaw commonly appear first; in the course of a month, their opponents in the upper jaw protrude; after this the two lateral incisors of the lower, and then those of the upper jaw, appear. Between the twelfth and sixteenth month, the anterior grinders of the lower, and then those of the upper jaw are cut; subsequently, the cuspidati, or eye-teeth, protrude, and after these the posterior grinders; so that children usually have the first set of teeth (twenty in number) complete, by the time they have attained the age of two years, or two and a half. There are generally intervals of several weeks between the cutting of each pair.

The formation of each tooth goes on in a membranous and vascular sac, which is firmly united to the gum; and, if we attempt to tear the gum from the jaw, the sac is brought along with it. This sac, it would appear, subsequently becomes absorbed; but when it is thicker than usual, more vascular, and long of being absorbed, it is one of the alleged causes of difficult dentition. The irritation produced by the pressure of each tooth against the gum, in its advancement to the surface, particularly when the child teethes late, and the gums are hard and cartilaginous, also occasions the different phenomena which are ranked under the same appellation.

A child, in such circumstances, is observed to be restless, fretful, and feverish; to sleep little, and is often seized with sudden fits of screaming. The bowels are out of order, and the evacuations fetid. On some occasions, marks of determination of blood towards the head take place, viz., great restlessness, flushed face, sudden fits of

crying, apparent suffering when brought into the erect posture, startings, slight spasmodic movements of the muscles of the face, and even general convulsions.

Many children, whenever they cut a tooth, are teased with a cough, depending on bronchitic irritation or inflammation. This is announced by wheezing. Others suffer from constipation, while many are afflicted with troublesome diarrhœa.

Cutaneous and glandular affections are often observed during difficult dentition. The glands of the neck, and the submaxillary, are those generally affected, and they sometimes suppurate. Of the eruptions, the porrigo larvalis, and lichen, are those most commonly seen.

Occasionally there is inflammation of the eyes, particularly those forms which are termed ophthalmia purulenta and ophthalmia tarsi; and sores take place behind the ears, which seem to operate beneficially. This statement will show the propriety of examining the mouth, when we are called to a child labouring under these or any other affections during the period of dentition; when the mouth may feel very hot, and on examining the gum over the tooth which we suspect, it will be found to be elevated, very red, sometimes white and shining; the ridge or seam, which runs along the jaw in the direction of the teeth, will, in general, be found to have disappeared. If such appearances present themselves, the tooth may be pronounced to be far advanced; at all events, it is well to be able to say whether it be near at hand or not, as mothers are often disappointed if the tooth over which the gum is cut, does not show itself in a day or two; whereas, if they are previously told that it is not so near, they will, in general, be satisfied. The best remedy is to divide the gum, down to the very tooth, by crucial incisions. Many people entertain a dislike to this operation, from the idea that the gum is hardened by the cicatrix; but they may be safely assured that this is not the case, and that the tooth will be advanced, certainly not retarded, by the scarification. If the operation be effectually performed, it constitutes the principal part of the treatment. Should the gum even heal immediately, the bleeding will remove the local inflammation, upon which the febrile symptoms frequently subside. The bowels must be kept freely open, and the tepid bath is often of great service. If the face be flushed, with other marks of determination to the head, the application of cold may be tried; the child should at least sleep without its cap, and use a hard pillow; frequently have I seen it advantageous to change a down pillow for one filled with fine shavings. It is probable that some of the serious affections of the brain to which children are liable, may be attributed to warm caps and soft pillows. The bowels must be more freely acted upon; and if these means do not succeed, it will be well to apply leeches to the feet, which may be subsequently placed in warm water, for the purpose of encouraging the bleeding; besides which, the hæmorrhage is better under command upon the application of a bandage. Many practitioners are heard to complain of the great difficulty in stopping the bleeding in young children, but I never experienced any impediment. In the *first* place, we ought always to point out the situation where

the leeches ought to be placed, which I take care shall be, if possible, over a bone, against which pressure can be applied. *Secondly*, not to apply too many at a time. It is rare to find more than one orifice troublesome, from which the bleeding will be easily suppressed, by gently pinching the skin between the finger and thumb for a few minutes. I have never been obliged to use the actual cautery, or even caustic.

We are often not called, however, till convulsions have actually taken place, which are to be treated in the manner to be subsequently described in the second volume. I may, however, mention here, that the child should be put into a warm bath as soon as possible; the face sprinkled with cold water; and, if a fit should continue long, and threaten danger, a vein should be opened on the instant. Should the external jugular be readily observed, blood may be drawn from it; but if a vein cannot be found, the hot bath and stimulating frictions must be trusted to till leeches are obtained. Great attention should be paid to keep up a brisk action in the bowels, by means of suitable doses of calomel and jalap, or calomel combined with rhubarb or scammony, together with castor or croton oil and injections; but all these means will be of no avail unless the gums be freely scarified.

Cough is occasionally a troublesome attendant on teething, and practitioners will be found, in general, to act empirically, unless they are able to ascertain whether it depends upon any diseased action in the lungs, or merely upon irritation about the epiglottis and pharynx. If the latter, a common cough mixture may do good; but it will be inefficacious, perhaps injurious, if the cough proceed from bronchitis, which may sometimes require the application of leeches or of a blister, or contra-irritation produced by a mustard plaster, or the ointment of tartar emetic. If the lungs be very much loaded with mucus, which is easily ascertained, an emetic will be very serviceable; but the treatment of bronchitis need not be dwelt upon in this place. It is only necessary to state the general principles, with reference to the affection now under consideration.

When a child, who is suffering from difficult dentition, has diarrhœa, we should not be in a hurry to check it, particularly if there be marks of determination to the head. The bowel complaints of children are of so much importance, that it is necessary to treat of them in a separate article, with a view to point out their pathology; but it must be mentioned in this place, that the best practice is to exhibit a little castor oil in the first instance; and if there be any pain in the abdomen, warm fomentations are to be used; should there still be signs of suffering, a leech or two may be applied, followed by very small doses of Dover's powder or a drop or two of Battley's sedative solution of opium.

It is very fortunate that children, upon the occurrence of the most trifling febrile symptoms or disorder of the bowels, are liable to eruptions on the surface, because they act beneficially by removing irritation and increased action, on many occasions inflammation itself, from internal organs. When these eruptions take place during the course of dentition, it will almost always be found best not to meddle

farther with them than to enjoin cleanliness; indeed, on many occasions, do what we will, the eruption continues, the child becoming better between the periods of cutting teeth. I have frequently seen great mischief done when external applications had the effect of repelling the eruption, and, on more than one occasion, death itself. In "*porrigo larvalis*," when there are great heat, itching and inflammation of the part, I have found it answer well to apply leeches to the inflamed surface, and to cover the part with oiled silk. The child's hands should be muffled, to prevent the face from being scratched and disfigured.

Glandular affections may be safely let alone, unless they become inflamed and painful, when the practitioner will do well to apply either leeches, fomentations, or a soft warm poultice. If matter form, the sooner it is let out the better, in whatever constitution it may occur, there being far more danger of leaving a disagreeable mark, by allowing the pus to discharge itself, spontaneously, than by using the lancet.

We are often consulted respecting inflammation of the eyes at this period of life. Generally speaking, the disease will be found to be confined to the conjunctiva; sometimes to the tarsi; there is rarely deep-seated inflammation on the eye itself. A leech or two applied to the temple, is always safe practice, as well as a blister behind the ear; indeed, nature points this out, by the relief which supervenes upon a natural sore appearing in that situation. Let me add, that whenever we have occasion to blister a child, we should be careful that none of the powder of cantharides is sprinkled upon the surface of the plaster, which frequently creates unnecessary irritation; and, above all, the blistered surface should be carefully examined every day by the medical attendant, till it shows a healing tendency, as it is apt to slough, which the timely application of a linseed poultice will very frequently check. With respect to the natural ulcerations that take place behind the ears, it is only necessary to use frequent ablution with warm milk and water, and to take care that they are not unnecessarily irritated. Great uneasiness is often produced by carelessly removing the dressing; this might always be avoided by previously applying tepid fomentations. An occasional opiate is very beneficial; but no medicine of this kind should be left in the way of an ordinary nurse, who will often administer it to secure to herself a quiet night to the great injury of the child; even Dalby's carminative, or syrup of poppies, should never be left in the nursery. I have known many children destroyed by their constant exhibition. The American soothing syrup is another remedy that is, perhaps, too frequently ordered by medical men: it is supposed to *soften* the gums, and to render the process of teething easier; which it does, not by mollifying the gums, but by virtue of a narcotic principle which it contains.

A child, when teething, carries every thing to its mouth, bites it, and thereby seems to experience relief, and nothing will be found to please it more than rubbing the gums with the finger. A gum-stick promotes the flow of saliva, and amuses the infant.

[PAROTITIS.—MUMPS.]

[*Cynanche parotidea.*—This disease is an inflammation of the parotid gland, appearing on one or both sides at the same time. It is most common in boys before the age of puberty, and is seldom seen after twenty years of age. It follows the law of contagion in attacking the same individual but once, and also in affecting several or sometimes all the children of the same family successively.

The symptoms are rigors, fever, pain and tumefaction of the parotid and adjacent glands, with some soreness of the throat, and consequent difficulty in opening the mouth and moving the jaws. Although the distress is often great for three or four days, there is seldom any danger. I have never seen the inflammation terminate in suppuration; yet this has occasionally happened. One of the most serious attendants on mumps is metastasis to the testicle in the male sex, and to the breasts in females. In both cases the glands swell and become, in other respects, highly inflamed; but in the extensive experience of the late Dr. Dewees, prolonged as it was through a period of forty-five years, that gentleman informs us that he had never seen any permanent evil follow these translations.

In the treatment of mumps, nothing more is requisite, in ordinary cases, than rest, mild cathartics and a light diet, conjoined with occasional spirituous or volatile fomentations to the affected parts. In severe cases, however, free leeching is demanded, to be followed by a blister behind the ears with the ordinary treatment of febrile diseases.

The parotid gland is also liable to inflammation of the common phlegmonous kind; and this, when it is aggravated by neglect or exposure, sometimes takes on the process of suppuration in a very slow and painful manner; but the treatment will be inferred, from what has already been said of other local inflammations.]

CHAPTER II.

DIFFICULT DEGLUTITION FROM INFLAMMATION, ULCERATION, OR ENLARGEMENT OF THE TONGUE; CYNANCHE TONSILLARIS; CYNANCHE PHARYNGEA; INFLAMMATION OR ULCERATION OF THE ŒSOPHAGUS.

DIFFICULT DEGLUTITION.

Difficult deglutition may be produced by inflammation, ulceration, and enlargement of the tongue, which are often caused by the action of mercury and other metallic poisons, and still more frequently by disease of the digestive organs. If the affection be produced by mercury, leeches applied to the cheeks are said to be very useful, as also a wash composed of a solution of the chlorate of soda, or that of lime. Several serious cases of inflammation of the tongue have lately been published. Two will be found in the 92d and 93d Nos. of the Edinburgh Journal, and a fatal one in the 214th No. of the Lancet. I am inclined to believe that inflammation and enlargement of the tongue are generally owing to some temporary diseased action in the chylo-poietic viscera. The experience of any professional man may be appealed to, who is liable to derangements of the stomach and bowels, whether he has not, on such occasions, felt his tongue sometimes swollen and painful, and even slightly ulcerated in different parts of the tip and edges; and whether he has not been led to attribute such a condition to a morbid state of his digestive organs? Whether this view be correct to the full extent or not, the stomach and bowels must be attended to in the treatment.

Children, in particular, are very liable to white specks, vesicles, or ulcerations on the tongue, and over the whole mucous membrane of the mouth and fauces. These specks are called aphthæ, (stomatitis). We meet with this affection in two forms, one of which is mild, the other very severe. In the first, the treatment consists in keeping the bowels gently open, avoiding solid food, and using the warm bath. In the last, I feel persuaded, from the vomiting, griping, and purging, and the intensity of the other symptoms, that the disease affects considerable portions of the intestinal tube, and requires a different plan. Before the appearance of the ulcerations in the mouth, the constitutional symptoms occasionally run high, which are sometimes relieved upon the mouth becoming sore; so that this affection has some resemblance to the exanthemata. Mr. Burns, in describing this disease, states, that "*the child is sometimes drowsy, and oppressed for*

some hours, or even a day or two, before the spots appear, and occasionally is affected with spasms. The fever and oppression are often mitigated on the appearance of the aphthæ." Children affected in this manner, suffer great pain, and are consequently exceedingly peevish. The stools are generally acrid, sour, and discoloured; there are often tenesmus, and prolapsus ani, the surface around the anus being excoriated. Successive crops of aphthæ appear, which resemble small portions of curdled milk adhering to different parts of the tongue and mouth; after a time they become yellow, and seem to slough off, but may be renewed many times. When they drop off, the parts below frequently look raw, particularly in severe cases, in which the crust sometimes becomes dry and hard; occasionally the parts look very foul, dark-coloured, and have a fetid smell. A case of an adult lately fell under my observation, in which great suffering was produced; the sloughs were most extensive, and portions even of the palate itself were thrown off.

The diseased action frequently extends into the air passages, announced by dyspnœa and cough. Children brought up by the spoon, are more liable to aphthous affections than others, as well as those whose bowels are neglected, and are insufficiently clothed.

Treatment.—The above pathological description of the disease, leads at once to the proper mode of practice. In the two cases of inflammation of the tongue recorded in the Edinburgh Medical and Surgical Journal, venesection and the application of leeches produced temporary benefit only, while deep scarifications were had recourse to with permanent advantage. It is probable, however, that sufficient attention has not been always paid in similar cases to the condition of the stomach and bowels.

With respect to the severe cases of aphthous affections of the tongue and mouth, I can speak strongly of the advantages derived from the frequent application of leeches to the abdomen, if the strength be good; the warm bath, and contra-irritation on the abdomen by means of a stimulating embrocation, or the tartar-emetic ointment. The contents of the bowels should be discharged by an occasional dose of castor oil, or a few grains of rhubarb. An injection, composed of a few drops of laudanum, and a tablespoonful of starch or gruel, may be thrown into the rectum, by means of a small penis syringe; but it is difficult at all times to make a child retain it. Dover's powder, united with aromatic powder, is also a good remedy.

If a child upon the breast be affected in this manner, no other food should be allowed; if it be already weaned, ass's milk ought to be provided, but if that cannot be procured, whey, mixed with a little cream, and occasionally a little thin gruel, may be substituted; beef tea, and soups of all kinds, are, according to my own experience, bad, until the disease be far upon the decline; if the child's strength be sinking, wine, properly diluted, is far less exceptionable than soups or animal jellies. A weak solution of the chlorate of soda, combined with an opiate, will be found serviceable, a teaspoonful for a dose. Considerable mischief is sometimes done, and children are very much and unnecessarily fretted, by the application of borax

and sugar introduced into the mouth upon a cloth, or a finger, and rubbed so as to remove the crusts.

[I never saw a case of aphthous mouth in children, that was not accompanied by acidity of the stomach; and I have derived great advantage from the frequent use of small doses of calcined magnesia. This may be applied dry to the tongue, or it may be prepared as follows: with a small teacupful of water, mix a heaped teaspoonful of magnesia; of which a teaspoonful should be given every hour, first stirring the mixture, which may be sweetened if desirable. For the same purpose I am in the practice of giving a mild solution of of the bi-carbonate of soda.

In children, there is great difficulty in applying local remedies with sufficient frequency to render them available. The best of these is a solution of nitrate of silver, four grains to the ounce of water, and applied with a camel's hair brush. Diluted tincture of myrrh, and an infusion of white oak bark, gum catechu or common green tea, all answer extremely well as a wash for the mouth.]

[GANGRENE OF THE MOUTH.]

[We propose, in this place, briefly to notice a painful and not unfrequently fatal disease, which has occasionally appeared in our larger cities, and known by the name of gangrene of the mouth, water canker, cancrum oris, &c.

This remarkable affection is not the termination of ordinary inflammation, but often comes on without pain, heat or redness, yet with a hard swelling in one or both cheeks, with so little tenderness, that "the patient seems all but unconscious of it; and but for the enlargement being obvious to the eye, the mischief would probably escape notice altogether in its early stage. Indeed, as it is, the tumefaction is occasionally mistaken for affections of a much less serious description. The skin of the cheek has a peculiar glossy or waxy appearance. On examination of the mouth, we detect a whitish or ash-coloured eschar, without any inflammatory redness of the surrounding membrane; generally in the centre of the cheek or in the commissure of this part and the lower jaw. The gums look pale and spongy. There may be a certain degree of languor, dulness or slight feverishness, but not less frequently there is nothing to call particular attention to the general health. Such are the principal phenomena of the first stage of the disease. As it advances, the slough spreads rapidly over the interior of the cheek and lip, and invades the gums. Saliva escapes in great quantity, at first clear, afterwards mixed with dirty sanious matter, which has a horrible fetor. About the same time the outside of the cheek presents a pale, ashy spot, which soon becomes livid, and sphacelates. The extension of the disease to the bony structure is evidenced by the loosening of the teeth, which are soon thrown off with portions of

the alveolar process. The fluid discharged appears to have a corrosive quality, for the angles of the mouth and the lower lip sometimes become new centres of mortification. We have known both sides of the face attacked in the same individual; and there are cases on record, in which all the soft parts of the face, as well as the upper maxillary bones, the palatal, the nasal, and even the ethmoid, were involved in the destruction."*

The preceding description of the disease by Dr. Symonds, as observed by him in Great Britain, corresponds entirely with the appearances noticed in this country, and especially in this city, by my friend Dr. B. H. Coates, who had charge of 170 cases within three months in the children's asylum.

Besides those internal remedies which suggest themselves for the correction of the stomach and bowels, (and calomel was of the number,) Dr. Coates found the following local application to be far more efficacious than any other. Sulphate of copper ʒij, powdered cinchona ℥ss, and water ℥iv.—To be applied twice a day to the full extent of the ulcerations and excoriations. The cinchona is not absolutely necessary, but serves to retain the sulphate longer in contact with the edges of the gums. Simple ulcerations and small gangrenes, adds Dr. Coates, as well as troublesome excoriation, when not in the last stage, yielded promptly to this remedy; the good effect being generally visible from the first application.

"The separation of a portion of the periosteum from the fang, within the socket, which was universally found whenever the tooth was loose, among two or three hundred specimens, proved the existence of the disease in a deep, narrow crevice, into which it was impossible, by any contrivance, to insinuate the lotion. This cavity was laid open by extracting the tooth; and when the remedy was applied, the sanatory effect was surprisingly prompt. The universal rule was to extract all teeth the moment they were discovered to be in the slightest degree loose, and the *blue wash* above described became the standing remedy."† In addition, however, the following prescription derived from the late Dr. Parrish, will be found extremely beneficial: Sulph. of zinc ʒj., water ʒij. Dissolve, and then add of pure honey and tincture of myrrh, each ℥ij.—To be applied the same as the preceding lotion.

Caustic potash and nitrate of silver appear to possess very little control over this disease, and the same remark is applicable to the mineral acids.]

CYNANCHE TONSILLARIS.‡

THERE are two varieties of inflammation of the tonsils: the acute and chronic. In the acute, the swallowing is difficult and painful;

[* *Tweedie's* Practical Medicine, vol. 3.]
[† North American Med. and Surgical Journal, vol. 2.]
[‡ Called also Angina tonsillaris and Amygdalitis.]

the voice is altered, and in very severe cases the respiration is impeded; the pain, generally speaking, is severe. On looking into the throat, the tonsils, uvula, and even part of the palate, are seen much swollen, and very vascular, and sometimes the throat is swollen externally. Loss of appetite, thirst, headache, and general fever, for the most part, accompany this disease; occasionally these symptoms run high, and there is delirium. In some cases, only one tonsil is inflamed; in others, the uvula only; sometimes white specks are seen upon the inflamed parts, surrounded by a viscid exudation, which present the appearance of ulcerations. The white specks alluded to, are sometimes produced by exudations of lymph; at others, by sebaceous matter projecting from the follicles. This form of sore throat bears a considerable resemblance to the cutaneous affection termed acne. Occasionally, however, actual ulcerations are observed in the throat.*

Cynanche tonsillaris terminates in resolution; sometimes in suppuration, ulceration, and sloughing. When matter forms, the patient's sufferings are generally increased, the dyspnœa is considerable, and he is said, in common language, to have a "quinsy."

The most frequent cause of this complaint is supposed to be cold, produced by sudden vicissitudes of weather; but I imagine there is a combination of causes in the production of inflammation of the throat, and that the principal are a disordered state of the stomach and bowels, and the formation of sebaceous matter in the follicles. Many individuals are known to me, who never have a sore throat, unless the stomach and bowels have been for some time out of order; as well as others, who for a series of years, have escaped an attack, by regulating themselves properly in this respect.

Treatment.—This complaint is sometimes very little under the power of the usual remedies, unless it be attacked at the very beginning; and it is in such cases only, or to check the inflammation from running into extensive ulceration or sloughing, that venesection is admissible. Leeches may be applied externally, under similar restrictions. It has been recommended, that they should be applied internally to the part immediately affected; in which last case, each leech is introduced by means of a tube, with a thread through the tail; but when it is thought necessary to draw blood from the part affected, it is much more easily and speedily done by scarifications, producing less pain to the patient. Blisters are very frequently useful. Females have a great objection both to leeches and blisters; but particularly to the former, from the marks they produce. Laxative medicines are highly necessary, and must be frequently repeated. Emetics are much extolled. The best gargle, if it be necessary to wash the throat, is a little warm water, or acidulated infusion of roses. Inhaling the vapour of hot water is productive of great benefit, whether suppuration is to take place or not. When matter forms, dyspnœa frequently becomes a marked symptom; therefore, the sooner it is discharged the better for the patient; and it is by no means a painful operation, the relief being often instantaneous.

* It has often been in my power to prove, that the sebaceous matter is one cause of a "bad breath."

Several fatal cases have come to my knowledge, in which it is strongly suspected that the immediate cause of death has been inflammation extending into the larynx and bronchial tubes.

Chronic cynanche tonsillaris may either be the consequence of acute inflammation terminating in the chronic state, or may take place as the effect of sub-acute inflammatory action; the uvula is found enlarged and hard, as are the tonsils. If the case be recent, stimulating applications are found useful, and a succession of blisters to the throat. If these means do not succeed, and the enlargement is permanent, particularly if the voice be affected, the patient becomes an object of surgical treatment, and the parts have been excised.

Sometimes extensive and troublesome ulcerations are produced as the effects of chronic, as well as of acute inflammation in the throat; and in treating these, it is necessary, in the first place, to attend to the general health, by regulating the state of the stomach and bowels, and also the diet, which ought to consist of mild and digestible substances. Leeches and blisters are often serviceable; but the most efficacious application is a solution of the nitrate of silver in distilled water, in the proportion of four, six, and even ten grains to the ounce. The ulcerated surface is to be carefully washed, before the solution is applied. This operation, however insignificant it may appear, must be done with proper care, as bad consequences have been known to follow. There is a preparation in my museum, in which the epiglottis is completely destroyed by common caustic, rudely used, which was the cause of death.

[INFLAMMATION OF THE UVULA.]

[This affection often occurs independently of any considerable inflammation of the surrounding parts, and trivial as it may appear at first thought, is often the occasion of great distress and some danger. The uvula not only swells and elongates by the inflammatory process, but becomes rapidly œdematous, extending like a chord for an inch or an inch and a half into the fauces. The usual stimulating and astringent gargles will mostly reduce it to the natural size. Lunar caustic and alum, applied by means of a brush, are also very serviceable. But if the elongation continues, the uvula should be removed by seizing it with a forceps and excising it with a pair of long scissors. I have known protracted coughs to originate with this condition of the uvula, and to disappear with its extirpation.]

PHARYNGITIS OR INFLAMMATION OF THE THROAT.

In this affection, the tonsils and uvula are not invariably inflamed, but upon looking, the parts being exposed to a bright light, we can often see the throat and pharynx very vascular, and loaded with viscid lymph, which the patient is constantly making efforts to dislodge by hawking and spitting.

The pain on swallowing is fully greater than in the last described affection; I have seen patients suffering severely, some apparently in great danger. When it is recent and severe, the lancet must be used, followed or not by the application of leeches and blisters, according to circumstances. The inhalation of the vapour of hot water affords remarkable mitigation of the symptoms; and in slight cases, nothing further is required but to keep the bowels open, and allowing moderate nourishment.

[Chronic pharyngitis, accompanied by extensive ulceration, has become very common in the United States. The ulcers are most frequent on that part of the mucous membrane which covers the spine: they also form about the base of the tonsils, and less frequently on the anterior surface of the soft palate. They put on every appearance from mere denudation of the membrane, to ragged, dark, and livid ulcers. I have sometimes seen the whole pharynx involved in the disease, presenting a raw, unequal surface throughout. Occasionally it yields to the mere use of astringent gargles, especially the diluted creosote solution, or a strong infusion of white-oak bark. But in other instances they resist every form of treatment except that by lunar caustic, which is best applied in solution by means of a camel's-hair brush. This operation, to be successful, must, in most cases, be several, and, perhaps, many times repeated, not omitting, however, the assiduous use of gargles.

When the ulcers have fairly skinned over, they are liable to reappear on taking cold; so that the disease becomes tenacious and excitable in some persons, harrassing them at intervals for years, occasioning much local distress, and even altering the voice.]

INFLAMMATION AND ULCERATION OF THE ŒSOPHAGUS.

Of all the structures in the human body, the œsophagus is, perhaps, the least liable to disease. In general it is difficult to detect inflammation of the œsophagus till ulceration and constriction take place. I have seen one case only of universal inflammation of this tube not caused by poison, in which the lining membrane was in a sloughing state. There is a preparation in my museum that displays similar appearances; in this instance, however, there were no symptoms indicative of disease in the tube. In the former case which I attended,

there were pain and difficulty in swallowing. Both patients were also affected with phthisis. Inflammation may be partial, affecting only a part of the calibre of the œsophagus; and, if ulceration follow, there will be no contraction, but the patient will feel slight pain and a momentary stoppage when the bolus of food arrives at the spot. If the whole calibre of the œsophagus be involved in the inflammation, the pain will be more considerable, not so much from constriction as from the effort to vomit, which is produced by irritation. If it terminate in ulceration, occupying the whole tube, constriction will take place, with increased difficulty in swallowing. Patients have been known to be three and four days, and even a week without food.

Treatment.—Attention to the bowels, topical bleeding, and extensive contra-irritation, are the best means that can be employed. Nourishing injections, thrown into the rectum, are to be assiduously administered when the patient is unable to swallow a sufficient quantity of food. It is the practice in such cases, to introduce instruments to dilate the œsophagus, but I have seen it very injurious in several instances, when the operation was performed during the inflammatory stage. Affecting the system with mercury has been highly extolled, but perhaps without sufficient consideration. If the constriction be permanent, after the inflammation and irritation are subdued, a surgeon may be called to make cautious trials with a bougie; perhaps a common œsophagus tube will be found the best instrument for this purpose.

CHRONIC AFFECTIONS OF THE ŒSOPHAGUS.

Sometimes the gullet is diminished in diameter by fleshy excrescences; tumours, or occasionally scirrhous contractions are observed; and more rarely, ossification. Some individuals have survived contractions of the œsophagus for a great many years, being obliged to have food introduced into the stomach through a tube. Chronic diseases of the œsophagus are frequently found to have made considerable progress before their existence is even suspected.

The smoke of tobacco and stramonium, the abuse of mercury, and drinking fluids either excessively hot or cold, have been assigned by writers as the general causes, but, perhaps, too hastily.

Of all the remedies which have been recommended to us in such cases, the bougie is undoubtedly the best; and if at any time there should be much pain, leeching, contra-irritation, and narcotics, are to be had recourse to.

Many other circumstances produce difficulty in swallowing, as for instance, want of the uvula, tumour in the pharynx, ulcerations in the larynx, or upon the epiglottis. The first two belong more to the surgical department than the medical, and therefore cannot be treated of in this work; the last two shall be noticed among the diseases of the respiratory organs.

[DIPTHERITIS.]

[The preceding varieties of inflammation (to which the more recent nosology has applied the generic name of Angina,) are liable in all climates to an attendant or sequela, called by M. Brettonneau *diptheritis*, and by other writers *angina membranacea*. This consists in an exudation or rather secretion of a lymph-like matter, which appears in whitish spots on the inflamed fauces, first separate, and few in number, and apparently connected with the follicles; but they sooner or later coalesce, and sometimes cover the entire mucous membrane behind the velum palati. Although its colour is generally white, it is not unfrequently grayish, and reddened by effused blood; but in other instances it assumes a dark, ashy hue. All these symptoms may accompany those of ordinary inflammation of the parts; but in other cases the exudation is preceded by very little pain or uneasiness, while the membrane forms rapidly, and all the symptoms present a typhoid character. To this variety of disease the name *angina maligna* has been given. If it is not checked in its progress, it becomes gangrenous, as manifested by the false membrane becoming of a livid colour, and eventually black: the pain ceases; deglutition, from having been almost impracticable, is performed with ease; and the cadaverous breath, which often exists almost from the first, becomes yet more fetid.

This disease in its milder forms, is familiar to practitioners in the United States; but in Europe it is occasionally epidemic, even in its malignant variety. The simple diptheritis is readily managed by astringent gargles, or those composed of cayenne pepper, portwine, brandy and salt, or salt and vinegar: so also with alum and chloride of lime. M. Brettonneau recommends undiluted muriatic acid; but the most effectual application is the strong solution of nitrate of silver, as already directed in other forms of angina. It is a remarkable fact that genuine diptheritis will seldom bear general depletion, which increases the debility without arresting the disease; and when there is the least indication of the typhoid state, a cordial treatment, with stimulating ingesta, becomes necessary. Counter-irritants, as blisters to the back of the neck, or behind the ears, and irritating lotions over the throat, are also, in most cases, indispensable. The only internal remedies much to be relied on, are calomel, opium and ipecacuanha, variously combined according to circumstances. When the disease has invaded the larynx, even independently of the typhoid condition, there is very little chance of recovery.]

CHAPTER III.

INDIGESTION.

Under this head I shall treat of the affection which is commonly called dyspepsia, with its usual attendants, flatulency, tympanitis, pyrosis, and heartburn; and also of the painful affection termed gastrodynia.

Dyspepsia is a most troublesome disease to treat; and I believe the physician, to be able to do so effectually, should have suffered from it himself; as one who has had the good fortune never to feel as if he had a stomach, can scarcely believe, or almost listen to the complaints of those who have experienced that sensation. One symptom is more prominent and urgent in one case than another; a little flatus in the stomach occasionally produces violent nervous symptoms, sometimes as if the brain were seriously affected; and the whole will vanish after one or two sour eructations. Some patients appear as if they could not survive the difficulty of breathing under which they labour; and it will be found to depend, perhaps, on flatus rising in the œsophagus, producing the affection called *globus hystericus*. Remedies have not the same effect in any two cases; and all plans of treatment will most generally fail, unless the patient himself can discover what articles of food agree with him better than others, and has resolution enough to adhere to a proper regimen.

Dyspepsia may arise from various causes. Perhaps the following are the principal causes:—*First*, From simple functional derangement of the stomach, duodenum, liver, spleen, or pancreas; *second*, From indigestible and acrid substances taken into the stomach; *third*, From structural derangements in the digestive apparatus; *fourth*, From long-continued constipation; *fifth*, From derangements in other important organs.

Dr. Wilson Philip, who has written on this subject, has divided the disease into three stages. This plan would do admirably well, if dyspepsia were as regular in its march as intermittent fever; but in practice, such an arrangement will be found to be too arbitrary to be useful.

First stage of indigestion.—The first symptoms of indigestion are a sense of fulness and uneasiness in the region of the stomach, arising either from too great a load of food, from some indigestible article, or from flatulent distension of the stomach; frequent acid eructations, constipation, loaded tongue, and some thirst, follow. Sometimes sore throat is complained of, and a feeling in the eyes, as if sand were lodged between the eyelids and ball; it is difficult to keep the hands and feet sufficiently warm; and occasionally there is severe headache, accompanied by nausea, or violent vomiting.

These symptoms may steal on slowly, and, from being felt only occasionally, are neglected; or they may be produced suddenly, by indulgence in improper food, a copious draught of very cold water, or from anxiety, grief, fright, or other severe mental affections, or by too violent exercise after a full meal.

Physicians are rarely consulted in the first stage of the complaint; for the patient either drives on through it, or relieves himself by a day or two's abstinence, and by taking a laxative. If a person, however, take little heed of himself, he is soon heard to complain of restless nights, oppression at the præcordia, and becomes sensible of diminution of strength and heat of skin; his appetite becomes fastidious; he is either very costive, or is affected with diarrhœa. The alvine discharge is sometimes very bilious; at others white, showing a want of bile; it is adhesive, drops with difficulty from the body, and is very fetid. After the patient obtains passage from the bowels, he still feels much loaded, and very often considerable quantities of half-digested food will be observed in the stools.

Persons labouring under such symptoms will very generally be heard to attribute their complaints to a "*fit of the bile;*" and many medical men, I fear, confound stomach disorders with those of the liver, and too frequently exhibit powerful mercurial preparations, to the great injury of the patient.

Treatment of the first stage.—The cure of this form of the complaint is not difficult. The patient is to be directed to abstain from the use of soups, and whatever else distends the stomach; to eat and drink little, and to leave off while he has still an appetite; to keep his bowels open with a little rhubarb, Henry's calcined magnesia, or a compound colocynth pill; and to take regular exercise. He should, as much as possible, avoid any cause which has a tendency to produce either mental excitement or depression.

The second stage of indigestion is marked, according to Dr. Wilson Philip, by the supervention of tenderness in the epigastric region, and a hard pulse; and he very justly considers these two symptoms of much practical importance. The patient now feels very sensible to the impression of cold; he is often chilly, and afterwards complains of flushes of heat; his hands and feet have sometimes a dry, burning sensation, particularly during the first part of the night, extremely cold at other periods, painfully so when he first goes to bed; his skin becomes hot in bad cases, but towards morning a perspiration breaks out, and the patient enjoys some quiet sleep. When he awakes, although he may complain of not feeling refreshed, yet the symptoms are greatly relieved. His debility is now greater, with some emaciation; he complains of languor, and always desponds. There are considerable uneasiness and fulness in the epigastric region, and an occasional darting pain towards the spine, together with a burning sensation in the stomach. Palpitations are now, perhaps, very troublesome; they are not constant, but become worse after dinner; the least thing agitates the mind, and produces them. The patient sometimes coughs and expectorates in the morning, and supposes he is consumptive; or there are vertigo, and sometimes violent headache, with imperfect vision, as, for in-

stance, seeing two objects instead of one, or only half an object; and it is impossible to persuade him that he is not threatened with apoplexy.

In cases of dyspepsia, some individuals, particularly those with light hair, are very liable to inflammation of the tarsi, with purulent exudation; and sometimes little abscesses form, which are called, in common language, "styes." The kidneys frequently suffer, the flow of urine being either too sparing or too copious, attended with complaints which are called "gravelish." It is my belief that dyspeptics are more liable than others to inveterate skin diseases, and to stone in the bladder. It will be found also that most of the individuals who labour under hæmorrhoidal affections are dyspeptics; and it may be mentioned, that I have rarely seen a person afflicted with *fistula in ano*, excepting when it proceeded from external injury, who has not been a martyr for a long period to this class of complaints. Pure surgeons should make themselves acquainted with these facts and a great many other points of medical pathology.

It is rare to observe all these complications, but they are occasionally met with in the same patient. I have seen many persons consider their lives as burthens to themselves, and there is often a strong tendency to commit suicide.

Should the symptoms continue severe for a considerable time, some serious organic lesion may be dreaded; but the lungs, liver, kidneys, and brain, are the organs that most frequently suffer, and form what may be termed the third stage of dyspepsia.

Treatment of the second stage.—Whenever the patient complains of tenderness in the epigastric region, with a hard pulse and bad nights, local bleeding by cupping or leeching frequently produces the best effects. My own plan, in severe cases, is to apply leeches, to the number of twelve or eighteen, two or three times if necessary, before contra-irritation is had recourse to; and the best method of producing irritation, is by frictions with the tartrate of antimony ointment, which must be persevered in, first on one part then on another, so as to produce a succession of pustules. I have been led to place much dependence on this practice, by observing that dyspeptics have sometimes been relieved, at others cured, upon the appearance of a spontaneous eruption. In severe cases, the diet should consist of gruel, arrow-root, milk, calf-foot jelly, light pudding, and good bread; and these should be allowed in limited quantity; more than a breakfast teacupful at a time will overload the stomach. Soups and vegetables should be avoided; at least for some time. Gentle laxatives, so as to open the bowels twice a-day, are to be used. The tepid bath will be found very useful; but perspiration must not be encouraged after coming out of the bath. The patient should be clad according to the season of the year; and it is of great consequence to keep the feet comfortably warm and dry; in order to ensure this, worsted stockings are too frequently directed to be worn, which, in many individuals, will produce the very circumstance it is wished to avoid. It was a long time before I could discover the cause of this; and I believe I may now state confidently, that worsted stockings, worn by people whose feet perspire, will tend to

produce coldness of the extremities. In such circumstances, I find the object is attained, if the patient wear an under stocking either of silk or thin cotton. Exercise in the open air is highly necessary as soon as the patient's strength will permit; if he ride on horseback, the feet should be additionally protected in cold weather by cloth boots, and he should never make use of horse exercise for two or three hours after a meal. By degrees, he may be allowed a small teacupful of chicken or beef tea; subsequently, he may eat part of the breast of a chicken or game to dinner, till he is able to return to ordinary fare. The physician, in severe cases, ought to insist on his patient keeping notes of his diet, particularly during his recovery, which will enable him to compare his present state of health with the articles he had eaten the day before. The best diluents he can use are, an infusion of chamomile flowers and lemon-peel, and wine and water in small quantity. Stimulants are to be commenced with great caution, and not until the pain in the epigastric region and heat of skin are subdued; perhaps the best stimulant is cayenne pepper with food, which affects the whole bowels as well as the stomach, and tends to obviate constipation. Ginger tea will be found serviceable, together with a glass or two of good sound wine once or twice a-day. Wine, sometimes, however, produces acidity, in which case a small quantity of brandy in water is found an agreeable substitute.

Dyspepsia is one of those diseases too generally treated by the routine practitioner, from its name, without reference to the pathological condition of the body on which the numerous symptoms depend. If such a practitioner were asked what he would prescribe for a person who had dyspepsia, he would quickly reply, *tonics!* I have no objections to the medicines which are usually administered under the denomination of tonics, provided they are not given for the purpose of running up a bill, or prescribed at times when something better might be done for the patient. But I have some doubts respecting the truth of the received notion of their action; I do not think it is by giving tone to the stomach. These remedies are generally bitter, and, I imagine, produce increased secretion of the fluids connected with the digestive process. On putting a little quassia or gentian into the mouth, immediately a flow of saliva takes place, which continues as long as the taste is perceptible, and even afterwards, when the person thinks of the bitter taste. May not a similar action, in other organs, follow the application of the same substance?

If the liver be not doing its duty properly, calomel, hydrargyrus cum creta, or the blue pill, may be occasionally exhibited at bed-time, followed by a very small dose of salts in the morning; but it is a despicable practice to give blue pill in every disease connected with the digestive function. And it is much to be regretted, that the great name of Abernethy should ever have been associated with such insufferable quackery.

The above treatment is to be persevered in for a long time, changing the diet and the laxatives now and then, but continuing the contra-irritation and application of leeches alternately. After a time, cold bathing in the open sea may be cautiously tried; the shower

bath, or sponging the body with vinegar and water, often produces the best effects.

Third stage of indigestion.—It is not necessary to give a description in this place of the symptoms in the third stage of indigestion, and the proper mode of treatment, because these must vary according to the organ diseased, as well as the nature and extent of the affection.

The disease termed dyspeptic phthisis, by Dr. Wilson Philip, is only met with, generally speaking, in cases of long standing. My experience, however, leads me to state that bronchitis is the primary affection in such cases; the tubercles form subsequently, and only in subjects highly predisposed.

Flatulency and Tympanitis.—These are symptoms of dyspepsia, but require a few separate remarks, along with water-brash and heart-burn.

Some people suffer extremely from flatulency and acrid eructations. Five or six instances have fallen within my observation, of individuals who frequently passed enormous quantities of flatus upwards; and it is presumed these are cases to which Dr. Mason Good would apply the term *cholera flatulenta.* In all such instances, the patients had previously eaten some crude vegetable substance: generally, the ordinary salad mixture, or radishes. The remedies which seemed to afford the greatest relief were æther, aromatic spirit of hartshorn, warm brandy and water, or brandy by itself, and essence of peppermint.

Tympanitis may be detected by percussing the abdomen; it is often a troublesome symptom, not only in this affection, but in fever; and the best remedy which can be used is turpentine. It is better to try it, in the first place, by injection, in the proportion of a tablespoonful to eight or ten ounces of thin gruel, which the patient is to retain as long as possible. If this plan does not succeed, half an ounce is to be given by the mouth with the same quantity of castor oil.

Infants, during the first months, frequently suffer very much from flatus in the stomach and bowels, which will in general be found to depend on the pernicious and unnecessary custom of giving them castor oil and other medicines to open their bowels, and food they are unable to digest. In truth, the moment an infant is born, and often before it is dressed, castor oil is exhibited, which frequently produces griping; this is attributed to wind, and want of something to eat, therefore a quantity of gruel is then given, which often increases the child's sufferings; Dalby's carminative is at last exhibited, which affords temporary relief. Few infants can be expected to thrive well under such bad management. The usual remedies for flatulence in infancy are, dill water and oil of aniseed.

Pyrosis, or Water-brash.—In some long standing cases of indigestion, particularly in old people, in women more than men, and those who live principally upon farinaceous food, a considerable quantity of limpid fluid is discharged from the stomach by eructation. This is the affection which is called water-brash. It is a symptom of scirrhus of the stomach also.

It attacks the patient generally in the morning and forenoon; at

first considerable complaint is made of pain in the pit of the stomach, faintness, a sense of tightness, as if the stomach were closely drawn up to the back bone, and the uneasiness is increased upon moving into the erect posture; at last the limpid fluid is discharged in considerable quantity at different times, when the pain subsides; sometimes the fluid has an acid taste, but in general it is stated to be insipid. Occasionally the discharge takes place without being preceded by any severe symptom. Laxatives and the oxide of bismuth, together with change of diet, are the best remedial agents in this complaint.

Heartburn is, next to flatulency, one of the most frequent symptoms in indigestion, and it is also one of the common attendants on pregnancy. When heartburn exists, the patient complains of a burning pain in the pit of the stomach; every kind of food creates acidity; and hot, acrid eructations take place, which seem to irritate the œsophagus. Some women suffer very much from this symptom during the whole course of pregnancy, but the moment delivery takes place, it generally vanishes like magic.

Henry's calcined magnesia, and careful attention to the diet, often mitigate this symptom. The carbonate of soda and potass are frequently used, and sometimes with benefit; as also, charcoal and chalk mixture. The remedy which will be found most successful in producing temporary relief, is the common extract of liquorice. Cases are now and then met with which resist all these remedies, together with leeches and opiates. The oxide of bismuth, in doses of 15 or 20 grains, is often serviceable. Sulphate of iron, and sulphate of zinc, have been highly extolled. I have exhibited them often in such instances, but without benefit. The points to be chiefly attended to, are the regimen and laxatives.

GASTRODYNIA, OR GASTRALGIA.

The stomach is liable to a neuralgic affection, which is known by this name, as well as by the term *Cardialgia*. Gastrodynia is closely connected with dyspepsia, often occurring as a symptom; but it may exist as the primary disease; sooner or later, however, the digestive powers suffer.

Symptoms.—Sometimes the appetite remains good, but in general it is impaired. There is gnawing pain in the stomach, extending very deep to the back, accompanied by anxiety, sense of constriction, tendency to eructate or to vomit, with occasional faintness, sometimes headache and constipation, and the patient is occasionally relieved by eructation; a considerable quantity of limpid fluid is sometimes discharged; in fact, this affection is often complicated with pyrosis. After a severe attack, a patient sometimes escapes without another, for a week, a month, or even a longer period.

All the symptoms enumerated do not take place in every case; sometimes there being only pain and anxiety, with some nausea,

which are increased after taking food. This affection is almost unknown before the age of puberty. Besides, depending on a diseased condition of the nerves of the stomach, it is probably occasioned by a diseased state of the pancreas, spleen and liver. Sometimes it is produced by scirrhosities of the stomach and duodenum, and it is also a very troublesome attendant on gout. This disease has, of late years, excited a great deal of interest in France, as well as in this country; and although no additional light has been thrown upon the nature and seat of the disease, still very considerable practical advantages cannot fail to be derived from perusing the writings of M. Barras, and Dr. James Johnson.

The chief causes of gastrodynia, generally speaking, are supposed to be long-continued use of indigestible food, very hot or very cold drinks, dram-drinking, long fasting, worms. The chief articles which produce a paroxysm in an individual liable to the affection, are salads, and other crude, uncooked vegetable substances; cheese, sweetmeats, new bread, cherries, nuts, olives, and above all, perhaps, roasted chestnuts. The cure depends, therefore, upon avoiding such articles in future, together with fat, oils, and butter.

During an attack, a vomit will often suddenly check it, if exhibited within two or three hours after the offending matter has been eaten; hot flannels are to be applied to the epigastric region; gentle laxatives, and the warm bath, are to be employed, together with bitters, alkalies, magnesia; and, in bad cases, contra-irritation is to be persevered in for a considerable time. I have known one or two patients, who, for many months at a time, could not put any kind of food into the stomach, without previously taking a small dose of the sedative solution of opium; and we are told by Roche and Sanson, that, in the worst form of this disease, which had resisted bleeding, bitters, and antispasmodics, Dr. François found lactucarium successful. It is a curious fact, that, although sweet things generally aggravate the complaint, the extract of liquorice frequently alleviates the pain considerably. M. Barras insists much upon the necessity of making the patient take animal food, although it may, for the time, increase his sufferings; but to this treatment I cannot subscribe my assent—that kind of food is best for the patient which occasions the least distress after it is taken into the stomach.

[Much use has recently been made of the sulphate of morphia, in dose of one-eighth or one-sixteenth of a grain, given three or four times a day, and persisted in. Dr. James Johnson has strongly recommended the nitrate of silver, viz.: in pills containing the eighth part of a grain, or even the half of that quantity, repeated twice or thrice a day. This should be accompanied by a hot saline foot-bath, during the paroxysm of pain. The preparation known as Warner's cordial, with the morphia added, should be taken in a draught of water as hot as the mouth will bear it. Mustard plasters to the stomach will also be a great relief during the emergency.]

CHAPTER IV.

DISCHARGES OF BLOOD FROM THE STOMACH AND BOWELS.

I. *Hæmatemesis—Hæmorrhage from the stomach.*—This form, which is termed hæmatemesis, is sometimes occasioned by diseases of the liver and spleen, and takes place also occasionally in fevers; but these are not under consideration at present.

Hæmatemesis most frequently attacks women, particularly those who are unmarried, of a plethoric habit, and at times when there is an obstruction, or some other irregularity of the menstrual discharge, and who are constipated. Each attack is generally preceded by a rigor. Pure blood is seldom vomited, unless from external violence, or the erosion of the coats of a blood-vessel. This discharge rarely coagulates, and seems rather to be the product of passive hæmorrhage, or exudation from the minute vessels of the mucous membrane. It is supposed to be a very easy matter to distinguish this affection from those hæmorrhages which take place from the lungs. In hæmatemesis, it is said the discharge is preceded by a sense of weight, pain in the region of the stomach, and that it is unaccompanied by cough, &c. But these distinctions will not answer in practice, and it may be of great consequence to a medical man, that he should not give an assurance of safety, in a case which may prove fatal in a few minutes, as the following instances will show. A child was attended by Dr. Yates, when that excellent gentleman was a pupil at my dispensary. It had been for some time complaining of cough and anomalous symptoms, which were relieved from time to time, and it was able at last to go to school as usual. Still it occasionally discharged a little blood, and died suddenly after *vomiting* a considerable quantity. On dissection, the stomach was found filled with a coagulum, and there was also a considerable portion in the small intestines in a fluid state. It was evident that there had been active hæmorrhage, but after the most minute investigation, no blood-vessel could be found from which it had issued. The relations began to complain of the time we had been over the body, and at length became very impatient, so much so, that we were obliged to give up further examination; but the whole of the contents of the thorax, including the œsophagus and great vessels, having been carefully dissected out, were surreptitiously conveyed to my museum for minute inspection; and it was discovered that the blood found in the stomach and bowels, had proceeded from a ruptured artery in a cavern in the superior lobe of the left lung. A fistulous opening was found running upwards from this cavern, and communicated high up with the œsophagus; so that when ulceration produced a rupture of

the vessel, the blood passed in this direction, and found its way into the stomach. The preparation is in my museum, together with an accurate and beautiful drawing by my friend Dr. Alexander Thomson, an enthusiastic pathologist.

Another remarkable case occurred in the dispensary practice, in an old man. He had enjoyed remarkably good health until lately, when his appetite became impaired, and he complained of dyspeptic symptoms, which gradually increased in severity, and he was at last reluctantly obliged to seek for medical advice, at the age of seventy-two, for the first time I believe, in his life. He complained of so much uneasiness in the region of the stomach, that he was cupped several times, and contra-irritation was produced over the part affected, with considerable relief. One morning he discharged a little blood, between the act of coughing and vomiting, and he soon died after passing a considerable quantity. Upon dissection, it was a subject of general remark, that the external appearance of his body, as to shape and plumpness, was more like that of a man half his age. Every internal organ appeared sound; but on cutting through the stomach into the duodenum, the pylorus was found thickened and indurated, and an ulcer about the size of a horse-bean was discovered in the duodenum, on the surface of which, the gaping mouth of a large artery was discovered, from which the hæmorrhage had taken place.

[The diagnosis is certainly difficult in some instances, especially when there is reason to believe that the patient may have swallowed blood which has oozed from the nose, mouth or pharynx. I once assisted at the examination of the body of a child that had died from hæmorrhage from the gums which had been lanced by the attending physician. The bowels were absolutely distended with blood, and a portion of it yet remained in the stomach. But for a knowledge of the *cause*, how complete would have been the deception in this instance? The safest diagnosis will be derived in a great measure from the pre-existing symptoms, which are not confined to "a sense of pain in the region of the stomach," but also embrace a distressing languor, nausea, weight and preternatural heat, extending through the right hypochondriac region. The vomiting is sometimes delayed for many hours, and even for several days, and is usually followed by syncope, with its usual attendants: unconsciousness, a cold, clammy skin, temporary cessation of pulse and visible respiration, and in fact, all the appearances of death itself.

The blood thus thrown up, unlike that from hæmoptysis, is for the most part dark and coagulated, and besides being ejected by the act of *vomiting*, is usually accompanied by, and mixed with the injesta of the stomach. There is, moreover, extreme tenderness of the epigastrium throughout the attack; and my own experience has seldom exhibited hæmatemesis in a plethoric person. On the contrary, nearly all the instances that have come under my notice have occurred in attenuated constitutions,—thin, delicate, and more or less inclined to anemia,—with little or no antecedent febrile excitement. To this rule, habitual drunkards form an exception. They are, perhaps,

particularly liable to it, and the attacks are characterized by every grade of fever.

Hæmatemesis is very rare in childhood, and unfrequent in the decline of life; and it is more common in women than in men, being often in the former a vicarious hæmorrhage.

The quantity of blood lost is sometimes truly frightful; yet I am satisfied that in most of the cases I have met with, the hæmorrhage was of the *passive* kind, never owing to the rupture of blood-vessels, but in every instance a simple exudation from the mucous membrane. I have seen three deaths during the hæmorrhage itself; and in the worst of these, a most careful inspection of the alimentary canal, which was literally filled with blood, led to the decided conviction that the disease consisted in a mere sanguineous exudation. Erosions of the stomach from cancerous and other ulcers are, nevertheless, of frequent occurrence, but are attended by a train of symptoms which readily leads to a correct diagnosis.]

Treatment.—As the disease generally attacks plethoric individuals, and is seldom accompanied by debility or oppression, practitioners have no scruple in employing blood-letting during an attack, and it is frequently speedily successful in checking the discharge, by altering the determination of blood, and reducing the force of the circulation. Quietness, cold acid drinks, and a course of laxative medicines, are also essentially necessary. If the hæmorrhage recur after bleeding, or should it take place in a constitution already debilitated, the acetate of lead, either in solution or in the form of pill, in doses of two or three grains, and one of opium, every second or third hour, will be found serviceable. [I have never seen a case that would bear bleeding, as may be inferred from the foregoing remarks. Mustard to the epigastrium and extremities, and the internal use of the muriated tincture of iron, or spirits of turpentine, are all the resources which I can add to those enumerated above.]

II. *Hæmorrhage from the bowels.*—This was formerly known by the term hæmorrhoidal flux, and it was believed by the ancients to be salutary; but now such a discharge is always regarded with anxiety, as it tends to undermine the constitution, and, like other long-continued hæmorrhages, leads to affections of the brain—a remarkable and fatal instance of which lately fell under my observation.

[Every part of the mucous membrane of the alimentary canal, is, perhaps, equally subject to hæmorrhagic exudation. Occasionally the inundation of blood is so great as to give rise to sanguineous cholera. The diagnosis is simple; for, if there be no vomiting, we of course refer the disease to the bowels, and especially when the blood is ejected unaltered. We might at first suppose the latter symptom to indicate piles; but I have seen red blood voided in large quantity at the same time that it has been thrown up from the stomach, thus removing every doubt as to the nature or origin of the hæmorrhage.

Intestinal hæmorrhage for the part, however, assumes the form or character called *melæna*, in which the stools are of a black or very dark colour, and extremely offensive. Sometimes they resemble ink

mixed with sand, or black paint. The first discharges are generally hard or scybalous, but those which follow become looser, and are more apt, for obvious reasons, to be mixed with pure blood. This condition may exist for days without its being suspected; and I have known instances in which it was only discovered by a casual notice of the discharges, which, from their black colour, excited apprehension.

The symptoms which mark melæna, do not materially differ from those of hæmatemesis, excepting, as already observed, the absence of vomiting.

Although these hæmorrhages are to be regarded for the most part as simple exudation resulting from a congested state of the mucous membrane, there can be no doubt that the liver is sometimes involved in the same pathological condition, and relieves itself of congestion by pouring its blood into the duodenum. Whether Dr. Ayre was right in ascribing this pathological condition to "the minute ramifications of the portal vein in the glandular texture of the liver," we will not attempt to decide; but his general position appears to be founded in fact.

We need hardly remark that hæmorrhage from the bowels, like hæmatemesis, is often symptomatic of other diseases, as carcinoma, ulcers, the low forms of fevers, dysenteric affections, &c., but the diagnosis in these cases is seldom difficult.

The treatment is much the same as in hæmatemesis, excepting that moderate purging with mercurial cathartics, combined with opium, is for the most part requisite. These should be accompanied by enemata of an active kind; and after the bowels have been freely evacuated, cold drinks, and especially a *weak* solution of elixir of vitriol, sweetened with sugar, or simple vinegar and water, will act favourably as a check to the hæmorrhage. Acetate of lead and opium, or alum in pills, or the aqueous solution of creosote, in small and repeated doses, will serve the same purpose. This disease, like hæmatemesis, is most frequently observed in the atonic state, and is consequently *passive;* but where it is attended, as is sometimes the case, with plethora and active fever, the general treatment must be obvious. The topical applications should be cups or leeches over the epigastric or right sacro-iliac region, followed, if the case be urgent, by vesicatories.

In that hæmorrhage which follows or attends the low or ataxic forms of fever, nothing acts so promptly and so beneficially as the spirits of turpentine, in doses of ten or fifteen drops every hour or two hours, in emulsion.

I have never met with a case of idiopathic intestinal hæmorrhage that would bear venesection; but, on the contrary, after the bowels have been evacuated and cleansed, the diet should be light and nutritious, and even gently stimulating; as wine-whey, the farinaceous articles flavoured with brandy, weak milk punch, animal and vegetable jellies, &c. The proper period for interposing stimulants, however, is a point that requires caution; at the same time that a neglect of them may prove fatal to the patient.]

III. *Piles*, or *hæmorrhoids.*—When blood is discharged by stool, it will sometimes be found to proceed from an injury done to the verge of the anus by the hard and constipated stool, from a ruptured blood-vessel in the bowels, or from the diseased excrescences which are found at the termination of the rectum, known by the name of hæmorrhoids, vulgarly called piles. These have been divided into two kinds, external and internal, which last are also called blind piles. They may be said to be painful excrescences on the verge of the anus, or in the rectum, usually attended with a discharge of mucus or of blood.

The profession is not agreed as to their pathology; but after a careful examination of the opinions which have prevailed, and of the diseased parts themselves, I feel disposed to believe there are at least four distinct kinds of hæmorrhoids. 1*st*, They are sometimes nothing more than a varicose state of the hæmorrhoidal veins with, perhaps, a slight thickening of the mucous membrane of the rectum itself. 2*d*, They are formed by an effusion of blood in the submucous tissue, which may either be subsequently absorbed, or become organized, with a slight thickening of the membrane. 3*d*, They are mere fungosities from the surface of the mucous membrane; and accordingly are found to vary very much in size, shape, and appearance. 4*th*, A prolapsed state of the mucous membrane of the rectum, which subsequently becomes indurated, and in a manner strangulated, by the contraction of the sphincter.

Symptoms.—Individuals who are thus afflicted, suffer only occasionally, and then, it is said, in common language, they have "a fit of the piles." A sense of heat and fulness is felt in the rectum, attended with an occasional stinging pain, which is sometimes very severe and darting, increased when at stool, during which a quantity of blood is discharged, and a strong desire is experienced to sit and strain. After this has subsided, a sense of heat is felt for a few minutes. But when the piles are external, they often swell enormously; are very tender, however small they may be, and sometimes ulcerate. In this case the discharge may be constant, taking place, however, in small quantity at a time; on other occasions, there is copious hæmorrhage, followed by temporary relief from pain. When the inflammation runs high, induration of greater or less extent is left, in consequence, most probably, of effusion of lymph into the cellular membrane, to which strictures of the rectum may frequently be traced, and the formation of small hard tumours close to the verge of the anus.

Causes.—The injury done to the parts by the frequent passage of indurated fæces; the use of aloetic purges; long-continued exercise in the erect posture; sitting on a cold or damp seat; and every circumstance which impedes the flow of blood through the veins of the abdomen—are causes of this complaint. The pressure of the gravid uterus, therefore, is sometimes a cause, as well as tumours affecting different parts of the uterine system, and diseases of the liver, &c. But it will be almost invariably observed, that individuals, affected

with piles, have been long and seriously afflicted with gastro-intestinal irritation.*

Treatment.—The bowels must be kept constantly well regulated by the gentlest laxatives, carefully abstaining from the use of aloes in any shape. A large mucilaginous injection, exhibited immediately before going to stool, will be found highly serviceable, and the best way of preparing it is by making a decoction of linseed. Sulphur has been erroneously supposed to be a specific. Balsam of copaiva was recommended by Dr. Cullen as an injection; but in the ordinary cases of blind piles, gentle laxatives, occasional injections of decoction of linseed, or of sulphate of zinc, or alum, together with rest in the horizontal posture, and a moderately antiphlogistic regimen, will suffice. When the piles are external, tender, and inflamed, the application of leeches, or punctures made with a lancet, are often productive of great benefit, by diminishing the tension and pain. In severe cases, the recumbent posture is actually necessary, and I have seen the inflammation run so high, and attended with so much suffering, as to require general bleeding. Poultices and warm fomentations are very serviceable in alleviating the pain, and sometimes anodyne injections must be had recourse to; considerable relief is obtained, if the excrescence can be pushed within the sphincter. An ointment, made by mixing equal parts of powder of galls and opium in hog's lard, and a weak solution of nitrate of silver, are frequently beneficial. [The fresh leaves of stramonium, pounded with crumbs of bread to the consistence of a poultice, afford great relief.]

If a great deal of blood be lost, whether at once or at different periods, a careful examination should be made with the eye, as well as the finger, in order to ascertain the exact point from which the bleeding proceeds; and it is necessary sometimes to apply caustic, a ligature, and even the knife; but these are matters of surgery. I would only further beg to insist upon the necessity of attending to the constitution more than is generally done in these cases, and particularly to the general condition of the mucous membranes; and young practitioners should bear in mind, that neglected cases of piles often terminate in fistula.

* The pernicious habit of taking a book or newspaper to read in the water-closet, when at stool, is not an uncommon cause of this unpleasant complaint.

CHAPTER V.

COMMON COLIC; PAINTER'S COLIC; ILEUS, INTUS-SUSCEPTION; INTESTINAL CONCRETIONS; PROLAPSUS ANI; AND CONSTRICTION OF THE RECTUM.

COMMON COLIC.

Common colic may be produced, among other causes, by indigestible food, constipation, and a diseased condition of the biliary secretion.

Symptoms.—Griping pains and flatulent distension of the bowels, with a sense of twisting in the region of the navel, are felt, sometimes, with contraction of the abdominal muscles: and, occasionally, though rarely, with some degree of nausea and vomiting, which takes place more frequently, when the affection is produced by the biliary secretion, and in which case there is generally looseness of the bowels. Flatus is sometimes heard rumbling backwards and forwards in the bowels, which is more classically termed *borborygmus*. The pain comes on in paroxysms, during which the patient thinks he experiences relief by pressure applied to the abdomen, which in general distinguishes the affection from others of an inflammatory nature. But it must be recollected that cases of colic, when neglected, often terminate in inflammation of the bowels.

[Sometimes the disease is attended from the outset by spasmodic and very painful contraction of the abdominal muscles, (which gather into knots under the finger,) which seems to be propagated from the bowels themselves, giving rise to intense pain. The abdomen is hard and distended with wind; the pulse is tranquil, owing to the absence of fever, and the countenance, during the intervals of pain, resumes its natural expression. The latter circumstances contrast with the ordinary symptoms of enteritis, with which colic may be confounded; but, after colic has continued for some hours, the pulse often becomes irritable, the abdomen sensitive, and the symptoms assume an inflammatory or febrile character. The most serious mistake which can result from a careless examination of the patient, is that of overlooking a hernial protrusion, which has sometimes remained undetected until fatal consequences have followed.]

Treatment.—It is a most essential point to obtain free evacuations from the bowels speedily; particularly by means of an injection; certainly the best is composed of tobacco, in the proportion of half a drachm infused for ten or fifteen minutes in eight or ten ounces of boiling water; to be strained, and exhibited when sufficiently cool.

If the attack succeed immediately after a meal, an emetic may be given to dislodge the offending matter. Oil of cloves should be administered along with castor oil, or any other purgative; or oil of turpentine may be used by injections. Warm fomentations to the abdomen, or the general warm bath, may be employed.

Some cases of abdominal inflammation are attended by symptoms so slight as to resemble colic very closely; so much so, that in many instances it is difficult, and in some impossible, to determine this point of diagnosis.

In such circumstances, it will be well for our patients if we do not attempt to refine too nicely; if, in doubt whether the case be one of inflammation or of colic, it is our duty to give the benefit of that doubt by using the lancet, particularly if the bowels are obstinate. [If the pain be severe, bleeding had better be resorted to without delay, inasmuch as it not only relieves the pain sooner than any other remedy, but at the same time renders the bowels much more readily acted on by cathartics.] The advantage of opium is very doubtful till the bowels have been properly moved, and the evacuation examined. [If, however, the violence of the pain demands it, it should be combined with free doses of calomel, viz.: five grains of the latter with a grain or two of opium every hour or two until relief is obtained. I have also seen great benefit derived from heating brandy and cloves together and applying the decoction, by means of flannel wrung out of it hot and dry, and applied frequently to the abdomen. A hot saline pediluvium contributes to the same end.

In flatulent colic when the distension is great and the distress in great measure is owing to that cause, I have seen great relief derived from the insertion of a gum-elastic tube, (the stomach tube, for example) into the rectum, and by giving it additional firmness by means of a slender whale-bone, passing it up cautiously as high as possible. The quantity of flatus which sometimes escapes in this way is truly remarkable, as is also the relief which follows it.

I have pursued the same plan in the obstinate constipation of bilious colic; and can recur with peculiar gratification to the case of a gentleman whose symptoms, after resisting every other plan of treatment for five days, and at a time when nature was almost exhausted and death seemingly at hand, yielded to a strong injection of senna thrown high into the bowels through a stomach-tube. In this instance I succeeded in passing the instrument through the sigmoid flexure and up the left descending colon into the arch, and along the latter to the right side of the abdomen; until, in the words of the patient, the instrument touched the seat of his disease. Immense feculent evacuations immediately followed, the obstruction was removed, and the recovery, under a cordial treatment, was rapid and complete.]

In a case of colic from vitiated bile, diluents, such as barley-water, are to be employed, together with a weak solution of salts, and afterwards opiates. If the bowels be open, and we are perfectly satisfied that there is no danger of inflammation, a stimulant, such as brandy, is often beneficial.

Some women, at the menstrual periods, have griping pains in the

bowels, more particularly in the course of the colon, accompanied by considerable distension of the abdomen, attended or not by constipation; frequently the pain extends from the caput cæcum to the arch of the colon. The best remedy, in such cases, is a turpentine or assafœtida injection, combined with warm fomentations, proper regulation of the bowels and diet, and sometimes the warm hip-bath.

COLICA PICTONUM.—PAINTER'S COLIC.

This is also known by the names, colica pictonum, Devonshire colic; and in the West Indies it is commonly called dry belly-ache.

This is the form of colic produced by the introduction of lead into the system, whether in food, by respiration, or cuticular absorption. It is a disease which was long known and described before its cause was discovered. The discovery was made in Germany, about one hundred and thirty years ago, by detecting publicans putting a preparation of lead into their wines. It is said that the disease used to prevail in Devonshire and other places where cider is manufactured, in consequence of putting lead into the casks, to render the cider sweeter. The disease also prevails in the neighbourhood of smelting furnaces and lead mines; indeed, it is even said, in such situations, to affect the lower animals, such as poultry, pigs, &c. House painters, plumbers, potters, glaziers, and all who are compelled by their occupation to handle lead, are subject to this disease, particularly if they are not well guarded by personal cleanliness. Sir George Baker* was the first who drew the attention of the profession in this country to this interesting subject. It must be mentioned, however, that cases do occur displaying the same phenomena, course, and termination, which have been produced by exposure to cold and damp, when there could not be the most remote suspicion of the action of lead upon the system.

Symptoms.—The pain never leaves its principal seat about the umbilicus and pit of the stomach; at first it is dull and remitting, but gradually increases to be very severe and constant. The pain, in some severe cases, strikes through the back, and patients have told me that it resembled a stab through the body; others have felt as if they were cut in two at the umbicilus. In other cases, the pain extends to the arms and hands, down the back and pelvis, often affecting the lower extremities. The integuments of the abdomen feel retracted and hard, and I have seen the strongest men rolling and weeping like children. The whole surface sometimes suffers from pains, which the patients ascribe to rheumatism; there are constipation, sometimes tenesmus, and occasionally sickness and vomiting. The sickness and vomiting are most severe at the height of the paroxysm; acrid mucus is sometimes vomited, or bile mixed with mucus, afford-

* Vide Papers in the 1st and 2d vols. of the Transactions of the London College of Physicians.

ing temporary relief. [Occasionally there is vomiting from the very commencement, and I have even known the disease to be ushered in with profuse diarrhœa.] Hiccup sometimes supervenes, together with retraction of the testicles.

It is a matter which strikes every one with astonishment, that, notwithstanding the violence of the symptoms, and the excruciating sufferings of the patient, the pulse is rarely much affected till the disease goes on for some time: in the end, however, it becomes quick and small. It has been remarked by some, that the feet and toes are occasionally affected, as in gout.

Spontaneous relief is said to follow a copious discharge of scybalous matter, like sheep's dropping, mixed with mucus and considerable quantities of blood. Occasionally, it is said, sweating produces a crisis. Sometimes the disease produces palsy of the superior extremities, and occasionally it terminates in death, which is preceded by a loss of sight and hearing, delirium and convulsions. [The paralysis of the arms is in some cases confined to the *extensor* muscles, which, at the same time, shrink and almost disappear; while the flexors remain but little if at all impaired.] One attack leads to another; that is to say, a predisposition is left.

Colica pictonum is a most afflicting disease to treat; for, do what we will, the patient is seldom relieved under a week, even when well managed, and relapses often take place at times when he is apparently doing well. He may be pronounced to be in great danger, however, when there are delirium, violent spasms, and convulsions.

Appearances on dissection.—The following is an abstract of the appearances found on dissection, in the bodies of a number of individuals who died of this affection in the hospital of Beaujon, under the care of M. Renauldin. Redness, thickness and ulceration of the mucous membrane of the alimentary canal, and often enlargement of the mesenteric glands, corresponding to the inflamed or ulcerated portions of this membrane. The redness varied from that of bright rose even to violet and brown; it was disposed in points, in streaks, and in patches, and sometimes occupied an extent of several feet. The thickness was variable. The ulcerations were found almost always toward the termination of the small intestines, near the valve of the colon, which was sometimes destroyed; and in cases where diarrhœa prevailed, ulcerations were found in the colon; and sometimes they were observed in the stomach. They were occasionally deep, and numerous; sometimes the stomach and intestines were perforated.*

[Cases, however, not unfrequently occur, and especially those which have passed rapidly to a fatal termination, in which no morbid derangements can be detected. "The mucous membrane," observes Dr. Symonds, "has been found usually dry, corresponding to the character of the stools; but, excepting this, there is no appearance that bears any relation to the symptoms. The prevalent opinion in the present day is that the disease is of a neuralgic nature. The wandering pains and impaired action of the voluntary muscles, the occasional spasm of the organs of respiration, and the termination of

* Vide Roche and Sanson, vol. i. p. 528. These authors inform us that M. Renauldin had two hundred and seventy-five cases during the years 1821–22–23.

the disease in convulsions, apoplexy and palsy, intimate that the poison acts directly upon the nervous system, and more especially on the spinal marrow."]

Treatment.—The nature and seat of this disease are imperfectly known; but there can be no doubt, from the symptoms during life, and the appearances found on dissection, that it is probably seated, in the first instance, in the nervous system, and that we have to dread inflammation of the mucous membrane of the stomach and bowels. I can speak confidently, from experience, of the good effects of local bleeding by repeated cuppings and leechings on the abdomen and flanks. Many entertain an unaccountable dread of opening a vein in these cases, perhaps from prejudices of education: since I have seen the above account of the appearances on dissection, my objections to it are so far removed, that I shall hereafter try venesection on proper occasions.

The remedies of the first importance are calomel and opium, given in pills containing four or five grains of each, repeated at short intervals, so as to affect the system as speedily as possible. This remedial means has been strongly recommended by my friend Dr. Musgrave, of the island of Antigua.

One of the most severe cases of colica pictonum, that ever fell under my care, occurred since the publication of the 1st edition. The patient was an apothecary's shop-man, aged 32, previous health good, and habits regular. The attack appeared to be owing to bathing the feet several times in a solution of acetate of lead, to suppress a fetid perspiration. In this case the paroxysms of pain were very distressing; the abdomen hard and distended; the features sharp and anxious, with hiccup and vomiting. The pulse did not exceed 80 till after venesection had been twice repeated, and large doses of calomel and opium administered, when it rose to 110. Venesection produced no relief; tobacco injections, fomentations, &c., were used in vain. The symptoms, however, became much mitigated after the third large dose of calomel and opium, conjoined with croton oil. He relapsed certainly, but was convalescent on the third day, and recovered progressively.

The bowels are extremely torpid in this disease, therefore common remedies must not be depended on; croton oil in doses of two, four, and six drops, must be given repeatedly at proper intervals, still continuing the calomel and opium. Turpentine is to be exhibited, both by the mouth and by injections. Large injections are to be administered; sometimes stimulating, at others unstimulating. Hot fomentations are to be applied; contra-irritation, when the disease is on the decline, which is to be for some time persevered in during the convalescence. The nitrate of silver has been strongly recommended in three, five and six grain doses, in pill, three times a-day.* Dr. Percival gave fifteen grains of the sulphate of alum every fourth, fifth, or sixth hour; and he assures us the third dose seldom failed to alleviate the pain.†

It is proper to mention, that Dr. Reynolds has the credit of being

* By Dr. Robert, 5th vol. Med. Trans.
† Vide 2d vol. Ed. Med. Essays.

the first who proved the powerful influence of opium over the morbid action produced in the system by lead.

[The treatment which has proved most successful in Philadelphia, (where, from the extensive white-lead works, colica pictonum is a common disease,) is the following, for which, however, I disclaim any originality, having adopted it for fifteen years past, and applied it to a great number of cases both in public and private practice.

Free bleeding from the arm, in the first stage of the malady, can seldom be dispensed with; after which the main object is to touch the gums with mercury, in order to relieve the bowels. *Without* this precaution the disease will often prove fatal; and even when the patient survives, paralysis and a crippled constitution are almost sure to follow. To bring on the mercurial impression, and at the same time to relieve the pain, I give ten grains of calomel and two of opium, repeating this dose every hour or two according to the violence of the attack. Simultaneously a blister should be applied over the abdomen, which, as soon as drawn, is to be dressed with mercurial ointment. It may be even necessary to rub in the ointment on the thighs and arms. After the patient has taken four or five doses of the calomel and opium, his stomach, if retentive, should be plied with castor oil at such intervals as it will bear. If the stomach rejects all medicine, very large injections must be resorted to. These should consist of the usual drastic cathartics: but I have in several cases found copious injections of cold water to induce the peristaltic action, when every thing else has been unavailing.

The bowels, however, will rarely yield, in any considerable degree, until the mercury takes effect, when purging becomes at once profuse, to the great relief of all the symptoms.

I have never seen a death from colica pictonum when this plan of treatment has been followed from the beginning.

M. Gendrin has published some observations on sulphuric acid as a prophylactic against lead colic. The acid is given in the form of lemonade, and is said to have proved eminently efficacious in the Parisian laboratories.*]

[* Dr. Benson, of Birmingham, has published the following formula for preparing what he calls the *sulphuric beer*. Take of treacle 15 lbs; bruised ginger, ½lb.; water twelve gallons; yeast 1 quart; bicarbonate of soda ½ ounce; sulphuric acid (oil of vitriol) 1½ ounces by weight. Boil the ginger in two gallons of water; add the treacle and the remainder of the water, hot. When nearly cold, transfer it to a cask, and add the yeast to cause fermentation. When this has nearly ceased, add the sulphuric acid, previously diluted with eight times its quantity of water, and then add the bicarbonate of soda, dissolved in one quart of water. Close up the cask, and in three or four days the beer will be fit for use. As acetous fermentation speedily takes place, particularly in hot weather, new supplies should be prepared as required.

Dr. Benson adds that this plan "was carried into effect in the summer of 1841, and the results have proved most gratifying, as, although during several weeks after the addition of the sulphuric acid to the treacle beverage, little advantage seemed to be derived, yet the cases of lead colic became gradually less frequent; and since October of that year, or during a period of fifteen months, not a single case of lead colic has occurred among the people." We have not yet tried this prophylactic plan; but with this strong evidence in its favour, it will be well deserving of a full trial in any large lead factory.]

ILEUS.

The attack comes on exactly like a common colic: vomiting takes place, which subsequently becomes incessant; sometimes even feculent matter is discharged by the mouth, and the abdomen is much distended. [In fact, as Dr. Watson has remarked, "the term *ileus* is applied to those cases whether inflammatory or not, in which, by an inverted action of the intestines, their contents are carried, in a retrograde course into the stomach, and thence out of the body by vomiting."] The symptoms vary much in intensity. Sometimes the pain is severe, amounting to *tormina;* at others it is slight. In some cases the febrile symptoms run high, in others, there is no fever. In this case, and even in common colic, the abdomen should be minutely examined with the hand, to ascertain whether or not a hernia exists; for I have seen two or three instances where much valuable time was lost, in consequence of mistaking a case of hernia for colic.

Appearances on dissection and pathological remarks.—Considerable dilatation of one part of the intestine is generally seen, while the continuous part is contracted; the parts above the contracted portion, are distended with fluid and flatus. Sometimes the intestine is of a livid colour, inflamed and even mortified. At other times there are marks of peritoneal inflammation; and on some occasions, gangrene, without peritonitis.

In treating of the nature and seat of this disease in the 1st edition, opinions similar to those of Dr. Abercrombie were advanced, viz.: that the disease probably consists of "a paralysis of the muscular coat of a part of the intestinal tube, which leads to great dilatation; while the continuous portion of the bowel is contracted, which produces a temporary obstruction." "But, (it was added,) there is much ambiguity on this subject." Since that period I have thought frequently on the disease, and, from an interesting conversation with Dr. William Stokes of Dublin, one of the most ardent and accurate pathologists in this country, I have become convinced that Dr. Abercrombie's views are erroneous.

In fatal cases of ileus, the bowel has been generally found in two opposite conditions—one part contracted like a cord, and another part above much dilated. The point to be determined is, which of these is the primary seat of the affection? Dr. Abercrombie thinks it is the dilated portion, and that "*the doctrine of spasm, as applied to this subject, must be admitted to be entirely gratuitous; and we must proceed upon facts, not upon hypothesis, if we would endeavour to throw any light upon this important pathological question.*"* In the last sentiment I most cordially agree; and as the author has substituted hypothesis for facts, I shall shortly state several reasons for dissent.

1*st.* Dr. A. avers that "*the collapsed state of the intestine, in which it assumes the form of a cord, appears to be the natural state of healthy intestine.*" "*That in a case of ileus, the dis-*

* Researches on the Bowels, p. 134.

tended part is the real seat of the disease; and that the contracted part is not contracted by spasm, but is merely collapsed because it is empty, its muscular action being unimpaired."—P. 136.

We submit, that the cord-like contraction is not the natural state of intestine. If it were the natural condition of parts, it would be always seen on dissection, when the bowels are unaffected by disease, whereas, it is avowedly rare, and, according to our observations, is only seen when the intestinal tube is in a morbid state. This appears to be satisfactorily proved by Andral, Billard, and others. We have examined the bowels of animals, opened during life, and on no occasion found the tube in the state which is asserted by Dr. Abercrombie to be natural.

2*d.* It appears to us that Dr. Abercrombie does not connect ileus with any known pathological state. He considers ileus to be a great and uniform distension of a part of the intestine, with loss of power of its muscular fibres. In short, he supposes the distended intestine to be in the state of paralysis, and that this is the primary disease. He states, also, that the "usual progress of the disease is into inflammation and its consequences."—P. 138.

Dr. Abercrombie cautiously avoids the term "paralysis;" but it must be admitted, that loss of muscular power proceeds either from paralysis or inflammation in the part: if paralysis, it is the opposite of the state of irritation, for nervation is abstracted, not added; if inflammation, then Dr. Abercrombie is wrong; but in neither case can he be correct.

It will be observed, also, that he does not denominate the cord-like state of the intestine "*contracted,*" which he ought, but "*collapsed,*" which term he ought not to have employed, because it conveys any thing but a correct notion of the actual state of parts.

3*d.* When we speak of a muscular organ such as the intestine, we must admit spasm to be possible, nay, probable; and we cannot, therefore, admit the doctrine of spasm, as applied to this subject, to be "*entirely gratuitous.*" No one denies the muscularity of the intestines, and that they are capable of contraction, which implies an increase of nervation. If Dr. Abercrombie's idea were correct, the bladder should never fill, nor the heart, nor the fæces pass through the intestine, unless muscular fibre could be *stimulated to dilate.* But it will be proper to allow Dr. Abercrombie to speak for himself: "If we suppose, then, that a considerable tract of the canal is in a *collapsed* state, and that a mass of alimentary matter is propelled into it by the contraction of the parts above, the series of actions which will take place, will probably be the following: When a portion, which we shall call No. 1, is propelling its contents into a portion of No. 2, the force exerted must be such as both to propel these contents, and also to overcome the *tonic contraction* of No. 2. The portion No. 2 then contracts in its turn, and propels the matter into No. 3; this into No. 4, and so on."—P. 136.

It will be readily seen, on looking at the parts, that the empty intestine is not in a state of "*tonic contraction,*" as Dr. A. asserts, and that it offers no resistance to the alimentary mass, which is

propelled onward by the contraction of the superior portion of intestine.

4th. If the dilated intestine usually passes into inflammation and gangrene, and its seat be in the muscular coat, its first stage must be one of irritation. The effect of irritation on muscular fibre is, to suddenly and powerfully contract it. The parts may become dilated afterwards, but the first effect will be contraction; and the contracted, of course, the diseased portion. It follows, then, as a necessary consequence, that *if it be spasm*, the contracted is the diseased portion; or if, according to Dr. Abercrombie, it be disease of the muscular fibre, still, in the first instance, the same will occur.

Ileus, according to Dr. Abercrombie, is either a paralysis, or an irritation of the muscular fibres of the intestine, usually terminating in inflammation and gangrene. Could any two things be more opposite? If it be a paralysis, it is either general or local. It is not general, because all the symptoms are those of violently increased action, *colic, vomiting, spasms of the abdominal muscles, and paroxysms of tormina!* Tormina and loss of power together? If it be local, it is, at all events, accompanied by increased muscular action—spasm.

If the primary diseased action be connected with irritation, as we imagine, the first effect will be to contract the parts.

Lastly, It may be asked, does the treatment coincide with the doctrine of paralysis, or that of irritation and spasm? After describing the treatment, I shall return to consider this important question.

Treatment.—The chief attention must be directed to prevent and subdue inflammation, and to employ every means to move the bowels. For this purpose, the milder laxatives frequently repeated, assisted by tobacco injections, are to be had recourse to. If these fail, then we may entertain the question of bleeding, particularly if the case be not far advanced, and if there be pain on pressure. Leeches may be applied; but still we must not lose a moment in endeavouring to procure stools. Although we may mitigate the symptoms by bleeding and leeching, yet we may rest assured that a relapse will take place in the course of an hour or two, unless the bowels are relieved. Dashing cold water upon the belly has sometimes succeeded. When the gut is supposed to be obstructed, mercury, in its pure metallic state, has been recommended to be poured into the stomach in considerable quantity, in order to force a passage. Once I was present at a dissection, when the obstruction existed at about six inches from the termination of the rectum; and since then I have met with two cases of ileus, which were produced by constriction of long standing of the rectum; therefore I think, in all severe cases of this sort, that a long œsophagus tube should be introduced into the rectum, and, if possible, pushed forward into the sigmoid flexure of the colon.

This is one of those diseases in which we frequently succeed in procuring passage from the bowels after bleeding, which had previously resisted the strongest purgatives; it is also one in which large opiates may be advantageously combined with laxatives. Opium generally acts by confining the bowels; but in the case now before

us, it seems to increase rather than diminish the laxative effect of medicines. During recovery, it may be advisable to apply contra-irritation.

It has been already asked, if the most improved remedial means coincide with Dr. Abercrombie's hypothesis? Bleeding, tobacco enemata, full doses of opium, and contra-irritants, to cure a disease which is a simple loss of the muscular power of a portion of the intestinal canal? The circumstance cannot be reconciled upon principles of pathology. Much real injury is done to the advancement of medical science, by the construction of such distorted theories; and I cannot resist quoting a passage from the preface of Dr. Abercrombie's work on the bowels, which bears on the present question. Speaking of the circumstances which have retarded the progress of medicine, he says, there are two errors committed—the one is the *"construction of hypothetical theories, or the assumption of principles which are altogether gratuitous and imaginary; the other is the deduction of general principles or conclusions from a limited number of facts."*—P. 8.

INTUS-SUSCEPTION.

Intus-susception, generally speaking, is a disease of infancy. There are the same symptoms as described in ileus, only that in many cases there is violent straining; the patient passing more or less bloody mucus with each effort, in some instances exactly resembling red currant jelly. This, like all other affections, varies very much in the symptoms as to violence; this was well proved in two fatal cases occurring in the same family, which fell under my immediate notice. They were both male infants at the breast; the disease ran its course in three days; but the symptoms were very violent in one case, and very slight in the other. In both, a tumour was felt in the left iliac region, at the termination of thirty-six hours, which gradually increased in size, till it became as large as an orange. Both children strained much at stool, and passed mucus tinged with blood. I have known the disease terminate fatally in thirty hours.

Appearances on dissection.—We often find partial invaginations of the small intestines. I scarcely ever open a child without finding them; but they are not to be regarded as intus-susceptions, unless the coats are thickened, with marks of obstruction and inflammation. At least so I thought when the first edition was written. Since then, however, I have become doubtful on this point, having discovered ulcerations in the intestines at each intus-suscepted part in every case which I have had an opportunity of examining. In the dissections of patients who die of intus-susception, it is the caput cæcum, and a portion of the ileum, which are commonly forced up the ascending colon across the transverse colon, and sometimes down to the sigmoid flexure. In one of the cases to which I have alluded,

the caput cæcum was found in the rectum, very near to the extremity of that gut. Could such a transposition have taken place unless there had been some original malformation? I think not. Upon first opening the abdomen, in both cases mentioned above, the intestines looked displaced and twisted in a strange manner, and the caput cæcum was missed from its usual position in the right iliac region.

On slitting open the intestine at the point of obstruction, we find two *mucous* surfaces highly inflamed, dark-coloured and thickened, and covered with a considerable quantity of effusion of a red colour, intermixed with a whitish matter like coagulable lymph. On laying open that part of the intestine which is invaginated, we then expose to view two *serous* surfaces, which are also found in a state of inflammation, with exudation of lymph and adhesion.

Treatment.—The same plan is to be had recourse to as in ileus, only this is altogether a more hopeless case; we are to be more guarded in using strong purgatives, lest we increase the torments of the poor little sufferers. It is said that a natural cure sometimes takes place by a spontaneous separation of the intus-suscepted portion of gut; and in every extensive collection, a preparation or two of this kind is exhibited.

INTESTINAL CONCRETIONS.

Some remarkable cases of this kind are on record; but man is not nearly so liable to the complaint as some of the lower animals. A case is published in the eighth volume of the Edinburgh Medical Communications, by Dr. Fitzgerald. The patient, a lady, suffered extreme pain in the hypogastric region, the back, and os sacrum, for eighteen months; during the last three of which she could not leave her bed, except to be put into the hot bath, which afforded only temporary relief. One day, after receiving an injection, a large, hard, calcareous ball, of an oval figure, was discharged. It exceeded in size an ordinary orange, and was so solid, that it required a stroke of a hammer to break it. It weighed eight ounces and three drachms.

Sometimes there are several of these concretions; in that case, they may be heard rattling upon percussing the abdomen. Many curious instances of this affection are related in the Philosophical Transactions. The late Dr. Marcet wrote an essay on the chemical history and medical treatment of calculous disorders, wherein notice is also taken of several interesting cases, to which, as well as to the first volume of Good's Study of Medicine, I must refer the reader.

It is alleged that the inordinate use of chalk and of magnesia in dyspeptic and calculous complaints, leads to the formation of these substances. Mason Good mentions a case of a lady whom he had once attended; she "laboured under a most painful constipation, till a large mass of what may be called intestinal mortar, was removed by a scoop from the rectum."—P. 297, vol. 1st.

[These concretions are variable in their origin and composition, and possess much interest on account of their frequent occurrence. They, for the most part, form around foreign substances which have been received into the bowels, as fruit-stones, seeds, pieces of bone, &c.; but there are others which are derived from no perceptible nucleus, but consist of impacted fæces, which, from long retention and the deprivation of moisture, assume an earthy hardness, and can only be removed by mechanical means, after they have become lodged in the pouch of the rectum.

Whatever may be the chemical character of the substances, the attendant symptoms are much alike and for the most part very obscure, excepting in emaciated persons, in whom the calculi are readily detected under the fingers, through the parietes of the abdomen, but for the most part in the cæcum or right ascending colon. They will sometimes remain lodged in these places for years, giving rise to no very obvious symptoms other than depraved digestion, and general debility and loss of flesh. Together with these symptoms I have seen the most extraordinary nervous irritation, with erratic spasms or cramps, at one time in the intestines themselves, and then passing in an instant to the voluntary muscles of any and every part of the body, until life has yielded to protracted suffering which nothing but anodynes could even mitigate. And yet, in the instance to which I refer, the concretions, when examined after death, were little else than dry impacted fæces, which the bowels, owing to a perfect torpor, were unable to expel; nor was it possible by medicines to force them further than the rectum, from which they had to be removed by a curved, scoop-like spatula made for the purpose.]

Treatment.—If the nature of the disease be discovered, large mucilaginous injections ought to be frequently administered, alternately with those of an anodyne nature, to allay irritation. Blisters and leeches may sometimes be necessary to allay internal pain, and moderate any inflammation that may arise. If such substances can be felt through the parietes of the abdomen, as is alleged, it may, perhaps, be possible to push them on, daily, in the course of the bowels towards the rectum. In females, I can conceive it to be very easy to break them down when they arrive in the rectum; and considerable assistance will be afforded by introducing one or two fingers into the vagina. The warm bath is not to be neglected.

PROLAPSUS ANI.

By this term is understood the protrusion of a portion of the mucous membrane of the rectum, the sphincter contracting forcibly, and producing a temporary stricture. *Prolapsus ani* depends either upon a temporary want of power on the part of the sphincter ani, or some violent irritation in the rectum, producing great straining, which, in medical language, is termed tenesmus, during which the mucous membrane is protruded. It is now much more rare than formerly, owing to greater attention paid to the bowels of children, who are

generally the subjects of this complaint. Formerly a pernicious custom prevailed of endeavouring to produce a stool, by making children sit upon a pot containing a little boiling water, instead of giving them physic.

Symptoms.--The protrusion takes place when the child is bearing down at stool, or making water; it begins to cry most violently from pain in the part affected, and the protrusion takes place. On making an examination, the mucous membrane is found of a dark red colour; the protruded portion is of various sizes, sometimes as large as a small orange. Formerly a piece of scarlet cloth was applied to the part by the women, under the idea that it would be thus reduced; but now almost every nurse knows how it should be reduced. The child being placed on the back, gentle pressure is to be applied to the protruded portion of gut, by the thumbs of the operator, which have been previously dipped in oil. If the protrusion has continued so long as to cause violent inflammation, rendering the return of the intestine impossible, leeches may be applied with great advantage. The case of an adult recently came under my care in which the gut remained exposed for nearly forty-eight hours, and only became manageable after free leeching. Soft poultices are important adjuvants. [Either purging or constipation tends to this displacement, whence the importance of regulating the bowels. If they be confined, free injections of mucilage will act gently and effectually; but if the opposite state exists, small injections of the same kind, with the addition of a little sulphate of zinc, will tend to correct the evil: so, also, injections of cold water, and frequent ablutions with the latter around the region of the anus.]

People advanced in age are sometimes affected with prolapsus ani; it frequently depends upon diseases of the urinary organs, as well as of the bowels. The parts are occasionally so much relaxed as to require the use of a bougie, and sometimes of a bandage; or a more serious and painful surgical operation is necessary.

CONSTRICTION OF THE RECTUM.

Little need be said respecting constriction of the rectum in a work on the practice of physic; indeed, it is introduced only for the purpose of drawing the attention of physicians to the subject. I have seen several cases within these few years, in which many dangerous attacks of constipation might have been avoided, had the disease in the rectum been early discovered. This affection may be suspected in every case of habitual constipation, particularly in those instances where the patients have to strain long at stool before the least passage can be procured, which is followed by pain in the part, and frequent attacks of piles. Laxative medicines afford only temporary relief, and when too powerful, I have seen symptoms of ileus induced. The only remedy is to be found in the frequent introduction of the bougie. I have been lately consulted in two instances where symptoms of ileus were occasioned by this affection; both patients were permanently cured by dilating the stricture.

CHAPTER VI.

INTESTINAL WORMS.

There are principally three kinds of worms which infest the intestinal tube,—the lumbricus, tenia, and oxyuris.*

1*st. Ascaris lumbricoides.*—It resembles the common earth worm, in general appearance, varying in length from three to twelve inches, and having a reddish-brown colour, and may exist in considerable numbers; instances are on record of upwards of fifty having been voided. Lumbrici lodge in the small intestines, and occasionally in the stomach, and are therefore frequently vomited, and even escape from the nostrils.—They often excite little uneasiness, but in some cases they create griping and considerable constitutional suffering.

2*d. Tenia or Tape Worm.*—Of this genus there are two species, the *tenia solium*, and *tenia vulgaris*.† The first, as its name imports, is solitary; the second may exist in families. They generally take up their quarters in the higher parts of the intestines; for the purpose, as is supposed, of feeding on the chyle. Tape worms appear to be composed of a great number of pieces or animals joined together by articulations. In the tenia solium these articulations are long and narrow; while, in the other kind, they are short and broad. The solitary tape worm has been known to measure between thirty and forty feet; and one extraordinary worm is mentioned by Dr. Sibbargaarde, of Copenhagen, which measured thirty-eight yards. The tenia vulgaris measures generally from three to twelve feet.

3*d. The Oxyuris*, or *ascaris vermicularis* thread-worm, generally lodges in the rectum, enveloped in mucus; it is the smallest, being only like threads, from an eighth to a quarter and half an inch in length.

4*th. Tricocephalus dispar.*, or long thread-worm.—This also sometimes collects in great numbers in the small intestines. The body is round, thickest posteriorly, and slender as a thread anteriorly, and attains the length of one or two inches. [It chiefly inhabits the cæcum, but is less frequently met with than the other species.]

Worms chiefly exist in children and sickly adults, and are generally attributed to some diseased condition of the secretions in the alimentary canal. I believe the inhabitants of Great Britain suffer less from them than those of any other nation. Mr. Marshall,

* There is another kind of worm occasionally met with, the trichuris, but of which I shall not treat, being more an object for the natural historian. Another species, never before described, has lately been discovered in my collection by Captain Brown, an ingenious naturalist, and described as the oxyuris angulata in an excellent little work on Worms, by William Rhind, Esq., surgeon.

† [Called also Tenia lata, and Bothriocephalus latus by naturalists.]

deputy inspector-general of hospitals, informs me that Europeans are very liable to lumbricoides in India, and perhaps Africans are even more so. Few *post-mortem* examinations are made without discovering them. One negro passed forty lumbrici in one day; in seven days he passed altogether two hundred.

It is an interesting point to determine, whether worms are produced in the intestinal tube itself, or are generated from ova or animalcules accidentally swallowed with the ingesta. Various opinions have been maintained in support of each view. A case, however, occurred in the sessions 1834–5, in the veterinary school of Edinburgh, that convinced my mind of the truth of the former theory. A horse having died rather suddenly, was minutely examined by Mr. Dick and his pupils, to discover the cause of death. Several small slender red worms, (the *strongylus armatus*,) were discovered in the intestinal tube. On examining the mucous membrane, the distinct follicles were observed to be very numerous, large, and elevated. On the surface of some of them, a dark-coloured spot was seen, which, on close examination, was found to be a hole, communicating with the interior follicles; in others it was wanting. Incisions were cautiously made, to expose the contents of the follicles that were without the opening, in each of which a small red worm, *strongylus armatus*, was found coiled up like a snake in its egg; the others were empty, but retained the impression made by their late occupants, and a circular hole in the centre through which they had made their escape.

[The following facts and arguments from the pen of Dr. Stokes, of Dublin, are so full of instruction on this interesting question, that I need offer no apology for introducing them in this place. "There is no direct evidence to prove that these animals have been introduced into the body from without, either in the form of ova, or in a state of perfect development.—First, it appears that the worms which have been found in man and animals, have a peculiar structure and organization, differing materially from the worms which inhabit the external world.—In the next place, we find that the worms of certain animals present peculiarities differing from those of the same species [genus] in others. Not that *every* animal has its peculiar worms; for the lumbricoides and small ascarides of man, are found to exist in various animals, both carnivorous and graminivorous.—We find worms, moreover, in the brain, heart, kidneys and spleen; and there are certain species of worms which occur only in the same organs, and are never met with in any other situation.—It would be ideal and absurd to say that in the case of worms found in the substance of the viscera, that they had been introduced from without, or came from the intestinal canal. The *distoma hepaticum*, which is found in the liver and gall-bladder, might be supposed to arrive at those situations by passing along the ductus communis choledochus; but, in the various cases in which it has been found, it has never been detected in the intestinal canal; and this, I think, would not have been the case if the digestive tube had been its original situation."* And lastly, without pursuing this subject further, we may

* Lectures on the Theory and Practice of Physic, Dr. Bell's edit., vol. ii, p. 499.

adduce the fact, that worms have been found in the intestines both of men and animals, and in those of birds which had just broken the shell.]

Worms frequently produce emaciation, swelled and tense abdomen, gnawing and slight burning pain in the stomach and bowels; irregular appetite; a pale, sickly countenance; foul tongue; fetid breath; irritation and inflammation of the nostrils, occasioning great itching and desire to pick the nose; occasional feverishness, particularly at night, producing restlessness and want of sleep. But none of these symptoms, nor all of them conjoined, point out the positive existence of worms, because they may be produced by any irritation or sub-acute inflammation in the mucous membrane; and it is too much the custom for medical men to conclude that a child has worms if it be dull, look pale, and is observed with its fingers frequently in the nose. Besides these symptoms, worms occasionally produce violent colicky affections, with vomiting and purging, sometimes of blood; and I believe ulceration of the bowels, and even peritonitis, may be excited by this irritation. More rarely, cerebral symptoms, and even epileptic convulsions take place. Children who are troubled with worms, often awake suddenly, screaming; and frequently are observed to grind their teeth.

Treatment.—The first thing to be done, is to endeavour to repair the digestive function, and, at the same time, we must institute an exterminating war against all such filthy intruders, by means of a class of medicines called anthelmintics. It is curious, however, that the remedy which appears to succeed in one or two cases, will disappoint our expectations in a number of others. Anthelmintics naturally divide themselves into two classes: one which operates mechanically, namely, ordinary purgatives, common oils, sulphur, sea-salt, tin-filings, cowhage; another, which has a peculiar poisonous effect on the animal, as oil of turpentine, hellebore, male fern, tobacco, rue; calomel and other mercurial preparations. Of all these, oil of turpentine, calomel, and wormseed-oil, jalap, and the cowhage, have been most successful. It deserves to be mentioned, that turpentine, in doses of from one to two ounces, is the only remedy which has hitherto been found generally successful in destroying the tænia. It has been mentioned to me, however, that a decoction of the root of the pomegranate tree, is fully as successful. When turpentine is given by the mouth, care should be taken to have the bowels previously well opened, so that it may not be detained in the intestines. The condition of the stools must be watched, which, together with other symptoms, treated of under the head, "Usual Complaints of Children," will generally announce whether there be any considerable irritation or inflammation in the mucous membrane. Should such symptoms exist, the application of leeches, or of a contra-irritant, may be necessary.

[Ascarides are most effectually attacked by injections: one of the best of these is made by dissolving a drachm of aloes in half a pint of warm water, and administering it at a single operation. Enemata of simple olive oil, or spirits of turpentine, mixed with any mucilage, answers the same purpose.

Of all the intestinal worms, however, the tænia or tape-worm is the most intractable; for it often foils all our devices for its expulsion, and continues from year to year to harass its unfortunate victim. The usual modes of treatment may be summed up in the following extracts from an essay by Dr. Wawruch, of Vienna, in which city this disease appears to be of very frequent occurrence. As the plan here proposed was tried in no less than 206 cases, the results possess great practical value.

As a preparatory step, all the patients took a purgative combined with a portion of sal almoniac; this was repeated on four or five consecutive days, during which no food was taken but weak broth. "In eight cases the worm was expelled by the mere effect of continued abstinence. The anthelmintic remedies employed, were castor oil and the powdered root of the male fern. From one to two tablespoonfuls of the oil was given as a dose, alternately with one or two drachms of the powder twice or thrice a day. Enemata of oil and milk were frequently thrown up to attract the worm towards the large intestine. The drastic purge employed was composed of equal parts of calomel, gamboge and sugar, from two to eight grains of each for a dose. In many cases a single dose brought the worm away; but, in others, three or six doses were requisite. In eight cases, as has been already remarked, it was expelled by the mere effect of purges; in thirteen cases, by the anthelmintics alone; in eleven, by the first, in fourteen, by the second, and in fifteen cases, by the third drastic purge; and, generally speaking, it came away within one to twelve hours after the last drastic."* Dr. Wawruch adds, what the experience of every extensive practitioner will confirm, that the tænia is not always solitary; for he found nine cases in which there were *two* worms; two cases of *three* worms; and one example of *four* worms, which last remained uncured. Twenty-six of his cases relapsed; but he considers the patient as cured, if ten or twelve weeks pass without a re-appearance of the worm.

Tape-worm is certainly a very unfrequent disease in the United States, even in our hospitals. The following case, which occurred in my private practice, is very remarkable, not only for its duration, but for the resistance of every plan of treatment; and with the consent of the patient, who is a merchant of this city, I take this occasion to place it on record; merely premising that I first submitted the facts (which were pronounced correct in all their details) to his inspection.

Mr. T. T., aged about 40 years, of a healthy constitution, was attacked early in August, 1835, with inflammation of the liver complicated with enteritis. The late Dr. Joseph Parrish, Dr. Isaac Parrish and myself, attended him throughout his disease, which was in every respect one of the most violent I have ever known to terminate favourably. It did so, however, and without remarking upon the treatment, which embraced the usual active course in such an emergency, we had the pleasure to see our patient leave his sick chamber towards the close of September; his illness having continued a little short of two months. Towards the end of the same

* Braithwaite's Retrospect, Part iv. p. 26.

year, or about six months after the first attack, he called to show me several single joints of tape-worm, which he informed me were daily and almost hourly coming from him in that form. The striking resemblance which these detached joints bore to *gourd-seeds*, enabled me at once to identify them with the narrow *tape-worm*, or *Tæia solium;** and I immediately commenced a course of treatment for the purpose of destroying it. This was about the commencement of the year 1836. Eight years and a half have since elapsed, yet the detached joints, with occasional long pieces consisting of many joints, have continued to come away daily. Sometimes two or three feet of the worm, in other instances, ten feet in length have been voided; but without a respite or interruption of more than three consecutive days during that long period. I have, on many different occasions, inquired of the subject of this malady respecting the average number of joints which come from him in the twenty-four hours; and he has uniformly assured me that they cannot be less than *ten*. Taking this number, then, as the basis of a calculation for eight years and a-half, or 3102 days, and allowing three quarters of an inch for the length of each joint, it follows, (and the estimate in my opinion is far within bounds,) that this gentleman has already passed one thousand nine hundred and thirty-nine feet, or six hundred and forty-six yards of tape-worm! What, it will naturally be enquired, has been done to destroy such a disgusting parasite? I answer, every thing that the books and experience have recommended, or that art and ingenuity could devise. Mercury long continued, even to ptyalism; spirits of turpentine until it has caused strangury; drastic purgatives until they could be tolerated no longer; all the known vegetable and mineral anthelmintics; but all to no purpose; until my patient, finding no permanent relief from my treatment, resorted to empirical remedies, and took these in such enormous doses as even to astonish the venders of them. But still the tape-worm makes its daily appearance, (1844) in sleeping and in waking, in motion or at rest, in sickness or in health. It causes a sense of weight in the epigastric region, and, at times, a gnawing and distress in that part; but otherwise it occasions no obvious symptoms; and the patient, if such I may call him, is remarkable for robust health and buoyancy of spirits.]

[* This resemblance to the gourd-seed led Dr. Heberden to call this worm by the descriptive name of *Lumbricus cucurbitinus*.]

CHAPTER VII.

INFLAMMATORY AFFECTIONS OF THE ORGANS CONTAINED WITHIN THE CAVITY OF THE ABDOMEN.

GENERAL REMARKS.

Inflammations of the viscera have been distinguished, since the time of Boerhaave, by anatomical terms, derived from the name of the tissue or organ affected, with the addition of the Greek term, *itis;* as gastritis, enteritis, peritonitis, arachnitis, &c.

It would be an error to suppose that in inflammatory disorders, the constitution is always disturbed in proportion to the importance of the part affected, and the nature and extent of the diseased action. If the organ be a vital one, the disease is certainly attended with more danger than if the inflammation attacked an ordinary muscle, or the cellular substance to the same extent; and the disease is much more rapid in its progress; but there are often more pain and a higher degree of fever, when the inflammation is situated in the latter tissues, than in the brain, lungs, &c.

The constitutional suffering which happens when vital organs are affected with inflammation, is attempted to be explained by the term sympathy; it is said, in medical language, "the organs sympathize with each other." Thus, Dr. Good observes, at page 384, vol. ii: "When inflammation is seated in the heart, its action becomes extremely agitated and irregular. When in the lungs, the heart, *possibly from sympathy*, does not seem to allow a free diastole."

It would afford me much real satisfaction, if the word sympathy were always employed in medical writings in a strict pathological sense, as I conceive it would be a great step gained in the practice of medicine. It is one of those vague terms, too often employed to express a great deal more than we actually know, but which explains nothing; and I have frequently seen it highly injurious in practice—thus, in inflammation of the stomach and bowels, I have seen the most deadly cerebral symptoms lighted up, which were not treated, because it was supposed the brain was only *sympathizing*, not really diseased. I have seen the same thing happen in fevers, gout, rheumatism, &c. The word sympathy means, strictly speaking, fellow feeling or suffering, and so far the expression is correct, because, as has already been explained in a former part of this work, diminished action in one organ leads to increased action in another, and

any thing going wrong with one important function, embarrasses all the others. Here it will be remarked, that the organs secondarily affected are diseased, inasmuch as they are supplied with too little, or with too much blood; or, if the organ affected be excretory, something deleterious is retained in the blood, which poisons to a certain extent the stream of life, producing embarrassment in all other organs, although one may show it more than another. Now all this shows a fellow suffering—a tendency which one organ has to sympathize with another. It is to be lamented, however, that this expression is too often used in medicine, in the same sense in which it is employed in common conversation.

When inflammation is seated in the lungs, the heart actually does suffer, from two causes; first, because the function of respiration is impeded, and the changes produced on the blood in the lungs are not properly effected; and secondly, because the circulation through the lungs is obstructed. This is certainly accounting for the affection of the heart better than by stating that it is "*possibly from sympathy.*" The same thing happens to the lungs, when the heart is primarily affected; there are dyspnœa and cough, not from sympathy in its ordinary acceptation, but from an increased or diminished supply of arterial blood; and also, by obstruction in the circulation. It may be thought by some, that this statement is quite unnecessary; but it is made under a strong sense of its importance, as I have often had to witness the baneful effects of the term in actual practice.

There is another term, which those who are young in the profession must be cautious in receiving—it is the word "debility." It has already been shown, that oppression and obstructed action are generally confounded with debility; and I shall take the liberty to make a few remarks with respect to this term, as applied to the system when labouring under inflammation.

Dr. Mason Good, in noticing inflammation of vital organs, observes at the page last quoted, "The *debility* commences early, because the inflammation itself is immediately interfering with the actions essential to life." The term debility is usually employed in such cases to denote oppression, prostration of strength, inability to perform locomotion; but if the inflammation be quickly removed from any organ by bold measures, the oppression ceases to be felt, and the strength is restored by remedies decidedly debilitating. This must ever be kept in recollection in treating inflammations in the first and second stages; otherwise the term will be apt to induce young practitioners to follow the fashionable practice of giving bark, wine, and animal food, in cases in which they ought to bleed.

It must be recollected that inflammations are not always acute; perhaps they occur more frequently in a sub-acute or chronic form.

The term "*acute inflammation,*" is employed to express the highest degree of this diseased action, which arises suddenly, advances through its course with rapidity, and, if not properly treated, terminates in a few days, by altering the structure of the part affected so much as to render it incapable of supporting life.

The term "*sub-acute inflammation,*" is employed to denote a milder degree of inflammation than the former; it arises more insidi-

ously, is less severe, and if left to itself, does not destroy the structure of the part affected till the second or third week.

In both these cases, we have the combination of symptoms denominated fever, which is higher, generally speaking, in the former than in the latter.

The term "*chronic inflammation*" is employed to express a diseased state which follows an acute inflammation that has been partly subdued, as we see sometimes in the tunica conjunctiva of the eye. This term is likewise used to signify an inflammation which begins and advances slowly and irregularly. The patient passes restless nights, with thirst, and a dry burning sensation of the hands and feet, while in the course of the day the extremities can scarcely be kept in comfortable heat; although he is always complaining, yet there is no severe general commotion during the day: he is able to sit up, to take exercise, and even for some time to go through his ordinary duties. His restless nights are too generally attributed to indigestion, proceeding from something which he has eaten or drank—to an irregular state of the bowels—want of exercise, or to something which had affected his mind; when, perhaps, the substance of the brain itself is undergoing slow destruction. In such cases, the common routine practitioner will be found prescribing his tonics, diaphoretics, diuretics, or blue pill, always treating some symptom, the actual disease being hid by an impenetrable cloud from the senses. At length the structure of the part becomes more and more destroyed, till all the symptoms called hectic are fairly established, or the patient becomes comatose.

These observations naturally lead me to notice other points in pathology. It is surprising to find how completely a vital organ may be altered in structure, without producing external signs or symptoms of corresponding violence, provided the diseased action has gone on very slowly. Another circumstance to be attended to is, that one individual, from peculiarity of constitution, will be destroyed by the tenth part of an organic lesion which a great many others may survive for years, never certainly being entirely well, but able to transact their ordinary business.

The consideration of these circumstances, ought to induce us, in our treatment of diseases, to go on steadily, guided, as far as possible, by the pathological condition of the body, at the time, without reference to accidental symptoms.

When treating of the congestive form of fevers, it was mentioned that inflammatory action might go on concealed under severe congestions. The same observations are equally applicable to purely inflammatory diseases.

ENTERITIC INFLAMMATIONS.

Under this title I shall treat, 1*st*. Of peritonitis. 2*d*. Of inflammation of the mucous membrane of the stomach. 3*d*. Of inflammation

of the mucous membrane of the bowels, which will include diarrhœa, the bowel complaints of children, tabes mesenterica, dysentery, and cholera. 4*th*. Inflammation of the muscular and cellular tissues. 5*th*. Scirrhus of the stomach and intestines.

PERITONITIS.

I SHALL, in the *first* place, treat of inflammation of the peritoneum in the ordinary state of the system; 2*d*, peritonitis after delivery; 3*d*, a modification of peritonitis after delivery, the consequence of inflammation of the substance of the uterus, or of the uterine vessels and absorbents; and *lastly*, of the chronic form of the disease.

Cullen, by dividing peritonitis into three varieties, has been guilty of a great error, because no one can tell whether it is the peritoneum lining the cavity of the abdomen, or that covering the bowels, omentum, or mesentery, which is inflamed. Although he insists much on the propriety of this division, yet he observes, "it is not proposed, however, to treat of them here, because it is very difficult to say by what means they are always to be known; and further, because when known, they do not require any remedies besides those of inflammation in general."

Although peritonitis may take place most extensively, even to a fatal termination, without affecting the subjacent tissues, yet it is rare to see a case of inflammation of the muscular coat of the intestines terminate fatally, without finding the peritoneum more or less inflamed also.

Symptoms.—Like other acute affections, peritonitis commences with a rigor or chilliness, followed by reaction; occasionally, however, as in other diseases, peritonitis makes its approach in the most insidious manner.

The pain differs very much in its extent and severity, being sometimes so slight as scarcely to be complained of throughout the whole course of the disease; in others, so severe that the patient is unable to cough or turn himself, and he complains even of the weight of the bed-clothes. The pain is commonly described as being acute tenderness rather than pain; it is sometimes so confined in extent, that the tips of the fingers can cover the part affected. The uneasiness sometimes commences in one part of the abdomen, sometimes in another. Generally it is first felt in one of the hypogastric regions; it does not, however, continue fixed and confined to one spot, but frequently spreads quickly over the whole abdomen. Before death, all uneasiness sometimes suddenly subsides, which is apt to impose upon the inexperienced; but the pain, on other occasions, continues to the last, and this is produced, I apprehend, by the extension of the inflammation. Tumefaction and tension of the abdomen occur early; in the first stage, it is produced by tympanitis, but late in the disease, the effusion produces distension. The pulse is not to be depended upon, as it varies much in different cases; sometimes it is full, strong, and quick, beating 120 or 130 in the minute; at other times it is strong and slow, sometimes weak and quick, and very often it beats

at the natural standard; but towards the fatal termination it becomes rapid, weak, and intermitting. Vomiting is only an occasional symptom in peritonitis. The bowels are in general easily moved, drastic medicines are therefore not necessary. Thirst is a very general symptom in the pure inflammatory disease, but when the system is much oppressed by congestion, it is not urgent. The tongue is at first moist, and loaded with a white fur, but soon becomes dry and brown in the centre, and frequently it is observed to be very red at the tip and edges. The breathing is soon affected, if the inflammation be extensive, from the pain which the motion of the diaphragm produces upon the tender peritoneum, as well as from the disordered state of the circulation. In the latter stage, however, the breathing becomes laborious, not only from the extensive effusion in the belly, and the increased disorder in the circulation, but frequently also from the pleura partaking of the inflammation. The brain, in most cases of acute and deadly inflammations of other parts, can scarcely escape embarrassment in its functions; therefore, we have almost always headache, if minute inquiry be made, and frequently delirium. When the peritoneal coat of the stomach is inflamed, the symptoms appear to be much more violent than when the disease affects any other part; the pain is more severe, the vomiting incessant and intractable; the features collapsed; the pulse small, and the powers of life sink rapidly—this description will be found to correspond to that of the gastritis of authors.

Causes.—Cold and fatigue, which occasion partial determinations of blood, and an irregular state of bowels, sometimes produce this disease, as well as contusions and wounds; sometimes it follows surgical operations.

Pathology.—Until lately this was not understood. Cullen was unacquainted with it, and so was Dr. Gregory, I believe, to the latest period of his life. Many people of the present day, cannot fancy how it comes to pass that there is so much effusion with so little vascularity, but there is now no doubt that the effusion is produced by inflammation of the peritoneum itself.

In addition to the observations already made on the effects of inflammation on serous membranes, at page 28, &c. of this work, and those which will also be found at page 120, I may now remark, that the absence of vascularity is no proof of the non-existence of inflammation; pathologists rather trust to the well-known results of that action, which have also been established by experiment. Peritonitis was produced in dogs, which were then killed, and the vascularity, if recent, disappeared in the act of dying.*

Treatment.—Bleeding, both general and topical, is to be had recourse to; in very slight cases we may trust to local bleeding by leeches, but when the inflammation is severe, the lancet should be used to such an extent as the nature of the case demands, so as to make a decided impression upon the disease and upon the system. Some physicians are, I believe, still in the habit of ordering the precise quantity of twelve or sixteen ounces of blood to be drawn in

* Vide Archives Générales for December, 1823, and January, 1824.

all cases, whether the disease be slight or severe; the patient robust or weakly; at the beginning of the disease, as well as at any time during its progress. In all cases, the operator should be left to his own judgment as to the quantity, because he alone can judge of the effects, unless the physician chooses to attend himself. More than two or three hours should not elapse between the bleeding and the next visit, when it may be determined whether the operation ought to be repeated, or leeches applied. Perhaps it may not be found necessary to have recourse to either the one or the other, but we are nevertheless still to be on the watch. Laxatives are to be frequently repeated, assisted by large, unstimulating tepid injections. There is no necessity in this disease for giving drastic purgatives, because the bowels are in general not difficult to move; and if they should be found obstinate, two grains of calomel, and six of rhubarb, repeated every three hours, will produce more satisfactory stools, with less danger of producing irritation, than five grains of calomel and a scruple of jalap. As soon as the bowels are opened, an opiate may be given if there be any restlessness. Fomentations with very hot cloths are often serviceable in mitigating the pain; but it is not yet decided whether they are more or less beneficial than cold applications. Blisters are not to be had recourse to till late in the disease; and when they are thought necessary in serious cases, the abdomen should be completely covered.

Many practitioners have great faith in digitalis in such cases, as a contra-stimulant, in doses of ten, fifteen, or twenty drops of the tincture, repeated four or six times in the twenty-four hours; but although I have seen it tried in many cases of peritonitis, it has never operated beneficially, and, in such an acute disease, no confidence can be placed in any remedy which requires that we should wait twenty or thirty hours for its effects in controlling the circulation. If a remedy of this class be wanted, we possess a far better one in antimony; and better still, in acute affections of the bowels, is tobacco, which is to be administered by injection.

If the patient be affected with distension of the abdomen from tympanitis, we have an admirable remedy in turpentine by injection, in the proportion of half an ounce, or an ounce, in eight or ten ounces of gruel; or it may be put into the tobacco injection. The regimen is to be strictly antiphlogistic.

PUERPERAL PERITONITIS, VULGARLY CALLED PUERPERAL FEVER.

The nature of this disease is inflammation, and its seat the peritoneum; so that it is exactly the same as the last affection treated of, but modified by the peculiar condition of the woman, and the nature of the prevailing epidemic.

Symptoms.—There are two varieties of puerperal peritonitis, the purely inflammatory and the congestive; and I shall hereafter explain the reasons why the latter more frequently occurs in the puerperal state than in the ordinary condition of the system.

It is not necessary that I should enter into a detail of all the symp-

toms, because they are the same as those already described in common peritonitis. It will be sufficient to notice some of the peculiar symptoms which Dr. James Hamilton, jun., and other symptomatical physicians, call "*pathognomonic*," or, in other language, symptoms which are present only when the disease is present, and absent when the disease does not exist. These are pain in the belly, the state of the pulse, tympanitic distension of the abdomen, pain in the forehead, and the condition of the discharge, which takes place after delivery, called the lochial discharge.

Mr. Burns, as well as Dr. James Hamilton, jun., has endeavoured to make it appear, that in peritonitis the pain is very severe; whereas, in what they choose to call puerperal fever, the pain in the belly is slight, or, to use the words of Mr. Burns, "abdominal pain is not the most prominent symptom." Dr. Hamilton is exceedingly angry at a statement made by me in my work on "Puerperal Fever," that in his cases the pain in the belly was very acute, which he has been at much pains to deny, in a letter printed in a celebrated pamphlet, which it has since been necessary to suppress; but that the doctor has been guilty of a subterfuge not very creditable to him, is easily proved, by looking back at his own account of the symptoms of the disease, in the old editions of his work. In the edition, 1813, page 202, will be found the following passage: "In many cases the pain in the belly is such, that the weight of the bed-clothes proves intolerable." But even allowing that the pain is often sub-acute, and not much complained of as a prominent symptom, it is no more than we frequently meet with in peritonitis in the ordinary state of the system. Dr. Abercrombie, in giving an account of the pain in common peritonitis, says, "and in some cases, it is little complained of except when pressure is applied, being rather acute tenderness than actual pain."*

Much stress is laid upon the pulse, by these gentlemen, in the form of the disease under consideration. They try to make it appear, that in common peritonitis it is always "frequent, small, and sharp," whereas, in this disease, it is fuller, but soon becomes feeble. Another short quotation from Dr. Abercrombie's paper, will show the absurdity of this distinction. "The pulse (says he) is frequently little affected, especially in the early stages. It may be from 80 to 90, or 96, but is sometimes scarcely above the natural standard."

Early tumefaction of the abdomen is supposed to be peculiar to puerperal peritonitis; but as no professional man, who has been in the habit of treating inflammation in the abdomen, whose opinion is of any value, will again hazard such an assertion, I shall pass it over without further notice, as also the pain in the forehead.

Lochial discharge.—All the authors who have written upon this subject, including Mr. Burns himself, state that the lochial discharge is variable—that it sometimes flows as in ordinary cases, in some it is diminished, and in others suppressed. Dr. James Hamilton, jun., maintains that it never ceases in the true puerperal fever; and that it is "*one striking mark of distinction between diseases which*

* Edinburgh Medical and Surgical Journal, vol. xvi.

resemble each other in the prominent characters of fever and pain in the belly." Thus endeavouring to draw pathological distinctions from one symptom, confounding, as is his usual custom, cause and effect.

Diarrhœa sometimes occurs in the course of this disease, and is always to be regarded with anxiety. If the secretion of milk have taken place, it almost always recedes, and the breasts become flaccid; but the disease generally makes its attack before the secretion of milk commences, in which case it does not appear till two or three days after convalescence takes place.

Appearances on dissection.—Dr. Abercrombie's account of the appearances found in peritonitis, occurring in the ordinary state of the system, is as follows: "On dissection we find uniformly effusion of coagulable lymph, in some cases very extensive; and frequently effusion of a turbid or puriform fluid, sometimes in considerable quantity. Gangrene is rare, and, as far as my observation extends, never occurs as the prominent appearance, it being, when it does occur, slight and partial, and always accompanied by extensive deposition of coagulable lymph."*

The following statement of the appearances found in the cases which were treated by Dr. James Hamilton, jun., in the lying-in hospital, was published in the inaugural dissertation of his pupil Dr. Torrance, and acknowledged by Dr. Hamilton to be correct.

"We found (says Dr. Torrance) appearances similar to those observed by Hulme and Leake in the London hospitals. On examining the abdomen, fetid gas sometimes issued from it. A fluid was always found in the cavity of the peritoneum. When the effusion was in small quantity, it resembled milk, *and joined the intestines together like glue;* but when in large quantity, it had the appearance of whey, and the adhesions were not so strong. We found small whitish portions of this matter in the folds of the intestines, which, when stirred, gave an appearance of milk to the effused fluid. The peritoneal coat of the intestines had lost its usual pellucid appearance, felt hard, and ramifications of red vessels were conspicuous. These traces of inflammation, however, were not such as they should have been merely from an effusion of fluid into the abdomen. The peritoneal coat of the stomach seemed always sound. The muscular and cellular coats of the intestines were sometimes affected by an effusion between them. The villous coat was almost always natural. About four or five pounds of a fluid, resembling coffee, were found in one or other of those affected.

"The omentum, in some cases, firmly adhered to the intestines, and its substance was so much affected, that it was torn in many places before it could be separated from them: but it never seemed mortified, nor was it dissolved into a purulent matter, as Leake and Hulme say they have seen it. The internal surface of the uterus was sound, and never affected with inflammation. Suppuration of the ovaria was sometimes manifest. In two or three cases, it seemed that the pleura had been involved in the inflammation, viz., by effusion, and other signs sufficiently marked."

* Edinburgh Medical and Surgical Journal, vol. xvi.

Pathological remarks.—1*st.* The peritoneum is the tissue affected by inflammation in this disease, which extends itself throughout the whole extent of the membrane, without attacking one portion more than another, except that part of the peritoneum which forms the broad ligaments, in which situation, it is probable, the disease first commences. Nevertheless, the inflammation does not always appear to be general, the traces of its existence being sometimes confined to particular spots.

2*d.* The effused fluid found in the abdomen of women who have died of peritonitis, has nothing peculiar in it; it resembles a similar effusion found in peritonitis in men, and in the thorax of those who die of pleuritis. It varies in consistence and colour in all these cases, but it is generally a white or reddish serous fluid, containing flakes of albumen, more or less abundant, according to the intensity of the disease; and sometimes it has a puriform appearance.

3*d.* The substance of the uterus has rarely been found diseased in this country at least, in any other degree than being sometimes large, flabby, and tender. But we have accounts of fatal epidemics on the continent, more particularly of one which occurred in Paris in 1829, in which not only the uterus, but the venous and lymphatic systems, suffered much.*

4*th.* If a patient die in the early stage of peritonitis, we may find little vascularity, particularly if much blood have been drawn, although we are certain, from the previous symptoms, that inflammation had existed. If the patient survive longer, however, then we shall see the sero-purulent effusion. If the patient live still longer, the quantity of effusion is increased, and masses of coagulable lymph will be found gluing the intestines very slightly together. If the patient live still longer, the intestines will be matted together, and false membrane will sometimes be found covering the liver, spleen, and uterus, and the peritoneum itself will then be seen very vascular, and much thickened.

5*th.* The pleura is frequently found inflamed in this disease, as indicated by a similar sero-purulent effusion; and there is sometimes evidence of inflammation in the brain.

6*th.* This disease is more rapid in its course, and fatal in its termination, than ordinary peritonitis, from the peculiar condition in which a woman is left after parturition. In the *first* place, there has been an increasing determination of blood towards the uterine region during the previous nine months; and in the *second* place, an increase of nervous irritability. So that the balance of the circulation is left at this period in a very disordered condition, being readily upset upon the application of any of the usual causes; and when upset, the blood naturally takes its course towards the abdomen.

These are at least some of the reasons for the venous congestion which takes place in many cases, in a greater or less degree, particularly in women who have been worn out by breeding, or who have been debilitated by previous disease, or insufficient food and

* Vide Archives Générales for March and April, 1830. The author has been induced to give a sketch of these forms of (what may be called) puerperal fever, at page 324.

clothing. In these cases, the heart and other vital organs are so much oppressed, that they cannot create reaction, or the system is too weak to do so. In one set of cases, speedy death takes place, the patient sinking without any marks of local disease, unless it can be said to be indicated by vomiting and diarrhœa, with some confusion of intellect. In another set, although considerable congestion has taken place, it is not to such an extent as to destroy the patient; inflammation attacks the peritoneum under a suppressed reaction, and it goes on with a surface which is almost bloodless: therefore there is little or no heat of skin; the pulse is small and weak; the expression of the countenance ghastly; and the pain in the abdomen perhaps sub-acute. There are various shades and degrees of this complaint, according to the various combinations of these two conditions of the system.

There are three other causes which enable us to account for the rapid march and fatal termination of puerperal peritonitis. The *first* which I shall mention is the occurrence of inflammation of that part of the peritoneum which covers the stomach, giving rise to those most violent symptoms which are described by authors under the title of gastritis. In a majority of the fatal cases which have fallen under my notice, the peritoneum covering the stomach was highly inflamed; in several cases the whole stomach was in a softened state; and in all these cases there were most violent gastric symptoms. In the *second* place, inflammation of the peritoneum frequently takes place before delivery; sometimes as the original disease, and occasionally from the extension of inflammation and ulceration from the mucous membrane of the intestines. The natural pains conceal the disease during parturition; afterwards the pain from inflammation is mistaken for after-pains; and, before alarm is taken, the patient is generally lost. Many examples of this have fallen under my notice since the publication of my Treatise on Puerperal Fever, and I think I am now able to anticipate what is likely to follow delivery. I have lost only one patient out of between sixty and seventy who had the disease. In the *third* place, something may be fairly attributed to the nature of the prevailing epidemic.

Treatment of puerperal peritonitis.—The only difference which exists between the treatment of peritonitis, in the ordinary condition of the system, and that which is now under consideration, proceeds from the two following circumstances:—We have a more severe and extensive inflammation to subdue, which is more frequently combined with venous congestion, which suppresses the inflammation, and deceives the practitioner. If peritonitis attack a woman during the first two or three days after delivery, and is neglected for twelve hours, nay, in many instances, for six, any means we can employ, will, in all probability, be unavailing. It is for this reason that I would rather treat the disease in a hospital than in any other situation. A physician, in such circumstances, requires almost to live with his patient, at least he should not be away from her bedside for more than two hours at a time; nor will this be a great hardship, should he even have five or six such patients on his hands at a time—the battle is to be won or lost in the course of twenty-four

hours: but should it be sixty, a medical man must be always prepared to sacrifice his interest, and to disregard bodily fatigue, when the life of a fellow-creature is at stake. If he will rest upon a bed of roses, scarcely a patient affected with this disease will be saved; and if Dr. Hamilton visited his poor patients in the lying-in hospital only twice a-day, it so far enables the profession to account for Dr. Torrance's conclusion with regard to the practice pursued. "Copious bleeding, therefore, however much praised by Gordon, Armstrong, and Hey, in private practice, has always, on this recent occasion, deceived the hopes of the physicians of the lying-in hospital of Edinburgh, and has been from necessity laid aside." Dr. Torrance says enough in one paragraph to show the profession the puny manner in which the bleedings were executed—that they were adopted "*without any alleviation of the symptoms;*" and the reader will be astonished when he is told the reason why Dr. Hamilton appears to have under-bled, particularly after perusing the above sketch of the appearances found on dissection. He conceives that the effusion of coagulable lymph, and the consequent gluing together of the bowels, are produced by the bleeding; but he shall speak for himself. "It appeared to me, (says he,) that the effusion into the abdomen was accelerated by the bleeding."

Upon further experience I can speak with much confidence of the advantage of applying leeches. Many cases could be quoted, where one hundred, one hundred and fifty, two hundred, and two in which two hundred and forty were applied, first and last. They were very unpromising cases, but the ladies are now in the enjoyment of perfect health and strength. Leeches are to be applied in numbers according to the age and constitution of the patient, and the period of the disease; but it must be mentioned, that some constitutions cannot bear their application. Whenever we are in doubt, therefore, it is better to apply fewer than we would otherwise do, and repeat them according to circumstances. An ordinary constitution can well bear the bleeding from two dozen, and plethoric individuals from 50 to 100 at one application. When it is time to check the oozing of blood, we should see it done. In one case, a delicate lady who was labouring under peritonitis, twenty leeches were applied to the abdomen. Her husband was a medical man, and he ordered the nurse to stop the bleeding; she told him it had already stopped, and he went out on necessary business. On his return he found his wife in the utmost state of exhaustion; upon examining her abdomen he found only one orifice bleeding, but the blood was coming *per saltum*. One of the leeches had penetrated a small branch of an artery. Stimulants were necessary, and she recovered from the state of syncope. This case is mentioned here as a warning to young practitioners.

In the congestive cases, bleeding is to be had recourse to if called early, and if the pulse still possesses sufficient strength. Stimulants may be necessary at the same time, and I have already shown that stimulating and bleeding in such cases are not inconsistent with good pathology. The warm bath, stimulating frictions and also large blisters, are to be applied; and subsequently calomel and opium

may be used, together with the application of leeches. Considerable suffering, and many relapses, depend on a tympanitic state of the bowels. By percussion this state is discovered, and the best remedy is an enema, composed either of oil of turpentine or assafœtida.

It is scarcely possible to give sufficiently precise directions regarding the circumstances which indicate the necessity for stimulants. Suffice it to say, that an experienced person derives the necessary information from the heat of the surface, condition of the pulse, and the expression of the countenance. If the surface be cold, or even cool, particularly if there be a cold clammy sweat; if the pulse be weak, irritable, or irregular and weak, and if the expression of the countenance be ghastly, no one could entertain a doubt as to the propriety of exhibiting stimuli at the termination of any inflammatory disease.

Before concluding this subject, the proportion of deaths may be stated under each system, to enable the reader to draw his own conclusions.

The celebrated Dr. William Hunter saved one patient only out of thirty-two; his practice became fixed, to give a good wineglassful of brandy at the commencement of the disease.

Dr. Hulme, who considered the disease partly of a putrid nature, and who employed bleeding in small quantities, and only as a secondary remedy, lost almost every patient.

Dr. Leake, who recommended bleeding in small quantities, and at long intervals, and who gave his patients bark, beef tea and cordials, to prevent putridity, lost thirteen out of nineteen patients in one season.

Dr. Gordon, when he adopted a weak, vacillating practice, lost twenty-three out of twenty-seven cases; but afterwards he used early and large bleedings, and out of fifty he lost only five.

Mr. Hey, of Leeds, saved only three out of thirteen cases, before he began to bleed; but afterwards he was led, by sad experience, to bleed boldly and early, and he lost only two out of thirty-six patients.

Dr. Armstrong, who seems to have profited early in life by the experience of others, assures us he lost only five out of forty-three.

On perusing this statement, the reader will perceive the dilemma in which Dr. James Hamilton, jun., is placed, and will perhaps say in his own mind, that there is no hole through which he can escape; but alas! he does not know the ingenious doctor; he will always escape, but always in a manner peculiar to himself. The reader will say, he cannot now assert that the cases of these authors could not be cases of puerperal fever because they had the lochia suppressed. It is, indeed, to be hoped he is not now guilty of such a blunder. What will the reader say, then, if Dr. James Hamilton, jun., were to try to escape from the dilemma, by such an extravagant statement as the following? Suppose he were to say, *he held his fatal cases, in which bleeding failed in curing the disease, to be more certain proofs of the inefficacy of bleeding, than the production of forty-five cases where the patients recovered when bleeding had been used; for the cases might not be of puerperal fever at all, as had really happened*

in those cases cited by Drs. Gordon and Armstrong, and Mr. Hey, of Leeds, where theirs terminated favourably under the lancet; or if they were really cases of the disease, he maintains that not the bleeding, but a natural change in the constitution, going on before that remedy had been employed, had effected the cure.

HIS FATAL CASES AFFORD POSITIVE PROOF; THE FORTY-FIVE FAVOURABLE CASES AFFORD ONLY NEGATIVE. The reader may here say, it is impossible that even a professor of the University of Edinburgh, low as she has fallen in some of her medical chairs, could make such a statement. My answer to this is, that I shall be glad to be afforded an opportunity, upon Dr. Hamilton's authority, of denying that he could ever have committed such an outrage upon common sense. This statement and offer were made in my first edition, entitled "Heads of Lectures," in 1828, and repeated in each subsequent edition.

In Dr. Abercrombie's work on the Bowels, p. 189, the following passage will be found:—"I have little doubt that women in the puerperal state are liable *to two distinct forms of peritonitis, which, in the discussions on this subject, have probably not been sufficiently distinguished from each other.*" Then the only conclusion which can be drawn is, that the author never perused the works to which he makes such a faint allusion. The two distinct forms, answering precisely to the description by Dr. Abercrombie, were most emphatically pointed out by the late Dr. Armstrong, and more recently by myself. I could give a true explanation of Dr. Abercrombie's speculation were it necessary; in the mean time I shall leave him to enjoy the reward due to his discovery!*

Another and fatal variety of disease sometimes takes place after delivery, which must be noticed in this section, although it is not always connected with peritonitis. The fatal variety consists of hysteritis, or inflammation of the uterus, uterine phlebitis and inflammation of the absorbent vessels of the uterus. Following the order which Dr. Lee has adopted, I shall treat, 1*st*, Of inflammation of the substance of the uterus. 2*d*. Inflammation of the absorbent vessels of the uterus. 3*d*. Inflammation of the veins of the uterus.

1*st*. *Inflammation of the uterus.*—Symptoms, hypogastric pain; diminution or suppression of the lochia; rigors; rapid, feeble pulse; countenance pallid, expressing anxiety and distress; cerebral disturbance, viz., headache and delirium; skin hot and dry, frequently sallow; respiration hurried; great prostration of strength; tongue loaded and foul; dark sordes about the mouth. Nausea and vomiting are occasionally experienced. The course of the disease is sometimes fearfully rapid, at others it is not fatal till towards the end of the second week. It is stated that the diagnosis "is extremely difficult." I have frequently seen cases of peritonitis, in the puerperal state, with equally distressing symptoms and speedy death, in which

* I do not think it necessary to notice formally, the analogy which Dr. Abercrombie has endeavoured to form between puerperal fever, when it is severe and fatal, with erysipelas, because he does not bring a shadow of proof in its support. It is most improbable that serous membranes are liable to erysipelas; so say Bayle, Gasc, and all the most esteemed pathological inquirers of the present day.

the most careful examination after death proved every part of the uterus to be sound, but its peritoneal coat.

At page 276, of a former edition, the severe epidemics that had occurred on the continent, more particularly that at Paris, in 1829, were briefly noticed. During the epidemic at Paris, there were forty-nine out of two hundred and twenty-two fatal cases, in which the uterus was more or less disorganized.

As to the treatment, Dr. Lee states, that "in all the cases of this affection, which we have observed, the resources of nature and of art have proved equally unavailing in averting its fatal course."*

Extract from the Report of the Dissections of women who died in child-bed in the General Hospital of Vienna, from 26th July to the end of August, 1819, by Dr. Biermayer. Extracted from the Edinburgh Medical and Surgical Journal for July, 1824. Vide No. 80, page 83.

Fifty-six bodies were examined.—"In the head, the organs were all turgid with blood; the ventricles generally contained more than the usual quantity of serum; in other respects there was nothing worthy of notice in reference to this disease.

"In the trachea there was generally found a sanguineous fluid, and its *internal surface* was *reddened.*

"The lungs were always in the greatest state of expansion, turgid with blood, frequently adhering or united by effused lymph to the pleura, which was generally, but not in all cases, slightly red.

"In the cavity of the thorax and pericardium, there was invariably more than the usual quantity of bloody serum; the pericardium in no case morbidly changed, nor the heart externally; but its substance, without exception, more flaccid and tender than in the healthy state. Its internal surface, particularly the valves, chiefly of the right side, of a deep red, often of a black colour; the mass of blood generally fluid.

"In the abdomen there were only two cases in which there was no unnatural fluid, *i. e.*, in those cases which had been delivered a considerable time before death. In all the rest, there was found from one to two quarts of turbid, very fetid fluid, mixed with portions of coagulated lymph, and sometimes purulent matter; the latter appearance was observed in those cases where powerful antiphlogistic means had been employed, and who had survived longer after delivery.

"The peritoneum, omentum, and mesentery, exhibited, in five cases only, no appearance of redness; in the rest it was always some-

* I have met with one case only of this disease, and therefore feel that I am not qualified, either to give an opinion, or to write on the subject. I shall therefore take the liberty of giving a brief abstract from Dr. Robert Lee's paper on puerperal fever, in the 8th and 9th parts of the Cyclopædia of Practical Medicine. The profession is much indebted to this zealous and talented pathologist, for his investigations on this subject, as well as for his following out the important discovery of the pathology of phlegmasia dolens by Professor Davis.

what more or less red, particularly towards the pelvis; and they were often agglutinated with the adjacent parts.

"With the exception of two cases, the stomach and intestines were always much distended with air, and their external surface more or less red. Lumbrici frequently appeared in great numbers, not only in the small but also in the large intestines, in the stomach, rectum, and in one case, in the nostrils.

"The liver and spleen were always similarly affected; they were much more pale, flabby, and tender, than in their healthy state; easily broken down with the finger, similar to the degeneration of the uterus, and filled with somewhat fluid blood; * * * * * * the gall bladder was always filled with dark bile. The pancreas always healthy.

"The kidneys, in most of the cases, were flabby and tender. The uterus always somewhat enlarged and red. The urinary bladder always contracted.

"The internal organs of generation were everywhere covered with yellow coagulated lymph, except in two cases, in which no fluid was found in the abdomen; and in those cases in which strong antiphlogistic means were used, there was frequently a thick, yellow, purulent fluid, often externally on the neck of the womb. The ovaria and fallopian tubes were always more or less swollen, red and tender.

"The uterus, in all cases little contracted, was more or less red externally, even in those where delivery had taken place long before, and the abdomen was not otherwise in an unhealthy condition. The substance or body of the uterus was always flabby, tender, easily broken down by the finger; in two cases, full of small holes or cavities filled with stinking blood. In two cases, the uterus, on account of the tenderness of its substance, had burst, during delivery, at its neck: in the one case, the rupture was four inches in length, and in the other, one inch and a-half. The cavity of the uterus was found filled with fetid air several times, particularly in two syphilitic women. Its internal surface appeared generally covered with offensive, cineritious ichor, or mucus only, seldom with offensive viscid blood. Beneath this, it was always red, discoloured, often, as if slightly eroded or ulcerated; the internal membrane very much eroded and destroyed." * * * * * *

Such are the principal facts, carefully abstracted from the whole 56 dissections.

We are further told, in this report, that the symptoms were such that the "*inflammation of the uterus and peritoneum, combined with high fever, could not be mistaken.*" The lochia disappeared either immediately, or in a few hours; and the mammæ were found empty of milk, loose, and flabby. "But, (says the report,) the most alarming circumstance was, that, while the disease was yet in all appearances a recent acute inflammation, Dr. Boer, on examination with the finger, already discovered, in the mouth of the uterus, marks of gangrenous disorganization, which were rendered evident even to the by-standers, and by the putrid smell of the finger."

2d. *Inflammation of the uterine absorbents.*—Dr. Lee has given

the particulars of four fatal cases of inflamed uterine absorbents, in his paper on Uterine Inflammation in Puerperal Women, in 15th vol. Med. Chir. Trans. of London; and he has quoted a case, which appears to have been the first, in which the absorbents of the uterus were filled with pus.

With respect to the symptoms there is much obscurity. "The local symptoms (says Dr. Lee,) of this affection are often so obscure as to escape detection during life; while the constitutional symptoms, which often resemble in a striking manner the effect produced by the introduction of specific poison into the body, are so violent as to yield to no remedies, however early and vigorously employed."

3*d. Inflammation of the veins of the uterus.*—It would appear that a large proportion of these cases termed "low child-bed fever," or typhoid "puerperal fever," are connected with this morbid lesion. Dr. Lee states, that since the year 1827, twenty-four examples of this most insidious and fatal disease have fallen under his observation. He has given the following description of the phenomena. "In women, who have enjoyed good health during pregnancy, and in whom the process of parturition has been easily accomplished, uterine phlebitis occasionally commences within twenty-four hours after delivery, with pain, more or less acute, in the region of the uterus, accompanied or followed by a severe rigor, or a succession of rigors, a suppression of the lochial discharge, acceleration of the pulse, cephalalgia, or a slight incoherence of intellect, with most distressing sensation of general uneasiness, and sometimes by nausea and vomiting. These symptoms, after a short duration, are succeeded by increased heat of the body, tremors of the muscles of the face and extremities, rapid, feeble pulse, anxious and hurried respiration, great thirst, with brown dry tongue, and frequent vomiting of green-coloured matters. The sensorial functions usually become most affected, and there is a state of drowsy stupor, or violent delirium and agitation, which is followed by symptoms of extreme exhaustion; the whole surface of the body not unfrequently assumes a deep and peculiar sallow, or yellow colour; the abdomen sometimes becomes swollen and tympanitic; and some of the remote organs of the body, such as the lungs, heart, brain, liver, and spleen, or the articulations and cellular membranes of the extremities, suffer disorganization from congestion, or a rapid and destructive inflammation." Dr. Lee adds, "there is scarcely an organ of the body, which has not been observed to become secondarily affected, from suppuration of the uterine veins." Occasionally, uterine phlebitis "commences at a later period after delivery than above described, and in a much more obscure and insidious form, without pain or sense of uneasiness in the region of the uterus, or any other local symptom by which the affection can be recognized. The uterus may return to the reduced volume it usually assumes after delivery; the lochial discharge may continue, and the inflammation and suppuration of the veins, which have caused the whole of the violent constitutional disturbance and destructive lesions in distant parts of the body, may have been wholly overlooked during life. In many cases which we have witnessed, this error was committed by the

medical attendant, and stimulants were liberally administered, to obviate the debility supposed to exist in a specifie form, without any local affections of the uterine organs." The effects of inflammation in the uterine veins are, "the formation of adventitious membrane on their inner surface, and the deposition of coagulable lymph, or of purulent matter within their cavities." "The inflammation may be limited to the veins, but not unfrequently the muscular tissue, contiguous to them, participates in the inflammation, and becomes of a dark red or blackish colour, and of an unusually soft consistence. The peritoneal covering may also be affected, and the usual consequences of puerperal peritonitis then ensue."

The subject is one of immense importance, and I trust, therefore, to be excused for quoting the following additional interesting passages, respecting the peculiar state of the veins. "The veins (says Dr. Lee) which return the blood from the uterus and its appendages, may be either wholly or in part inflamed; generally, however, (and this is a circumstance in the history of uterine phlebitis, deserving particular attention,) the inflammation attacks the spermatic veins alone, and, for the most part, the one only on that side of the uterus to which the placenta has been attached; and it may either confine itself to a small portion of the vessel, or extend throughout its whole course, from the uterus to the vena cava." "The same is the case with regard to the hypogastric veins, one only being generally affected. These are, however, more rarely affected than the spermatic veins; and this would seem to depend on the latter veins being invariably employed to return the blood from that part of the uterus to which the placenta had been attached.

"But the inflammation having once begun, it is liable to spread continuously to the veins of the whole uterine system, to those of the ovaria, of the fallopian tubes, and broad ligaments. The vena cava itself does not always escape the inflammation spreading to it from the iliac, or from the spermatic veins. This seldom takes place to a great extent, through the medium of the spermatic, the inflammation usually terminating abruptly at the opening of the spermatic into the cava on the right side, or of the renal on the left, &c. &c.

"When the inflammation affects the hypograstric veins, it may extend from these to the iliac and femoral veins, and thus give rise to all the phenomena of phlegmasia dolens."

Causes of uterine inflammation.—All the forms now noticed may be owing to mechanical injury from some pressure which the uterus sustains in a protracted labour, in which the child is very large, or the pelvis rather small. They may also be produced by rashness in extracting the placenta, when the hand is introduced for that purpose into the cavity of the uterus, more particularly, perhaps, in cases of indurating of the placenta. It is said that uterine phlebitis may follow the retention of portions of the placenta undergoing decomposition in the uterus. Dr. Lee allows, that although a dangerous disease, uterine phlebitis is not invariably fatal; and that "it often occurs in puerperal women, where it is not suspected," he thinks, is demonstrated by the fact that, in the spermatic and hypogastric veins of females advanced in life, calcareous concretions, and various kinds

of disorganization, have frequently been observed, which must have been the consequence of attacks of acute inflammation at some remote period.

I may remark, in reference to the last paragraph, that the term "phlebolites," has been applied to those bodies found in the spermatic and hypogastric veins; and that the attention of the profession has been called to this subject by Béclard, in his Anatomie Générale, and by Cloquet, in his Pathologie Chirurgicale. It has been ably followed up by Dr. John Reid, an accomplished anatomist of this city, the result of whose labours on this subject will appear in the Edinburgh Medical and Surgical Journal, before this edition can possibly be published.

With regard to the treatment of these three severe varieties of uterine inflammation, I cannot speak from my own knowledge, and therefore am induced to borrow still further from Dr. Lee. He states, that "in cases where the reaction at the invasion of the disease has been violent, and venesection has been employed, the relief obtained has only been temporary, if at all experienced; and in some instances the abstraction of only a few ounces of blood from the arm, has produced alarming syncope. When the local pain is severe, leeches and warm fomentations seem to be the appropriate remedies; but, as far as our observations go, we are in possession of no remedial means which effectually control these varieties of inflammation of the deeper seated structures of the uterus, which we have attempted to describe." The French practitioners place great reliance on the action of mercury pushed quickly to salivation. Dr. Lee states, that he gave this practice a fair trial; and that it failed, although he pushed it to great extent, and brought the system under the influence of mercury in less than twenty-four hours; "*Yet the progress of the symptoms was not arrested, and the patients died, as others had done where the remedy had not been administered.*"

CHRONIC PERITONITIS.

This form of disease sometimes succeeds to acute action in the tissue itself; sometimes it is occasioned by the extension of ulceration from the mucous coat of the bowels; and occasionally it is itself the primary disease, in which case the attack is often very insidious.

Symptoms.—Pains are occasionally felt in various parts of the abdomen, with a sense of weight or oppression; the pains come on in paroxysms, which are sometimes very severe, at other times a pricking sensation only is felt. In some cases pain is not a prominent symptom; the belly is tumid, with occasional tightness, while the rest of the body emaciates, and the strength declines slowly; fever is often present, that is to say, the pulse is quick, of variable strength and fulness, with thirst and restlessness. The tongue is in various states, either loaded or very red, or both; constipation is a usual attendant for some time, but subsequently diarrhœa generally takes place; the stools often have a very natural appearance. The

patient in all cases also experiences a sense of increased weight and uneasiness in the abdomen after a meal.

Chronic peritonitis runs its course to a fatal termination in various periods; I have known it of eighteen months' standing, and sometimes the patient is destroyed in a few weeks. In the last stage, the symptoms become aggravated; the features shrink; emaciation takes place to the greatest possible extent, and sometimes death appears to be owing to the patient's being worn out; or from an attack of constipation having all the symptoms of ileus, or from the supervention of acute inflammation, perhaps in the cavity of the thorax; all of which terminations I have seen.

It is in general a fatal disease, but I have seen some wonderful recoveries, if one may be allowed to judge from the appearances of thickening of the peritoneum, and extensive adhesions in the bodies of individuals who had survived the attack for a number of years, enjoying a tolerable share of health, and dying at last from the effects of other diseases. I lately attended a child who was observed to fall off in health and strength, and to complain occasionally of abdominal pain; he was feverish at night, but during the day was able to play about with the other children of the family; his body emaciated, while the abdomen became larger. Suddenly a decided change for the worse took place. The abdomen became more distended and painful, the fever increased, and he was confined to bed. In a few days a fulness was observed in the umbilical region, and an inflammatory blush. A natural opening soon took place, and a bilious-looking matter was discharged, with portions of food, such as barley, &c. When the discharge ceased, the symptoms became aggravated. He lived for some months. On examining the abdomen after death, there was an appearance of an abscess extending for several inches around the umbilicus, and immediately in contact with the intestines, round the circumference of which there were strong adhesions. In this cavity there was matter similar to that discharged through the external opening. On looking attentively at the parts, there were found nine openings into different parts of the intestinal tube. Some of these were large, others small; the orifices were ragged, and appeared to be the effect of ulceration, which opinion was amply confirmed by a minute examination of various portions of the mucous membrane, in which ulcerations in various stages were observed. The contents of the abdomen were all matted together, and the mesenteric glands were enlarged, and the mesentery thickened.

Chronic peritonitis is sometimes mistaken for other diseases, chiefly for dropsy, dyspepsia, and hepatitis.

Causes.—It has been already stated, that this disease sometimes follows an acute attack, and as the consequence of it. It is also produced by the extension of ulceration from the mucous coat of the bowels; hence it sometimes occurs as one of the sequelæ of fever, diarrhœa, and dysentery. It is occasionally caused by external violence. It may be also produced among the children of the poor by insufficient clothing, the use of unwholesome food, as well as by the continual irritation from worms. In women it sometimes occurs

at that period of life when the menstrual discharge ceases. It is probable that chronic peritonitis is often the consequence of irritation, produced by dysmenorrhœa, tumours growing from different parts of the uterine system, and by extra-uterine pregnancies.

Appearances on dissection.—The whole intestines are sometimes agglutinated into one solid mass, involving the liver, spleen, and other parts; generally, however, we find the intestines and omentum only in that condition. Occasionally it is seen to affect the liver and parts in its neighbourhood, which are covered with a false membrane that can be readily peeled off, leaving the peritoneal coat attached to the organ. The disease may be confined to the contents of the pelvis, as is sometimes seen in scirrhous affections of the rectum and uterus, and diseases of the ovaria. It appears to me, from the repeated examination of extensive adhesions of the pelvic contents, in connection with a small and circular os uteri, that chronic inflammation of the peritoneum may hereafter be found to be produced by the constant suffering, and consequent state of irritation, during the course of dysmenorrhœa. Occasionally the peritoneum is thickened everywhere without adhesions; but this is more frequently observed when there is an effusion of a serous fluid into the cavity of the abdomen, and particularly if it exist in any quantity. Sometimes the effusion is puriform. The colour of the peritoneum varies exceedingly; it is sometimes almost as red as if painted with vermilion, with large red vessels ramifying in different directions; sometimes the redness is confined to particular spots, as if produced by ecchymosis; in other places it is yellow, blue, purple, slate-coloured black; but perhaps some of the discoloration may be owing to *post-mortem* changes. In some rare instances, the peritoneum appears smooth; in general it is rough from irregular elevations; ragged, which last appearance is sometimes, though rarely, produced by ulceration; most frequently it is occasioned by the rough state of the membrane itself, and by very fine long irregular bands forming adhesions. On some occasions, the peritoneum presents partial fungosities, slightly elevated, extending in patches of irregular shapes, and of a red colour, looking very much like a coagulated bloody effusion. Chronic inflammatory action in the peritoneal coat, is a frequent cause of tubercular formation. I have seen tubercles in the peritoneum lining the general cavity, covering the intestines, stomach, liver, and spleen; also in the peritoneum which forms the omentum, mesentery, and mesocolon. Sometimes the mesenteric glands are also affected, but I have never seen them so without finding the corresponding parts of the mucous membrane of the intestine inflamed, more generally extensively ulcerated; so that I apprehend the too sweeping term *scrofula*, has been applied to these formations upon limited or erroneous pathological views. The tuberculated state of the peritoneum generally takes place after the lungs have been attacked with the same disease; sometimes from chronic inflammation of the peritoneum, particularly when it succeeds to external violence. The tubercles on the peritoneum are sometimes of the miliary kind, occasionally crude, sometimes hard, and of various sizes up to that of an orange, occasionally resembling masses of coagulated blood;

at other times having very much the character of the diseased structure termed medullary sarcoma, and they exist either singly, or in groups, hanging like bunches of fruit.

The description is drawn from cases and dissections which have fallen under my own observation; and my museum and portfolio contain preparations and representations of all the morbid appearances above stated, which were capable of being so preserved.

Treatment.—This disease is frequently a hopeless one, before medical advice is sought; but if the case should be ever so hopeless, it is the duty of a physician to use his best exertions up to the very period of death, as remarkable recoveries have been known to take place; indeed, I have remarked, that in proportion as pathology has advanced, the old practice of "giving up" patients has declined. We can almost always mitigate the violence of the symptoms, and place the patient in a comparatively comfortable situation, when there can be no hope either of curing the disease, or of prolonging life. The question of general bleeding can rarely be entertained; yet I have met with a few cases in which it was loudly called for, and was productive of benefit. The frequent application of leeches, whenever a patient complains of pain, is of great service, together with contra-irritation produced either by stimulating embrocations, tartar emetic ointment, or common blisters. Hot applications to the abdomen may be useful, together with the frequent employment of the warm bath. Assiduous attention to the bowels, however, forms a most essential part of the treatment; this is to be done, not by strong purgatives, but by very gentle laxatives united with hyoscyamus, and large tepid unstimulating injections used regularly once, sometimes twice a-day. Opiates are sometimes serviceable, but their use is often contradicted by constipation. The employment of drastic purgatives in these cases cannot be defended, and three cases might be stated within my own experience, in which they produced fatal attacks of acute peritonitis. It is almost unnecessary to add the importance of attention to diet, which should be nourishing, but bland and unstimulating, as well as easy of digestion. Ass's milk once or twice a-day, is therefore to be employed; but patients should avoid distending the stomach much, and taking any article which they know from experience will produce flatulency, as the violent paroxysms of pain, which have been mentioned in the description of the symptoms, may frequently be traced to the presence of flatus. The knowledge of this will therefore lead us, during such a paroxysm, to give a carminative; but a turpentine injection will answer better. Exercise should be avoided, if motion produces even the slightest uneasiness.

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE STOMACH AND BOWELS.

Before treating of the different diseases depending upon morbid states of the mucous membrane of the stomach and bowels, it will be of advantage to the student to give a sketch of the different changes produced by inflammation in that tissue.

It is a point of the first importance to determine the natural condition of the mucous membrane, in order to enable us to ascertain the appearances produced by the disease. It is admitted, I believe, by every one, that the mucous membrane of the stomach and bowels presents, in the most healthy state in which we see it after death, a whitish appearance, with a slight tint of rose colour; that although blood-vessels may be seen here and there, yet they are not observed arborescing in great numbers, nor do we see any discoloured patches, unless there has been some great impediment to the circulation, or a natural change towards decay. Indeed, it is to be apprehended that some of the tints, described with so much minuteness and accuracy by French pathologists, may be attributed to this last cause. It is stated that the stomach becomes more vascular, and of a redder colour, during the act of digestion, than at any other period; which appears to be very probable, and may account for the red appearance found in the bodies of criminals after execution.

On opening the stomach of an individual who has suddenly died from accident, or from some disease unconnected with the bowels, the mucous membrane will be found slightly coated with mucus, which is not difficult to remove; and if the body have been opened within two or three days after death, it will be found in numerous folds or rugæ, which seem to be produced by the contraction of the muscular coat of the organ, leaving the mucous membrane free, so that it forms itself into folds, which it is conceived have nothing to do with a diseased condition of the inner membrane itself. In a healthy state, the mucous membrane is not easily abraded.

The part of the stomach which appears to be most liable to inflammation, is the splenic extremity. In considering the diseased appearances of the stomach and intestines, it will be best to do so under the following four heads; viz. *colour, vascularity, exudation, alterations of structure.*

1. With respect to the *colour*, we have to determine whether or not it be owing to *post-mortem* changes; and we must also be careful to avoid the error into which Broussais and his disciples have sometimes fallen, of attributing every change of colour to inflammatory action. The reader is referred to Dr. Yellowly's observations on the vascular appearances in the human stomach, which are frequently mistaken for inflammation in that organ,* and more particularly to the first and third cases, in which the whole intestinal canal was minutely injected with dark-coloured blood in individuals who suffered the last sentence of the law. In these cases, Dr. Yellowly very pro-

* In the 4th vol. of the London Medico-Chirurgical Transactions.

perly supposes, that the circulation is carried on in the capillaries for some time after death. The appearance of the vessels, the exudation, and the structure of the mucous membrane itself, will, however, generally inform us, whether the colour described in Dr. Yellowly's paper is fortuitous, or owing to diseased action.

We must also be careful to distinguish whether the colour depends on infiltration of blood into the sub-mucous tissue, or on inflammation of the membrane itself. A section of the part will show this at once; for on looking at the cut edges, we shall see the mucous membrane separated from the muscular coat by the infiltration; the former having its usual healthy appearance. But it must be recollected that inflammation and infiltration very frequently co-exist; and when we wish to decide whether the mucous membrane is discoloured, the suspected part must be extended upon the finger, and a scratch made with a scalpel through the mucous coat itself, which will give us an opportunity of ascertaining its vascularity and structure. The chief discolorations of the mucous membrane resulting from disease, are bright red, dark red approaching to purple, brown, slate-coloured, and black. Minute shades of these colours are not noticed, because they are unimportant; nor shall I mention a number of other discolorations which are seen on dissection, because they are very doubtful signs of disease. It must be confessed, after all, that we are very liable to be deceived about the colour, as it is the most frequent, and, I apprehend, the first *post-mortem* change which takes place.

2. *Vascularity.*—Our attention should, in the first place, be directed to ascertain whether the vascularity is arterial or venous; if the latter, large, dark-coloured veins will be observed ramifying under the mucous membrane, and there will be few minute arborescent vessels containing red blood. In fact we shall see the appearances which Dr. Yellowly has so faithfully described in the two cases already quoted; in the first of which, "the whole of the abdominal viscera were loaded, as if by minute injection, with dark-coloured blood. *Here and there, however, there were florid vessels, which were distinctly traceable into dark-coloured ones.*" In the other, "the whole of the intestinal canal was minutely injected with blood, which was, for the most part, of a *dark crimson or purple, but here and there of a florid hue.*" If the vascularity be arterial, and connected with inflammatory action, we shall see red points, or numerous red vessels, running in lines or patches, with or without ecchymosed spots in the mucous membrane. We shall observe them, not in depending parts only, in which situation they are always doubtful signs of inflammation, unless accompanied by a corresponding exudation or alteration of structure. It is always necessary to make a section, first of the mucous membrane, and then of the other structures, to prove whether the vascularity exists in the mucous coat or in the other tissues, or in all of them; if in the former, a slight cut made through the mucous membrane will divide the vessels, a little blood will exude, and the parts beneath will have their natural white appearance; and, upon tearing away the mucous membrane with a pair of forceps, the white appearance of the subjacent parts will be still better seen. The vascularity is doubtful when there is disease

of the heart, or any other cause which obstructs the circulation. Even in that case, however, I imagine the vascularity must be regarded as a diseased appearance; and particularly when it is recollected that it frequently terminates in inflammation, and even ulceration, as will be shown hereafter, when treating of phthisis.

In estimating the extent of the vascularity, we ought to recollect that it must diminish very considerably after death, and particularly in recent inflammations. The tunica conjunctiva of an ophthalmic patient, loses its turgescence and redness at death, or soon after.

3. *Exudation.*—The first effect of inflammation on all secreting surfaces, is supposed to be a diminution of the natural secretion; but it is not certain whether this holds good in the mucous membrane of the stomach and bowels. In several instances it has presented a dry appearance, but these were cases of long standing chronic inflammation. The exudation merits our careful attention with regard to its tenacity, quantity, and colour. If it be viscid, and in considerable quantity, upon a surface which presents many red vessels, however partial the vascularity may be, it is to be regarded as the product of irritation or inflammation. It varies very much in colour, from that of ordinary mucus to pus; and a red matter like currant jelly is frequently found: the exudation has been represented to be occasionally so corrosive as to excoriate the fingers of the dissectors; but it is probable there is some mistake about this statement. There can be no doubt, however, that the mucous membrane yields a large quantity of thick tenacious mucus, colourless like starch, when it is under the influence of any kind of irritation; this is well illustrated in the experiments performed with the tartrate of antimony in considerable doses, which were published by me in the 258th number of the Lancet. With respect to the red exudation, two kinds are observed; one, like very red currant jelly, which is produced when the membrane is under a high degree of inflammation; the other, of a much darker hue, darker even than venous blood, more fluid than the other, and occasionally discharged in very large quantity; this will, in general, be found in cases where there is great congestion of the mucous membrane, along with some degree of inflammation. A similar discharge often takes place in diseases of the liver and spleen.

[The mucous secretion is sometimes replaced by a secretion of *pus,* though this condition is unfrequent. M. Andral observes that, on one occasion, he found the whole of the colon lined with a deep layer of thick pus, exactly resembling that of a phlegmonous abscess. It is, however, more commonly met with in the follicles, which form small tumours on the surface of the intestine.]

4. *Alterations of structure.*—The first appearance which falls to be noticed, is the pulpiness, with thickening of the mucous membrane. When it is in this state, the surface, if closely examined, looks rough and granular, and the membrane can be easily rubbed off. Abrasions are sometimes seen, but not so frequently the result of acute inflammation as of chronic; at all events, they are not so extensive. This is an appearance, however, concerning which we are very liable to be deceived; for when the membrane is soft, abrasions are easily produced by handling. Those which are the

consequences of disease, will be readily recognised by placing the part in water, a portion will be entirely awanting, the edges will look ragged, and the surrounding parts will be found detached. Ulcerations are now known to be a frequent result of acute inflammation; but there is some degree of ambiguity about the tissue primarily involved. Some allege that they exist in the glandular structure, others in the mucous follicles; while there are some who assert that the ulcerations take place in the mucous surface generally.

It is now well ascertained that some parts of the mucous membrane of the stomach and bowels are more liable to inflammation and ulceration than others. The inferior half of the ileum is the part most frequently found inflamed and ulcerated; according to my experience, the colon stands next to the ileum, and it is an extraordinary fact that the jejunum is seldom affected. Why it should possess this remarkable immunity from disease, has never been explained. In a case of poisoning, from corrosive sublimate, the jejunum was in a healthy state, while the stomach, the lower part of the ileum, the colon and rectum, were affected most severely, even to the destruction of the mucous surface, and thickening of the other parts of the intestine, the peritoneal coat only remaining sound.

In proceeding to examine a piece of intestine, it should be carefully cut open with a blunt-pointed pair of scissors, and, after the exudation is observed, the parts should be washed in water, till the mucus is removed from its surface. On some occasions we shall see numerous dark-coloured, distinct points, somewhat elevated, with a depression in the centre, which are the mucous follicles enlarged;* in some places a number of these points will be seen to coalesce, sometimes in a circular space, but in general they are more of an oblong shape. The surface is elevated, and sometimes spongy; and, upon making a section through this part, it will, in general, be found that the sub-mucous tissue is principally involved in the disease, and occasionally also the muscular tunic. On looking at the surface through a glass, ulcerations will be discovered. This appearance is most frequently observed in the lower part of the ileum and caput cæcum, in children who have died of bowel complaints.

Occasionally numerous distinct points will be observed, as if a penful of red ink were spattered over the surface of the mucous membrane; this I imagine is occasioned by an exudation of blood in the follicles, which are thereby distended. It is also noticed by Billard, to whose work upon the diseased conditions of the mucous membrane the reader is referred for much useful information, as well as to the 1st and 2d vols. of Andral's Clinique.†

* There is a preparation in my museum, showing the mucous follicles of the colon so large that many of them would admit a swan-shot. The colon is contracted. The patient died after a surgical operation.

† Since the publication of the first edition, M. Andral has favoured the profession with a work on pathology, which cannot fail greatly to advance the interest of medical science. The work is divided into two parts—the first treats of general, and the second of special pathological anatomy. There is, perhaps, no individual so well qualified to undertake such a laborious task as M. Andral. He is not only placed, by universal consent, at the head of the French pathological school, but, I believe, had the scientific medical men of Great Britain been polled, they would, with one voice, have confirmed the choice of his own countrymen. Few have had such

On other occasions, ulcerations are observed, of a circular or oval form, with defined margins, attended by loss of substance, not only of the mucous membrane and the sub-mucous tissue, but extending into the muscular coat, which may be seen in different places in a ragged state. In addition to this the mucous membrane is sometimes excavated to a considerable extent. The ulceration often destroys the greater part of the muscular coat, so as to affect the peritoneum, which will then be found thickened and inflamed; the external surface being either covered with lymph, or looking like an excrescence of a dark red colour. Occasionally, when ulceration attacks the mucous coat, the sub-mucous tissue and the muscular coat become infiltrated with lymph, producing a thickening of the rest of the intestines, as if it were intended to strengthen the part, and prevent rupture. When ulceration first attacks the muscular coat, it would appear that an effusion of lymph takes place in the outer cellular tissue, in which case it is difficult to separate the peritoneum from the muscular coat at the diseased part. Occasionally, indeed, the ulceration extends through all the tissues, allowing the escape of the contents of the bowels into the abdomen. Sometimes we observe distinct ulcerations on the mucous surface, inclining to the circular form, which are considerably elevated above the surrounding parts, resembling carbuncles, and having an appearance as if they were to throw off a slough. Upon making a section of the intestines through the centre of one of these ulcerations, the cellular substance, and a part of the mucous coat, will be observed to be much thickened, and occasionally of a dark brown colour. Ulcerations are sometimes circular, at others oval; sometimes they run in lines, and, on other occasions, are observed to be irregular in shape. In size they vary from that of a millet-seed, to be so extensive as to occupy a larger space, sometimes the whole intestine. [This hypertrophied and ulcerated condition of the glands of Bruner and Peyer, is the *dothinenteritis* of Bretonneau and others, which we have already described in the section on typhoid fever. It is, also, the *ileitis* of Dr. Stokes, and some other pathologists.] In general ulcerations of the colon are more irregular in shape and size, than of any other part of the intestine. In some instances, ulcerations are surrounded by indurated margins, in others the mucous membrane seems to be merely removed. Ulcerations in the small intestines are, for the most part, found in that portion of the tube most distant from the

extensive opportunities of examining the physical changes produced by diseased action; and I believe still fewer are to be found who could give such graphic descriptions. He has conducted himself with great fairness towards his pathological opponents; and those who have followed similar pursuits, will agree with me that his delineations bear the stamp of truth. A faithful translation of this excellent work has lately appeared, the joint production of Drs. Townsend and West, of Dublin. Those who are not familiar with the French language, may feel obliged to these gentlemen for putting such a work into their hands—a work which, from the style in which it has been brought out, will not, I fear, remunerate the translators. It is worth a thousand volumes produced by a literary compiler. It looks very suspicious to see a review highly commendatory of his own work in the journal of which Dr. Craige is editor, and another of as contrary a character of that of Andral. Had Andral been a British writer, I would have left him to fight his own battle with the reviewer; but, being a foreigner, I think it desirable that the selfishness of one should not be thrown as a slur upon a whole nation.

mesentery. In the colon they are sometimes seen to run in the course of the transverse bands, which are greatly thickened and indurated, while the mucous membrane may be partially or completely removed. Occasionally these ulcerations have a red appearance, or are tinged of a yellow or greenish colour by the fæces or bile, and are surrounded by a great number of red vessels; but in other instances, they present a blanched appearance; which last will be principally observed in cases where there has been a great discharge by stool. In many instances, the part of the intestine which is already ulcerated will show few or no red vessels, while other parts that are only advancing to that condition display intense arborescent vascularity.

Ulcerations produce contractions of the calibre of the whole tube; but this is rare, unless the whole mucous surface be involved in the disease. It is not exactly the ulceration which produces the contraction, but an effusion of lymph into the other coats and cellular tissues, causing considerable thickening. Occasionally we see the mucous membrane intensely red and thickened, partly from inflammation, and partly from infiltration; and in one or two places presenting a seared appearance, as if it had been touched by a red-hot iron; it looks somewhat puckered and very dark coloured, and sometimes the neighbouring part is slightly mottled, as if from white granulations; but this is a rare appearance, yet I have seen it on several occasions, and always in the stomach.

An œdematous condition of the sub-mucous tissue is occasionally the result of acute action in the mucous membrane: but it may be also found in cases of general or partial dropsy. When the mucous membrane is sound, the effusion is not to be regarded as the result of inflammation. An effusion of air is also occasionally found in the sub-mucous tissue; but whether the result of inflammation, or a *post-mortem* change, was not satisfactorily determined till the appearance of cholera in Edinburgh. In several cholera cases, an extensive effusion of air was found in the sub-mucous tissue, when the dissections were performed a few hours after death—too short a time to allow of such a *post-mortem* change. Mortification of the mucous membrane is also an occasional result of acute inflammation. This presents itself to us under two forms; the one is generally observed in the stomach in cases of fever, and in the last stage of phthisis, in which the mucous membrane is removed over a great extent of surface, leaving the parts of a dark colour; the other is observed in the intestine, and particularly about the cæcum and ascending colon, in which the mucous membrane is lying loose, and in shreds of a very dark colour, and having the most offensive gangrenous odour.

Inflammation of the mucous membrane, more particularly of the colon and rectum, terminates in a general thickening of the membrane and the sub-mucous tissue; and occasionally the muscular coat is also involved. The mucous surface is soft and spongy, sometimes partially abraded and very much thickened and discoloured; in some places of a bright red; in others of a dark mulberry colour; no distinct vessels can be seen, and the discoloration seems to be partly owing to infiltration of blood. This appearance is very apt to be confounded with mortification, and is principally observed in

the most acute form of tropical dysentery; but I have had many opportunities of seeing it in this country, in cases which ran their course in from eight to fourteen days. In some of these the intestine is more than the eighth of an inch in thickness—the preparations are preserved in my museum.

Sometimes the mucous membrane of the colon and rectum, together with the muscular coat and sub-mucous tissue, are seen simply in a state of hypertrophy, to a great extent, which appears to me to be the result of former inflammatory action; many of the subjects had been in warm countries, and had suffered from dysentery.

It is well known that ulcerations, with considerable loss of substance, undergo the healing process, and that for some time afterwards the parts so restored may be distinguished by an appearance of cicatrization, which pathologists are well acquainted with, and which is best observed in old cases of dysentery. A beautiful preparation showing these appearances, is in my museum.

[5. *Tubercles.* The whole internal surface of the intestines is sometimes studded with small white bodies, which are, in fact, follicles filled with tuberculous matter. They seldom exceed a pea in size, and always have an orifice through which the matter may be pressed out. Andral, however, regards these appearances as mere follicles, altered both in respect to nutrition and secretion.]

Sometimes we see tubercles in the mucous membrane itself, with more or less extensive ulceration; or the tubercles are found in the sub-mucous tissue, with ulcerations on the mucous surface, in various stages, and extending from the tubercular elevations. These appearances are also principally seen in the colon in cases of phthisis.

There are, no doubt, many other appearances, which are produced by inflammatory action in the mucous membrane; but a minute description of all would require a separate treatise, and is not consistent with the plan of this work.

Competent judges may deem the above description very imperfect. I can only say it is drawn from nature, and it will afford me much pleasure to demonstrate its general correctness, by showing the preparations and drawings in my collection, from which it is taken.

GASTRITIS. INFLAMMATION OF THE MUCOUS MEMBRANE OF THE STOMACH.

It is difficult to determine the meaning of most writers when they speak of gastritis. Some use this term to indicate inflammation of the peritoneal coat of the stomach, which is a rare disease; others, the mucous. A great deal of obscurity also prevails in different works, from the use of the terms phlegmonous and erysipelatous, adhesive and erythematic, which I shall therefore be careful to avoid.

By gastritis, I mean to express an inflammation of the mucous membrane of the stomach, frequently involving the sub-mucous tissue, and occasionally the muscular coat.

Inflammation of the mucous membrane of the stomach exists in various degrees of intensity, from the most acute to the slightest sub-

acute form; and it may also be chronic. Acute inflammation of the mucous membrane of the stomach is a rare disease; it often exists in a sub-acute, but more frequently in a chronic form.

Symptoms of gastritis.—There is a burning pain in the region of the stomach, increased on pressure; a constant desire for cold drinks; which are immediately vomited; nausea, and inclination to retch, are incessant; the heat over the surface of the epigastric region is considerable, while the extremities are perhaps cold. At the same time the patient frequently complains of sore throat; and upon examination, the fauces will be found inflamed. Hiccup is a troublesome symptom. The state of the tongue cannot altogether be depended upon; in general, however, it is very red at the tip and round the edges; loaded, and occasionally very rough in the centre, and towards the root; sometimes, in long standing chronic inflammation, it is red, glazed, and smooth; although I feel persuaded that this last condition of the tongue takes place more generally when the intestines are inflamed and ulcerated, than the stomach. The breathing is anxious and quick, and the patient restless; the pulse is small, and the prostration of strength soon becomes very great; the countenance is expressive of great anxiety, and the individual makes great complaint. Towards the termination of the disease, the features shrink, and the patient lies upon his back. The matter vomited in the early stages, consists of the fluids taken into the stomach, occasionally mixed with bile and some mucus; but at last the black vomit takes place. The bowels are generally constipated.

There is scarcely any acute disease which so frequently exhausts the powers of life, and hence it is said that the symptomatic fever is of a typhoid type. It happens occasionally, however, that the symptoms are exceedingly mild, when the disease has been produced by mineral poisons; and appearances denoting great danger, do not come on till within a few hours of the fatal termination. This was particularly well marked in a soldier of the 17th foot, who swallowed two drachms of the oxymuriate of mercury, and who died unexpectedly eight or ten days afterwards on the close stool; having been able to get out of bed, and walk unsupported.

It has been already stated, that the acute form of this disease is a very rare occurrence, and that it more frequently exists in a sub-acute and chronic form; and we see these most frequently in fevers, in dyspepsia, and in the last stage of phthisis.

Causes.—This disease is produced by any of the common causes which occasion inflammation; by wounds and contusions, as well as by poisons and other acrid substances taken into the stomach; also by too great indulgence in the use of ardent spirits: it sometimes follows in the train of other diseases, as cholera morbus, &c.

Appearances on dissection.—On opening the stomach, a considerable quantity of thick, tenacious mucus will be observed; and the mucous membrane itself will be found in one or other of the conditions already noticed in the general description. It may be mentioned, that the appearances produced by poisons so closely resemble the lesions occasioned by ordinary inflammation, that no distinction can be made; and the nature of the case must rest upon the fact of poi-

son being found, and its powers ascertained. [Ulceration is rarely met with in acute gastritis, and when it does take place, it seldom penetrates as far as the muscular coat. When the follicles are involved, they resemble small, reddish pimples. Gangrene of the stomach is of still more rare occurrence.]

Treatment.—Bleeding copiously and frequently must be had recourse to, and at short intervals; there is no disease which requires a more decided use of the lancet. The application of leeches in considerable numbers may also be found necessary, either after the inflammation has been somewhat subdued by the lancet, or when the physician is afraid that it is too late for general bleeding. Blisters are, of course, to be employed in severe cases. Laxative medicines are also necessary; but it is needless to administer them till the diseased action is considerably subdued, as they will increase the already too irritable state of the stomach; therefore, in the first instance, we are to endeavour to open the bowels by injections. Opiates are very useful; but it is necessary to caution young practitioners against the routine practice which is too generally followed, of trusting to opium whenever there is irritability of the stomach. When opium is given, it is often advantageous to exhibit it in the form of pill combined with calomel. The warm bath, and hot fomentations to the part affected, are means which must not be neglected; and it is necessary to restore and support the natural heat of the extremities.

During convalescence, the diet must be carefully attended to, and should merely consist, for the first day or two, of arrow-root or fine oatmeal gruel.

ENTERITIS.—INFLAMMATION OF THE MUCOUS MEMBRANE OF THE BOWELS.

Inflammation of the mucous membrane of the bowels, varies perhaps more in its external signs than that of any other structure in the body, and for the most part its attack is most insidious. The disease is most frequently met with in a sub-acute or chronic form; even when acute, the symptoms are sometimes exceedingly mild; and this takes place occasionally in cases where we subsequently find, on dissection, not only the most extensive inflammation, but ulceration; which will be more fully shown when treating of dysentery.

Symptoms.—The combination of symptoms denominated fever, take place with more or less intensity; in fact, as already shown, inflammation of this tissue is the cause of many of the fevers which prevail in all climates. Pain is often very slightly felt, in comparison with that which generally attends peritonitis; when the small intestines are affected, the pain is experienced more about the umbilicus than in any other region; cold drinks aggravate it, as well as any indigestible substance taken into the stomach. The pulse is found in very different states even during the same day; it is frequently quick, but not in general so hard as in peritonitis. The skin is generally hot and parched during the day and night, but towards

morning some degree of moisture takes place, and it is then only the patient enjoys comfortable sleep. Thirst is often very urgent.

Tympanitic distension causes considerable suffering to the patient, and aggravates the constitutional symptoms. The tongue is not altogether a sure index of the state of the mucous membrane, as I have seen it perfectly clean and natural in colour, or foul without redness, when dissection revealed most extensive inflammation. But in general, the tongue will be found to be more or less red at the tip, and round the edges, however much it may be loaded in the centre; sometimes it is altogether red, and looks raw, and perfectly smooth like varnished leather; when it is unusually red, I look upon it as a certain indication of very considerable irritation, or of some degree of inflammation or ulceration of the mucous membrane of the bowels. When the superior parts of the tube are diseased, there is more or less nausea and tendency to vomit; when the inferior parts are implicated, we find pain in the iliac regions, and in the course of the colon, with more or less diarrhœa, and considerable discharges of flatus; and when the colon is severely affected, there is that twisting pain in the bowels, which, in medical language, is denominated "tormina;" it comes on in paroxysms, with intervals of perfect ease. The patient complains of it every hour or half hour, and even at shorter intervals, and it is always followed by an irresistible desire to go to stool. When the rectum is involved, there is considerable straining, and the patient can scarcely be induced to leave the close-stool, and yet he passes nothing but a little mucus mixed with blood, or a small quantity of scybalous matter, with some flatus.

Every experienced medical man, upon reading these passages, will perceive that I have been describing the symptoms of diarrhœa and dysentery; but my wish at present is to describe inflammation of the mucous membrane of the intestines generally, as the peculiar nature of the discharges by stool, which constitute diarrhœa and dysentery, do not always attend inflammation of that membrane.

Women, after delivery, are sometimes seized with this affection; and some imagine that when peritonitis takes place in that condition of the system, it is always owing to the extension of the inflammation from the mucous tissue. But although sometimes the case, this cannot be assented to as a general rule. An instance of pure inflammation of the mucous membrane of the small intestines lately occurred to a woman, after an abortion at the fourth month, which resisted the most active practice, and terminated fatally. On dissection, traces of active inflammation of the whole membrane were discovered, which several days maceration in water did not destroy, and a portion of it, which is put up in spirits in my museum, still retains its red colour. There were also a great number of abrasions, which, had the woman lived a few days longer, would have been converted into deep and extensive ulcerations. Another fatal case occurred in the practice of a friend, after delivery at the full period. In this lady, the disease was apparently produced by a large quantity of grapes she had eaten with the skins and stones, which were found in different parts of the intestinal canal. But in neither of these cases did the peritoneum suffer.

Treatment.—If the disease be very acute, the lancet must be used; but the cases which usually fall under our notice, will yield readily after the application of a dozen or eighteen leeches to the abdomen, together with the warm bath, fomentations, and the gentlest laxatives. If there be much tympanitic distension, injections with a small quantity of turpentine, or with an infusion of tobacco, will be found very serviceable. Opiates are useful, and the best preparation perhaps, in such circumstances, is Dover's powder. We shall seldom be obliged to apply blisters, except in very acute cases; but the disease is often mitigated by the application of hot oil of turpentine, or a mustard poultice, which is to be removed in a short time, so as not to occasion vesication. Attention must be paid to diet and clothing, particularly during convalescence.

Chronic inflammation of the mucous membrane.—I have frequent occasion to see cases of long standing inflammation of this tissue. They will be often found connected with some cutaneous eruption, as lepra, psoriasis, &c., or with ulcers on the extremities. It will be observed, that the patients enjoy best health when the eruptions are most severe, or the ulcers most troublesome and attended with copious discharge. These circumstances were first forced upon my attention, upwards of twenty-five years ago, in a warm climate, and subsequent observations have tended to confirm them.

These pathological considerations would seem to demand a different treatment from that generally pursued in diseases of the skin, as well as in many ulcers on the extremities, and will show surgeons the propriety of attending to medical pathology, so as to enable them to treat even a common ulcer. I do not mean to assert that all ulcers are produced by this cause, but that many are so, I have no doubt; and it is necessary to point out the circumstances which will enable a young practitioner to distinguish them. When a person affected with an ulcer, says that he feels in better health when the ulcer is open than when it is healed, we may suspect that there is some internal disease; but when we likewise find his skin harsh, his thirst increased, the appetite impaired, or fastidious; together with some degree of nausea; if there be uneasiness, fulness and oppression in the abdomen, increased after taking a cold drink, or after meals; if he be alternately affected with constipation and diarrhœa, the evacuations being fetid and discoloured; if the tongue be loaded, and of a red colour at the tip and round the edges, or universally red, or loaded, but covered with large and elevated papillæ at the root; if any of these symptoms exist, even in a slight degree, along with the ulcer, or become increased after it is healed, we may rely upon it, that the mucous membrane of some part of the intestinal tube is affected.

Treatment.—In the cases I have described, whether attended by ulcerations or eruptions, I have sometimes seen the most striking benefit from general bleeding; but this is not often necessary, unless the eruption be attended with much inflammation of the skin. In general, leeches applied every second or third day about the umbilicus, and repeated for some time, together with the general warm

bath, gentle laxatives, a bland dry diet, never allowing the patient to eat a large quantity at a meal, will be productive of great benefit. Subsequently contra-irritation, produced by the tartrate of antimony ointment, is to be used; but I shall speak more fully upon the subject, in the second volume, when treating of cutaneous diseases.

DIARRHŒA.

A person who has frequent liquid stools, is said to have a diarrhœa, which may exist with or without fever. The evacuations are almost always fetid, discoloured, watery, or somewhat slimy, containing more or less feculent matter. Sometimes, on examining a watery or a slimy stool, small, round and hard masses of fæces may be found. Diarrhœa may also be attended with thirst; griping pains in the belly, which become relieved for a short time after an evacuation; and there is frequently tenesmus.

[Diarrhœa is divided into several varieties, according to the character of the evacuations. In most instances, these consist at first of feculent matter more or less diluted with the secretions of the liver and intestines; and it not unfrequently happens that the disease runs its course by thus expelling some irritating ingesta; as, the skins or seeds of fruits, or the fruits themselves, indigestible meats, acid drinks, and, in fact, any gluttonous indulgence. This form of disease is called *feculent diarrhœa*, and often works its own cure.

Diarrhœa is often induced by different causes;—sudden changes from warm to cold weather, or exposure in damp and chilly situations while in a state of perspiration. Cold bathing also at times induces diarrhœa; to which also may be added, the violent passions or emotions of the mind.

The preceding causes act more powerfully under certain circumstances; such, for example, as previously impaired digestion, various diseases of the liver, or other digestive viscera, &c., &c. It is obvious, also, that these latter causes may act independently of the alimentary substances received into the stomach; whence practitioners as well as nosologists describe several forms of diarrhœa, as the *mucous*, the *bilious*, the *lienteric*, and some others.

In *mucous diarrhœa*, the evacuations, as the name implies, consist chiefly of an excessive secretion of alvine mucus, more or less mixed with feculent matter, sometimes ropy and tenacious, and occasionally highly offensive. These appearances have not unfrequently been mistaken for worms. The bilious form of this disease is most common in hot climates, and not unfrequent in our own latitudes. The bile, which is thus poured out, is in great quantity, and in some instances almost as unmixed and inodorous as when it came from the liver.

In the disease called *lienteria*, the aliments pass rapidly through the bowels and are ejected from the rectum, undigested and unaltered. Thus meats and drinks, the very milk which has been taken by children, even water itself, are scarcely swallowed before they create a sense of pain or uneasiness, and are in a short time evacuated.

In other cases, diarrhœa is a mere result of long continued constipation, the one extreme ending in the other; and the discharges may be kept up for days and even for weeks by hardened fæces, which, lodging in the cells of the colon, induce a constant irritation and excessive secretion of mucus.

It not unfrequently happens that several of the preceding conditions are combined in a single attack. Thus, a diarrhœa, which begins with profuse feculent discharges, suddenly assumes the bilious form, to which the mucous secretions follow from prolonged irritation of the lining membrane. These morbid fluids are sometimes tinged with blood, which may become profuse from simple exudation, as described in a former chapter, constituting what has been called *sanguineous diarrhœa;* a name, which, in common with many others, is derived from a symptom rather than a pathological condition.

Again, the evacuations are composed, in large part, of coagulable lymph, which, secreted by the inflamed or irritated mucous surface, assumes the shape of the intestine itself, and is thus thrown off in hollow, membranous cylinders. This is the *fibrinous diarrhœa* of the systems, and which we have more fully described under the head of cholera. In some instances, these membranous secretions are thrown off in patches or in masses, which may be mistaken for undigested food.

Diarrhœa in all its varieties, is accompanied by prostration of strength, variable appetite, or a longing for improper and indigestible aliments. The onset, in severe attacks, is often accompanied by fever; but this symptom may be as speedily relieved by the spontaneous or assisted evacuations of the bowels, and is therefore of short duration.

It will follow, from the preceding remarks, that simple diarrhœa is a symptom consequent to several very different pathological conditions; irritation of the liver; irritation or inflammation, of a part or the whole of the mucous membrane, disease of the follicles, or of the glands of Peyer, &c., and we often meet with examples in which all these tissues appear to partake simultaneously of the same irritation.]

Treatment.—From the pathological description given above, it will be seen that the treatment must be considerably modified. If the affection be produced by the application of cold to the surface, the warm bath, a dose of Dover's powder, and subsequent attention to clothing, and particularly preserving the heat of the extremities, will be all that is required. If by unwholesome food, it must be avoided for the future; gentle laxatives must be given to hurry the passage of the offending matter through the bowels, followed by an opiate. If by diseased biliary secretion, which is to be recognized by the existence of nausea, or even vomiting of considerable quantities of bile, together with the passage of bilious stools, which, perhaps, will produce a pungent sensation in the rectum, and considerable tenesmus, a little calomel and opium may be prescribed, followed by small doses of Epsom, or any other salts, largely diluted with water, together with copious drinks of gruel, or barley water, or any other

bland diluent. If from constipation, which can only be recognized by examining the stools, that state must be removed by gentle laxatives, frequently repeated, conjoined with opium or hyoscyamus, and assisted by unstimulating injections. In this case, the warm bath is also serviceable; and after the bowels are fairly cleared of the hardened fæces, the irritation is to be subdued by an opiate. If, in any of these cases, there should be considerable pain in the belly, with fever and a hard pulse, bleeding may do good, and can rarely do harm. But should diarrhœa depend on inflammation of the mucous membrane, or should inflammation supervene during the progress of the disease, bleeding, either general or topical, ought to be employed, if the means above recommended do not succeed. Cases have occurred to me, where nothing else was necessary after abstracting blood from the arm, but which had previously resisted all the ordinary remedies for many days. If, notwithstanding the employment of these means, the patient be not relieved, or if he be so weak as to make us anxious to save blood, an injection of tobacco may be perhaps substituted. Opiates, attention to the diet, and contra-irritation, must be had recourse to. If in any case there be much tenesmus, a teaspoonful of laudanum, mixed in an ounce or two of gruel, is to be thrown into the rectum.

It would appear that Hume, the celebrated historian, died from ulceration of the bowels, which was not recognized by his physician.*

[Diarrhœa is extremely prevalent in the United States, owing to two principal causes—the proverbial changeableness of the climate, and the profusion of fruit. When, as often happens, it can be traced to over-indulgence in fruit, laxatives of magnesia, or of calomel and rhubarb should be first given; after their operation, alterative doses of calomel and opium, or of camphor-water and nitric acid,† are highly serviceable. This preparation of camphor has proved, in my hands, more efficacious than any other single remedy whatever. It is sometimes injured by adding too much of the acid, which should seldom exceed the small quantity directed in the following prescription:—℞. Aquæ camphoræ, ʒiv; Acid. nitric, gtt. iv; Tinct. opii, gtt. xl. vel lx.—Of this a tablespoonful is to be given every two hours to an adult, and in proportion, to children.—The chalk julep, especially where acidity is present, is also an excellent medicine.‡ The infusion of oak bark, or nut-galls, small doses of acetate of lead or sulphate of zinc, with or without opium, will all in turn serve a good purpose.

Very small doses of calomel, the sixth or even the eighth of a grain, given assiduously every hour or two hours, will occasionally check a troublesome diarrhœa; so also a pill of alum and sulphate of iron, the mineral acids, &c. Mr. Hoblin, of London, recommends in strong terms, rhubarb powder which has first been burnt black in an iron pot or crucible, and then diffused in portwine.

* The account of his symptoms and feelings, in his own words, is very interesting.—Vide History of England, vol. i., Introduction, p. xix.

[† See Appendix, Prescription No. 44.]

[‡ See Appendix, Prescript. No.]

Too little attention is generally given to *injections*. These act promptly; and the best of them are composed of laudanum or morphia with starch mucilage; or four or six grains of the sulphate of zinc, dissolved in five or six ounces of water or flaxseed tea.

Whenever a diarrhœa becomes intractable to these or other modes of treatment, a certain cure can often be effected by a short voyage to sea, or even in a river steamboat. Carriage exercise also contributes greatly to the cure of obstinate diarrhœa.

The diet should consist of arrow-root, sago, or tapioca, or of lime-water and milk in equal parts. Rice is also unobjectionable; and for common drink, rice-water and gum-water are best. An admirable diet consists of cold milk which has been first boiled. This can be thickened if desirable, with rice or common flour. In our southern states, a dietetic preparation of parched rice, flour, and milk, is much in vogue, and I have resorted to it with gratifying results.]

BOWEL COMPLAINTS OF CHILDREN.

The pathological observations already made in the last sections equally apply to the bowel complaints of children. In the course of practice, it is distressing to see so many children carried to the grave from a diseased condition of the alimentary canal; although there is no class of complaints, which, when taken early, and treated according to good pathological principles, are more under control. They frequently terminate by producing marasmus, and a complaint which I have presently to notice, under the name of *tabes mesenterica*.

Much mischief is occasioned by the method too generally adopted immediately after birth. A child is scarcely dressed, when a teaspoonful of castor oil is wantonly forced down the throat; or a great deal of sugar and water is given, for the unnecessary purpose of purging away the dark matter which collects in the large intestines during the last two or three months of its uterine life. We ought to be in no hurry to expel this matter, as if it were a virulent poison, the retention of which will carry death into the very vitals. We frequently see fatal bowel complaints produced by this cause, and it is no uncommon thing to discover that drastic purgatives have been employed. Not long ago, I was called to see a child under a fortnight old, who was taking half a grain of calomel and two grains of scammony twice a-day, although it had from fifteen to twenty stools during the course of twenty-four hours, notwithstanding the exhibition of occasional doses of chalk mixture. In such cases, the drastic purgatives are given in the first instance to "clear out the bowels," and afterwards persevered in "*to improve the evacuations.*"

Another source of the bowel complaints of children, proceeds from the absurdities constantly committed with respect to their food. Soon after the castor oil has ben exhibited, the nurse insists upon giving food, consisting of thick gruel, which the stomach is totally incapable of digesting; flatulency is the consequence; they cry; and then the nurse flies to Dalby's carminative for relief, which produces

ease for a time, but by inducing constipation, renders another dose of castor oil necessary; this, in its turn, frequently gripes. This the nurse attributes to wind in the stomach and bowels, and again thick indigestible food is given to drive out the wind, which, in its turn, again requires the Dalby. In this manner the functions of the stomach and bowels are too often impeded, and not only impeded for the time, but the children are rendered ever afterwards liable to complaints in the stomach and bowels.

Daily do I see the advantage of pursuing an opposite plan with new-born children. No laxative medicine should be given, unless an infant suffers from distension of the abdomen. Should this be the case, the old plan of using a suppository, or a twisted piece of paper, will in general answer every purpose; but if it should not, then a gentle laxative may be given by the mouth, and the best is a small teaspoonful of castor oil, or about three grains of Henry's magnesia. With respect to food, an infant ought not to have anything more substantial than well-made whey, or milk and water, till it can procure food from its own natural fountain.

Some children are so constituted, that, do what we will, they have more than the natural number of stools, and yet they go on growing and thriving in a remarkable manner. In such cases, little or nothing ought to be done, because there is good evidence that there can be no serious disease. Again, some children are naturally constipated, and yet they thrive; in such cases, also, much interference is unjustifiable, beyond changing the milk, or exhibiting a little manna. A healthy child, at the breast, ought, in general, to soil from four to six napkins in the course of twenty-four hours; the evacuations, after the first fortnight, should look like well-made mustard, with, perhaps, white specks here and there; it should have a sour smell, and possess no fetor. In disease, the stools are sometimes green and watery; sometimes yellow and watery; sometimes brown and frothy, or white and frothy, as if mixed with yeast; and also, whitish and hard, like half-baked clay; occasionally bluish, and very often mixed with slime, or are altogether slimy. When the stools are bluish, and particularly when whitish, like half-baked clay, they are very adhesive, and expelled from the bowel with difficulty. Instead of having the natural sour smell, they are like the stool of an adult; or they may have a still worse smell, sometimes compared to rotten eggs, at others to train oil; and occasionally even still worse, like that which emanates from a gangrenous sore. Green and brown stools are generally watery, or mixed with mucus, and are occasionally discharged, when the child is held out, as if they came with violence from a squirt, and are often preceded by considerable signs of suffering.

The bluish and the whitish stools are generally few in number, but are attended with consequences fully as dangerous to the infant, as they terminate by producing diarrhœa of the most intractable nature. In many of these cases, the diarrhœa alternates with constipation; and occasionally there is so much irritation in the rectum, that prolapsus ani takes place, attended with great suffering.

Many children go on thriving remarkably well, having a regular

state of bowels till they are weaned, when, from the sudden change of food, a serious disturbance is occasioned in the stomach and bowels, announced by vomiting and purging or by purging alone, the stools consisting at first of feculent matter, then mixed with mucus, and perhaps tinged with blood ; and subsequently of a white serous fluid, like dirty water, which is discharged suddenly, and squirted with violence from the bowels. Children so affected are said to have the "weaning brash," which has some resemblance tc the true cholera.

Treatment.—If the disease be produced by the injudicious use of laxatives, these are to be discontinued or diminished in quantity and conjoined with a slight opiate, as, for instance, a quarter or half a drop of laudanum in a teaspoonful of a solution of manna. If from indigestible food, it is to be withdrawn, and the child must subsist entirely upon the breast. If there be good evidence of its own milk disagreeing with it, another nurse should if possible be procured. Green stools are often occasioned by the exhibition of calomel, which is too frequently allowed to be prescribed by nurses themselves. The yellow watery stool, and the brown watery stool, often announce an excess of bile; while the bluish and whitish stools, but particularly the latter, indicate a diminished quantity of bile. In the former cases, a little thin arrow-root, one small dose of calomel, followed by a little castor oil, and an occasional teaspoonful of chalk mixture, together with the warm bath, will be all that is required. But in the latter cases, five or six half-grain doses of calomel, or one grain doses of hydrargyrus cum cretâ, given either at night or in the morning, followed by an occasional small quantity of castor oil, and attention to the diet, will be sufficient to put the child in a fair way of doing well. According to my experience, a mercurial preparation is particularly necessary when the stools have the peculiar disagreeable odours formerly described. If much mucus be discharged, particularly if tinged with blood, and expelled as if it came from a squirt; if there are fever, restlessness, peevishness, and thirst, and particularly if the child cries much and emaciates, medical men should be upon their guard; for if inflammation of the mucous membrane do not already exist, there are evidences of its being threatened. Solid food should be carefully avoided; and, if the child be already weaned, it should be offered nothing but whey or ass's milk. The warm bath is to be used morning and evening; and I have found powders composed of calomel, aromatic powder, and Dover's powder, with or without rhubarb, proportioned to the age of the patient, highly useful. To a child of three months old, I would give half a grain of calomel, the same quantity of Dover's powder, and two of aromatic powder, every three, four, or six hours; to a child under that age, a somewhat smaller quantity of Dover's powder may be given, and it should be increased to those who are older. If the feverish symptoms still continue, a leech should be applied, or a stimulating embrocation rubbed upon the abdomen. It is always safe practice to apply a leech early, which is not only justified, but loudly demanded, by the appearances on dissection, when the mucous membrane is seen, not only in a high state of inflammation,

but also of ulceration. My museum contains many specimens and drawings of such morbid changes.

Sometimes we are not consulted till the little sufferer is greatly reduced, and it should be remembered that its vital powers may sink early, from the peculiar severity of the disease. In such cases, we must be guided by the expression and colour of the face, state of the pulse, and the temperature of the body. If the expression be subdued, the face pale, the features sharpened, the extremities and tip of the nose cold, and the pulse weak, a stimulant is instantly to be given, and the best one is brandy and water, proportioned to the age of the child; it may be necessary to conjoin an opiate with the stimulant. The warm bath is also to be had recourse to.

TABES MESENTERICA.

This is a disease in which there are great emaciation of the whole body and enlargement of the abdomen.

After the bowels have been for some time in an irregular state, the child is observed to fall off very much in strength; the extremities and the face becoming much emaciated, while the belly is observed to be tumid; the appetite is fastidious, sometimes ravenous; there are great thirst, and frequent griping pains. A child so affected has some degree of fever, while another has no feverish symptom; but most commonly there is a febrile attack during the night, which goes off towards morning with perspiration. The abdomen feels doughy and knotty, at other times tense and tympanitic. At first the tumefaction is owing to flatus; but as the disease goes on, effusion takes place into the cavity of the abdomen; there is constant purging, till at last the child dies exhausted, or is carried off by disease in some other part, commonly of the brain or lungs.

Appearances on dissection.—On dissection we sometimes discover chronic peritonitis, with enlargement of mesenteric glands; but more frequently ulcerations of the mucous membrane of the bowels, the effect of long-continued sub-acute, or chronic inflammation. The whole of the internal surface of the colon is sometimes ragged; the rest of the coats of that intestine being, in general, very much thickened; at other times, the lower parts of the ileum and cæcum are affected; and occasionally ulcerations are seen in the jejunum, increasing in number, however, in the course of the ileum.

Treatment.—The pathology of this disease appears not to be understood by the generality of practitioners. It is too often attributed to scrofula, merely because the mesenteric glands are known to be enlarged; therefore the muriate of lime is extensively employed by those who are *calcined* in old prejudices, and who are blessed with so much patience, that three years is not considered too long a period to wait for its good effects. The disease should be treated as one proceeding from inflammation and ulceration of the mucous membrane of the bowels, which will also be the best practice, should the disease be found occasionally to depend on chronic inflammation of the peritoneum.

DYSENTERY.

This affection is known also by the name of flux; when attended with a discharge of blood, bloody flux.

Dysentery is generally divided into two varieties—acute and chronic.

Symptoms of acute dysentery.—This form commences like a common diarrhœa, with griping pains in the bowels; frequent calls to stool, with an irresistible desire to strain; the evacuations are sometimes fluid and copious, with the usual fetor; at others scanty; and whether copious or scanty, there is occasionally seen, particularly in this country, some hard scybalous matter, with mucus, sometimes streaked with blood, and very fetid. In warm climates it is rare to see scybalæ; when there is feculent matter, it is very watery. After a stool, the patient feels more or less relieved, but soon another paroxysm of pain frequently amounting to what has been denominated "tormina," takes place, and he may have a great many such attacks during twenty-four hours. In this country, for the first few days, the heat of skin is not much increased, nor is the pulse accelerated; the tongue is loaded, and generally red at the tip; the thirst is urgent; there is loss of appetite; considerable prostration of strength, and depression of spirits.

After the lapse of two or three days, more or less, the patient complains of fixed pain in the hypogastrium, and in one or both iliac regions, which sometimes becomes very distressing; it is increased by pressure, and I have been able to trace it, on many occasions, along the track of the colon. Sometimes there is universal heat of skin; at others, the abdomen only will feel burning to the hand, whilst the rest of the body is cool; nay, the extremities may be ice cold, and the patient may complain of frequent rigors. The evacuations from the bowels, at first feculent and copious, now become more frequent and scanty, consisting entirely of mucus, or of mucus mixed with blood; or they may be still watery, and of a dark brown colour, with portions of slime here and there; or they may have the appearance of dirty water slightly tinged with blood, with now and then a little scybalæ. The stools become more and more disagreeable in odour, till at length an experienced person will be able to recognize the smell to be dysenteric upon first entering the room. The tenesmus is more distressing, together with a cramp-like feel in the thighs and legs, which is relieved after each evacuation; it is with difficulty that the patient can be persuaded to leave the close-stool, and lie down in bed. The secretion of urine is frequently suppressed, and the patient suffers a good deal of pain from that cause. Thirst increases; cold water is preferred, from which the patient cannot refrain, although he knows it is bad for him. The tongue is more loaded and florid; or it has by this time become dry and glazed. The skin is either parched, or covered with copious perspiration, which, in the worst cases, does not appear to mitigate the symptoms, although some relief is experienced in slighter instances. When the skin is universally hot and parched, the pulse in general will be found quick, full,

and bounding, but when the extremities are cold, it will, perhaps, feel weak and thready; yet, in some instances, the pulse is not much changed from its natural state, neither are the other symptoms troublesome, till within twenty-four hours of death.

Sometimes the patient preserves some degree of appetite for a few days, but in the course of two or three hours, the articles of food are passed by stool in an undigested state. The patient emaciates quickly; the despondency increases; and, as the disease advances, his bodily weakness increases, till at length he is unable to obey the frequent calls to go to the close-stool. He lies upon his back, unable to move, and at length passes his stools involuntarily, which appear as if mixed with shreds of membrane; occasionally they resemble pea-soup, and sometimes are even like pure pus; or they still continue to consist of mucus, more or less tinged: the bowel is constantly in a state of protrusion, and the fetor which emanates from the patient is almost intolerable. In warm climates, I have seen an appearance as if large portions of the mucous membrane had been thrown off in a state of mortification, and I knew one patient recover after such an event. Sir George Ballingall and others mention a similar circumstance as having occurred in their practice; but recovery in this stage is almost out of the question. The pulse sinks; the pain ceases; and the mind, which perhaps has, hitherto, been quite clear, now becomes disturbed; a cold clammy sweat takes place, and death shortly closes the scene. Hiccup and vomiting are occasional symptoms; and, during the progress of the disease, the symptoms frequently undergo remarkable remissions, which excite hopes of recovery. I have seen the strongest men destroyed by this form of the disease in four days; but in general the case is protracted for two or three weeks.

Symptoms of chronic dysentery.—This form is rarely met with in this country, unless in individuals who have come from warm countries, where they had suffered frequent attacks of the disease. In chronic dysentery, patients are affected with severe fits of griping about the umbilicus, like colic, which are quickly followed by an irresistible desire to go to stool, when a great deal of flatus is discharged, along with an evacuation which is sometimes of a dirty brown feculent matter, sometimes even much darker in colour; at others it is greenish or yellowish; and occasionally the stool looks yeasty, or resembles thin gruel; sometimes, according to Mr. Marshall, like rice-water, or water in which a small proportion of white clay had been diffused. Sometimes there is only a sense of weight in the abdomen, and acute pain is perceived, upon pressure, in the course of the colon, but more particularly in the situation of the caput cæcum. After each paroxysm of pain, and subsequent stool, the patient enjoys a longer or a shorter interval of ease, unless he be scalded about the anus. The skin becomes parched, and the pulse quickened; the appetite is impaired in some cases, while it remains good in others; but the patient will be observed to be worse after a moderately full meal, and occasionally there is nausea. Thirst is a pretty constant companion. The tongue presents various appearances, sometimes loaded, the fur being of a yellow colour; at others it is loaded in the centre, and reddish at the tip; sometimes rough, and

often it has the appearance which has been already described in this work, red, raw-looking, and quite smooth as if glazed. After these symptoms have continued from two or three to twelve or fourteen days, the stools are found to consist of whitish mucus, frequently mixed with undigested food, and are almost always passed with considerable straining; the paroxysms of tormina increase; borborygmus is troublesome; the patient loathes food more and more; nausea is more complained of, and bilious vomiting occasionally takes place; thirst increases, as well as debility and emaciation; hiccup is often very troublesome; and the pulse becomes quicker and quicker, gradually losing its strength, the skin looks sallow, and at last death takes place. In the latter stages, the abdomen sometimes becomes more tumid; at others, it is flatter than usual. Occasionally acute peritonitis cuts off the patient, from the escape of the contents of the bowels into the abdomen through an ulcerated opening

Appearances on dissection, with pathological remarks.—In this country dysentery is rarely fatal, unless it attacks individuals who have suffered severely from the same complaint in India. Nevertheless, my museum contains sufficient proof that it is sometimes fatal, and that the *post-mortem* appearances closely resemble those which are found in tropical climates. I have known several fatal cases in Edinburgh, which ran their course in from nine to twenty days, and in which the colon, the rectum, and part of the ileum, were in a state of complete mortification, the parts having the gangrenous fetor. In other instances, the colon and rectum, throughout their whole extent, were thickened and contracted; the mucous membrane being soft and spongy, and dark-coloured, looking more like a livid fungous excrescence than an ulcerated surface; the colour being retained even after maceration. An opinion has been too prevalent, that dysentery is always connected with a vitiated state of the bile, or actual disease of the liver itself; but the writings of modern pathologists have dispelled such delusions.

Sir George Ballingall, in proceeding to give an account of the appearances found on dissection, in his excellent work on Fever, Dysentery, &c., states, that in a great proportion of cases, these appearances consist of an inflammation of that part of the intestinal tube situated below the valve of the colon, "without the smallest trace of disease in the structure of the liver."

The following are the appearances described by Mr. Marshall, deputy inspector general of hospitals, in his valuable work, entitled, "Notes on the Medical Topography," &c. &c. I have great satisfaction in quoting from this author, because I know his descriptions were drawn from nature when standing at the dissecting table, with the morbid parts before him, and not copied from books. "Upon examining the bodies of Europeans, who have died of dysentery, (says he,) the extent of structural derangement discovered is often very great."

"*Omentum.*—This organ is sometimes found greatly diminished; more frequently it is found much thickened, interspersed with numerous vessels, turgid with dark-coloured blood, and easily torn. Sometimes it adheres with great firmness to the intestines, occa-

sionally stopping up ulcers. Perhaps it adheres more frequently to the cæcum than to any other portion of the intestinal tube.

"*Intestines.*—The folds of the intestines are often found agglutinated together. Sometimes they adhere to the liver, and occasionally to the bladder. The colon appears studded or streaked with dark red or plum-coloured spots. Sometimes the contents of the intestinal tube are found in the cavity of the abdomen, having passed through a gangrenous orifice in the coats. When handled, the large intestines feel thick, heavy, and lumpy; they are, likewise, in many instances, easily torn.

"Upon removing the intestines from the body, and slitting them up through the whole extent, a great number of lumbrici are commonly found; but as worms exist so generally in the intestines of Europeans, in this country, their appearance cannot be considered as connected with dysentery. The inner surface of the duodenum is found covered with a viscid, glairy, semi-fluid substance, which has sometimes a yellowish, sometimes a greenish colour. Towards the inferior half of the ileum, small quantities of fecal matter are occasionally found, having a bright yellow colour, and some degree of consistence. The contents of this intestine frequently resemble the healthy alvine evacuations of young children. The colour and consistence of the fecal contents of the ileum are suddenly changed immediately upon passing into the cæcum. Nothing is ever found in the large intestines but a brownish offensive fluid, similar in appearance to the watery dejections which mark the last stage of dysentery. The intestines were never found to contain either scybalæ or fecal accumulation.

"The coats of the small intestines are generally healthy; sometimes they are redder externally than natural; this redness appears to originate from venous effusion rather than from an actively excited state of the vascular system.

"The mesocolon is frequently found much thickened, and containing a great number of vessels gorged with blood.

"The chief traces of disease are found in the large intestines. The villous coat of the cæcum, colon, and rectum, when expanded, sometimes appears dark red, and extremely turgid; the turgescence is occasionally so great, as to resemble the tumid state of the inflamed conjunctiva during a violent degree of purulent ophthalmia.

"Sometimes the villous coat appears, at a little distance, to be covered with a bluish puriform fluid, and thickly interspersed with dark grumous spots and patches. When more narrowly examined, the villous coat is found to owe the appearance of being covered with puriform matter to an extravasation of fluids into the substance of it, by which means it acquires a swollen and pulpy appearance. The dark red grumous patches are portions of the villous coat in a gangrenous state. These spots are generally surrounded by a red circle, the areas of which are various; frequently they are not more than about a third of an inch. Sometimes an individual slough may be compared to a tainted oyster. The mortified portion of the villous coat that is situated within the red circle is easily removed from the muscular coat, which is commonly found apparently not changed

from a state of health. In some instances, the central portion of the slough had disappeared, leaving an excavation in the villous coat, as if a portion of it had been cut out. Even in these cases the muscular coat was commonly sound. The villous coat was generally unattached at the margin of the excavation, and the finger could often be easily pushed under it from one depression to another. Sometimes, however, the sloughing extended into the muscular coat, and even into the peritoneal coat, which was rendered evident externally by the mulberry-coloured patches. The dark spots on the peritoneal coat are always much less extensive than the corresponding gangrenous portions of the mucous membrane. While one part of the large intestines has lost its natural tenacity from gangrene, another has sometimes acquired an increased power of resistance, and when cut into, conveys a semi-cartilaginous feeling to the hand. Sometimes large portions of the villous coat are found sphacelated without any intervening living parts. In these instances, it is extensively separated from the muscular coat, and is sometimes found loose in the cavity of the intestine.* The gangrenous shreds occasionally stretch across the diameter of the intestine, like a bow-string. The separated portions of the villous coat are torn by the slightest force. They resemble, in appearance, pieces of dirty lint, imbued with the ichorous discharge of a gangrenous ulcer.

"Sometimes small collections of purulent matter are found between the villous and the muscular coats. This is, however, not a frequent occurrence.

"Occasionally dysentery leaves traces of disease in the large intestines of a different kind, namely, tubercular ulcerations. Ulcers of this character are not unfrequently found spread over portions of the villous coat, and, for the most part, in a remarkably distinct and uniform manner. That portion of the villous coat which intervenes between the ulcers, has in general a loose, pulpy appearance. Sometimes it is turgid and reddish. Viewed at a little distance, the inner surface of the intestine appears to be sprinkled with a soft, curdy-like substance. These cream-coloured specks are of various sizes; sometimes they are not more than a line, at other times they are an inch in diameter. Upon examining a small speck, the whitish substance is found to protrude a little beyond the surface of the intestine, and adhering, but not very firmly, to the villous coat. After removing this substance, a depression or incipient ulceration is exposed. The base and margin of the indentation are generally dark red. The depression eventually increases, and becomes an ulcer, which is always encircled by a red portion of the villous coat. Sometimes the ulcers resemble the ill-conditioned sores, with prominent edges, which occasionally occur on the inside of the lips, particularly during a severe course of mercury. In general, the base and edges of the ulcers are indurated, unequal, and scabrous. When the transverse section is made, a gristly feeling is communicated to the hand. The tubercular appearance of these ulcers is very remarkable. They

[* Is not this the pseudo-membranous form of inflammation? A secretion of coagulating lymph from the mucous membrane, and not a portion of the membrane itself? Some remarks on this subject will be made in the chapter on Cholera.]

sometimes resemble warty elevations with excavated apices, in a state of ulceration. For the most part, ulcers of this kind are oblong; in length, they extend from half an inch to an inch; the breadth is seldom above half the length. The longest diameter is always in a transverse direction to the cavity of the intestine.

"Such are the more common traces of disease, found upon inspecting the bodies of individuals who have died of dysentery, more particularly among Europeans. Death rarely, if ever, occurs among this class of people before a certain degree of gangrene of the villous coat of the large intestines has taken place.

"Abscesses and other morbid states of the liver are occasionally concomitants of dysentery. When traces of disease in the liver were discovered, on dissection, the circumstance is noted in the table of casualties. The nature of the structural changes of this organ has been already mentioned. Upon examining the bodies of Malays that have died from dysentery, traces of disease of a less active character are discovered. The mesentery and mesocolon are generally found massy and dark-coloured, from turbid blood-vessels, and the lymphatic glands greatly enlarged. The coats of the large intestines are thickened and firm; frequently the calibre of the intestine is greatly contracted. The villous coat is, in these cases, unequal, puckered, and covered with a gelatinous muco-purulent substance. Occasionally, however, instances occur where the inner surface of the colon is found sprinkled with grumous spots in a state of mortification, and sometimes the sloughing portions are extensive."

Some years ago dysentery was very prevalent and fatal in Ireland, which afforded Dr. Cheyne and others the most extensive opportunities of making *post-mortem* examinations. They had the best proof that the primary and chief seat of the disease was in the mucous membrane of the intestines; the liver was sound in a majority of cases, but often otherwise. In two instances abscesses were found, and in many others great sanguineous congestion.

According to Dr. Cheyne, the intestines were variously affected; in some cases they were prodigiously distended; the small intestines measuring from seven to nine inches in circumference; in some, the coats were much injured without thickening; in others, considerably thickened as well as ulcerated. In some cases the inflammation of the mucous membrane was most extensive, extending from the stomach to the rectum; the inflammation being always greatest towards the large intestines, the rectum being, however, sometimes sound.

The morbid appearances discovered in the intestines, in fatal cases of dysentery, in this country, are considerable thickening of the large intestines; sometimes this thickening affects the whole colon and rectum; sometimes it is confined to the caput cæcum and part of the ascending colon, at others it involves also the arch, and even extends farther. The peritoneal coat generally remains sound. The seat of the thickening is in the mucous coat and sub-mucous cellular tissue, which are infiltrated with blood, spongy, with a rough and ragged surface. The colour varies from a bright red to a dark brown.

On other occasions the mucous surface is spongy, rough, and ragged, with deep ulcerations here and there; the ulcerations running

principally in the course of the transverse bands of the colon. The colour is sometimes very little changed, and there is little or no infiltration of blood into any of the tissues.

I have likewise seen complete mortification and sloughing of the mucous membrane in two dissections. In these instances, there were large detached portions of the membrane, the sloughing condition being sufficiently well marked by the colour and fetor. The rectum has been implicated in a variety of the cases that have fallen under my observation, but it escapes more frequently in this country than in warm climates. There are some specimens and drawings in my museum, from which this description has been taken.

Causes.—Dysentery is a disease which attacks individuals of all ages, and all classes of society, although those are more liable to it who are most exposed to vicissitudes of climate, and who are badly fed and clothed. Irregular habits also predispose to this disease. In warm climates it is found that Europeans suffer more than natives. Upon inspecting Mr. Marshall's tables, it will be seen that the disease is fatal during every month in the year; therefore it must occur in all kinds of weather. It is more peculiarly a disease of tropical climates; although we often see it in other situations, yet it is neither so prevalent nor so fatal. It also seems to depend upon the same exciting causes of fever. Although diseased secretion of the bile may occasionally produce both diarrhœa and dysentery, yet these diseases ought not to be so invariably imputed to this cause.

Treatment.—The method of treatment which is generally found necessary in this country, shall be first shortly stated; and then that which ought to be adopted in warm climates in the acute and chronic forms of the disease.

1*st. Treatment of dysentery as it occurs in this country.*—The same plan is to be pursued as in severe cases of diarrhœa. The body is to be warmed in a hot bath; and as we are anxious to get rid of any offensive matter that may be in the bowels, in the first instance, an ounce, or half an ounce, of castor oil is to be given, with twenty, thirty, or forty drops of the sedative solution of opium; but if the stomach be too irritable to bear the castor oil, calomel, with a small quantity of opium, is to be given in pills every second, third, or fourth hour, till a feculent evacuation is procured, assisted by a large injection of warm milk and water, or thin gruel; or small doses of salts may be given by the mouth, and repeated at short intervals. It is wrong to suppose, that in all instances of dysentery in this country, there are hardened fæces lodged in the bowels; but as this is sometimes the case, and certainly more frequently than in warm climates, the plan above recommended should in the first instance be adopted. This points out the necessity of a careful examination of the alvine evacuations, which has been already so much insisted upon in other diseases.

If, however, a patient has considerable griping and tenesmus, hot skin, and a quick pulse, although it may not be particularly strong, it will be right to bleed him, especially if there be pain on pressure; and perhaps it will be safest to draw blood before the laxatives are administered. One good bleeding will in general suffice; if there be

much subsequent tendency of abdomen, leeches may be had recourse to. After the diseased action has been thus reduced, and the scybalous matter got rid of, we may have recourse to large opiates by injection. It appears to me that the reason why opiates are not attended with more success is, that they are exhibited in too small quantity, and that they do not proportion the dose, in any degree, to the violence of the symptoms. If we suspect the liver to be disordered, small doses of calomel or blue pill may be given, but there is no necessity for greatly affecting the mouth. [At this stage of the disease, the alterative astringents come in extremely well; as opium and sugar of lead, with calomel, or the combination of camphor water and the mineral acids. With this last preparation I have conquered more dysenteric affections than by all the other internal remedies collectively. If opiates are required in large doses, (as often happens,) they are best given in enemata with starch or flaxseed. If anodynes are given by the mouth, the solution of morphia and solid opium are preferable to laudanum.]

Contra-irritation to the abdomen is to be had recourse to, and the best method of producing it, is by the frequent application of hot oil of turpentine; [or of brandy and cloves as mentioned under the head of colic. A poultice of bran and flaxseed, applied over the whole abdomen, in the manner recommended by Broussais, may be also tried with advantage;] but should the disease be very severe, it would be advisable to apply a blister. The attendants should be particularly cautioned to watch the heat of the extremities, and to apply hot bottles when necessary.

In the excellent clinical reports with which Drs. Stokes and Graves have lately favoured the profession, it is stated, that strychnine, in doses of one-twelfth of a grain, given in a pill twice a day, was found useful in the Meath hospital. They tried this remedy on the authority of a paper by Dr. Rummel, inserted in the June number (1825) of Hufeland's Journal. On some late occasions this remedy has been tried in my practice, and was found exceedingly beneficial, even in cases where there were most extensive ulcerations in the bowels. It succeeded after every other remedy had failed. I have also seen beneficial effects from the acetate of lead, given in two or three grain doses several times a day. The sulphate of copper has also been strongly recommended in such cases by Dr. Elliotson; I have given it a trial, and can speak rather favourably of the result.

The sufferings of patients are often much aggravated by flatulent distension of the intestines, which may generally be relieved by turpentine, assafœtida, or tobacco injection. During convalescence, the greatest attention must be paid to diet, clothing, and exercise.

2d. Treatment of the acute disease as it occurs in warm climates.—The only difference which is to be kept in view between the treatment of the disease as it occurs in this country and in tropical climates, is, that the disease being in the latter more severe, requires more active practice. It is also necessary to impress on the minds of those who are destined to practise in warm countries, that cases are frequently fatal, although the symptoms are apparently mild. That such cases are frequent, any reader may satisfy himself

by consulting the works written upon this subject; and it has led some to divide the disease into two varieties. For instance, Mr. Annesley states that there are two varieties, the acute and erythematic. "The first," says he, "is acutely inflammatory, and if not checked by bold and decided practice, will very soon terminate fatally, or lay the foundation of that chronic stage of dysentery which disables so many men. The second is more obscure, and consequently, more dangerous. There is dull, deep-seated pain in the bowels, sufficient to distress a patient, but not so severe as to excite alarm. There is no external pain, the pulse is not materially altered, neither is there any increased febrile action. This disease," continues he, "is confined to the mucous membrane of the colon, and consists of a less acute form of inflammation of this membrane. If not treated successfully, it runs at once into ulceration throughout the whole intestines."

These extracts are taken from Mr. Annesley's octavo work, which contains much valuable information. It appears to me, however, that the term erythematic is most unhappily chosen, at least in contradistinction to the first variety, as the inflammation in both cases may be said to be erythematic.

Great prejudices have prevailed in India, and I fear still exist among the older practitioners, against the employment of general bleeding, both in fevers and dysentery; and the action of calomel is too much trusted to in these diseases. Dr. Johnson and Sir George Ballingall were among the first who, by example and precept, endeavoured to root out this error, by an appeal to the morbid appearances which have been already described. In later times, we have received additional testimony of the advantage of general bleeding. Mr. Annesley, in detailing the treatment of the acute form, when it occurs in plethoric individuals, recommends general bleeding, and states, that much is to be done in a few hours, and if it be not got under control in that time, the patient is either lost, or the basis of a broken constitution is laid. But in those who have been long in India, and, I suppose he means, who have shattered constitutions, he says leeches will answer better, because they "diminish action without destroying power, and any quantity of blood may be taken by them." I cannot agree with this too sweeping statement; for I am certain, by experiment and careful attention, that individuals will bear the loss of blood better, ounce for ounce, by general bleeding, than by leeching. The cause of this remarkable circumstance cannot be determined, although it appears probable that it may in part be attributed to the long-continued unpleasant sensation produced by the biting of the animals and to the fatigue of the operation; but I am satisfied of the fact; leeches are certainly to be preferred, however, when the disease is of long standing; they operate beneficially in many cases, when general blood-letting would no doubt prove injurious. Two great advantages which the lancet possesses over leeches, are, that we can stop the bleeding from a vein in a moment, and promptly alter the determination of blood.

At page 278, of Mr. Annesley's octavo work, the following passage

will be found—"Full doses of calomel, with such other purgatives as act upon the mucous glands are required here, and should be continued without intermission till healthy action is produced." To those who have seen the morbid changes produced on the intestines, who know and are acquainted with the dreadful mortality which is caused by dysentery among Europeans, and who have seen individuals reduced to premature old age sent to this country on the pension list, will join me in stating, that much injury has been inflicted by the mercurial treatment too generally pursued by medical men in the East; and upon which the passage last quoted affords me an opportunity of commenting. At this moment, I have before me the detail of many cases, which have been corroborated by frequent communications with practitioners who have served in India, of the baneful effects of the practice which seems still to be inculcated by Mr. Annesley.

It is the custom in India to give calomel in large and frequently repeated doses, which is followed by the daily exhibition of drastic purgatives, which are given, to use Mr. Annesley's words, "to act upon the *mucous glands*, and are to be continued without intermission." Under this treatment, the proportion of deaths is sometimes so great as 20 per cent., and on some occasions, it has been known to be about 30 per cent. Thus, Sir George Ballingall has shown, that in his majesty's 59th regiment, during eight months of the year 1806, ninety-seven men were affected with dysentery, of which number twenty-eight died. In his majesty's 30th regiment, during seven months in 1807, four hundred and ninety-one men were affected with dysentery, of whom eighty-five died. And in the Royals, during eight months in 1808, five hundred and forty-one men were affected with the disease, of whom ninety-eight died. I have also some details of the result of the mercurial practice in India, in my possession, which show the enormous quantities of calomel exhibited in dysentery of late years, with the bad success of the practice. It is no uncommon thing for an individual to take three hundred grains of pure calomel, before he dies under the digestion of it. One individual took the enormous quantity of five hundred and twenty-three grains; another, six hundred and ninety-five; a third, seven hundred and sixty; and a fourth, nine hundred and seventy-four, which last is somewhat more than sixteen drachms! So far from curing inflammation and ulceration of the mucous membrane of the bowels, there is no plan more likely to produce these states; but it is doubtful whether the calomel or the continued use of drastic purgatives is most injurious. The generality of purgatives operate by producing irritation and increased secretion on the whole mucous surface, which ought to be carefully avoided. It appears that many practitioners act upon the principle of getting rid of the mucous discharge, as if it were lodged in the bowels, acting like a poison; whereas it is to be regarded as the effect of increased action. Let it not be supposed that I object altogether to the use of calomel; on the contrary, I believe that, combined with opium, its occasional use is most advantageous. My observations are only intended to prevent our trusting entirely to its operation, and to guard against its abuse. I shall con-

clude, by quoting the result of Dr. Cheyne's experience in the treatment of dysentery, with respect to mercury, stated in the Dublin Hospital Reports, and that of Mr. Twining in the General Hospital at Calcutta. "Mercury," says Dr. Cheyne, "could not be depended upon, and did not relieve in numerous instances when the mouth was affected, and sometimes seemed to increase the disease; and even when the symptoms distinctly pointed out a morbid organization of the liver, the result of this treatment was unsatisfactory." My own experience in this country, as well as within the tropics, enables me to confirm the above statement.

Mr. Twining, to whose talents and industry medical science stands deeply indebted, recommends venesection and the application of leeches, to decidedly reduce and permanently keep down any frequency and hardness of the pulse. He perseveres in this practice as long as pyrexia exists, or pressure on the belly gives pain, or there is any blood in the stools. He gives a laxative, and then six grains of ipecacuanha powder, with four grains of pil. hydrarg. He rarely uses calomel.

"Notwithstanding all that has been written," says Mr. Twining, "in praise of the general employment of large and repeated doses of calomel in the dysentery of India, whether that medicine be used to the extent of producing salivation or not, it will be easy to show, calomel is often not only useless, but in many cases of the dysentery of Bengal, it is exceedingly injurious. I speak without hesitation on this subject, from having too often seen the fallacy of trusting generally to the effects of calomel for the cure of severe acute dysentery, and having tried that medicine extensively, in every form of the disease."*

Treatment of chronic dysentery.—It must always be recollected, that no case of dysentery is to be regarded as altogether hopeless. From the recoveries which I have seen made, and from the dissections at which I have been present, of individuals who have been long afflicted with the disease, it may be stated as a fact, that the mucous surface heals and becomes restored, if not to its primitive healthy state, at least in such a degree as to preserve life for many years. It is rare, in chronic dysentery, that we shall be called upon to take blood from the arm, but the occasional application of leeches is most serviceable, together with contra-irritation, gentle laxatives, an occasional opiate, and astringent medicines, such as catechu, and solution of sugar of lead, and sulphate of zinc. Great care must be taken of the bowels and the diet; small quantities of light and digestible food are to be allowed at each meal, and the patient should not be permitted to eat oftener of any thing than once in five or six hours. I have been very successful in the treatment of chronic dysentery, by following this plan, together with an occasional warm bath, and long perseverance in the use of tartar-emetic ointment, as well as by the occasional employment of mutton suet boiled in milk, which is to be strained immediately after it is to be taken off the fire, sugar is then to be added, with a little spice to make it palatable; about four

* Vide Diseases of Bengal, by William Twining, Esq., p. 40.

ounces of this are to be taken once or twice a-day, mixed with rice,* if the patient's stomach will bear it. [Radical cures have been derived from a persistence in a diet of gum-water and the farinaceous articles, conjoined with absolute rest.]

CHOLERA.

This term, together with its adjunct, "*morbus*," is employed, even in common language, to express that a person is affected with vomiting and purging.

This disease presents itself to us in two forms: 1*st*. That which has been so long known in this climate, and which occurs so frequently in warm seasons, more particularly when fruit is plentiful, and which is called *cholera morbus*. 2*d*. That form which so long prevailed in the east, and has lately visited Europe, which has obtained the name of *Asiatic cholera*.

1*st*. *Cholera morbus*.—The disease usually presents the following phenomena. The first symptoms are, nausea and griping sensations, which, generally speaking, come on suddenly, and soon terminate in vomiting and purging. In very severe cases, the body, and particularly the extremities, become cold; the breathing is anxious and hurried; the features shrink; the eyes become hollow, with an expression of great anxiety in the countenance; the pulse small and contracted, soon becoming so weak as scarcely to be felt at the wrist; the thirst excessive; cold water is the beverage most preferred, which is no sooner swallowed than rejected. A cramp-like feel is complained of in the legs, and sometimes in the arms, as in the severer cases of diarrhœa and dysentery, and occasionally spasmodic contractions of the muscles of the abdomen take place. The discharge from the bowels, in this country, is generally watery, with very thin and offensive fæces. Occasionally the discharge looks like water in which meat had been soaked; at other times, dark bilious matter is passed in the first stage of the disease, both upwards and downwards, and subsequently the watery discharge takes place.

Sydenham, in treating of the symptoms of cholera, which prevailed in London, in the year 1669, states, that they "often destroy the patient in twenty-four hours."--(Swan's ed. p. 147.) The following case of cholera proved fatal in Dublin in thirteen hours, for the history of which I am indebted to Mr. Marshall.

"Private Dickie, 26th regiment, aged 19, was brought to the hospital on 13th August, 1826, in a state of great exhaustion, labouring under violent vomiting and purging, with which he had been attacked about an hour previously. He is also affected with severe spasmodic action in the bowels, and cramps in the legs; the matter vomited is bitter, and has a dark-green colour—that passed by stool has a dirty gray appearance; face and extremities of a livid hue,

* This is an old remedy; it is mentioned by Sir John Pringle.—The patient should in general be kept ignorant of the nature of the preparation, for fear of exciting disgust.

cold and clammy; no pulse at the wrist; the action of the heart is very obscure; articulates with difficulty, and moans incessantly; he cannot protrude his tongue; eyelids half closed; appears on the point of expiring; and he died before the lapse of twelve hours from the time of his admission, notwithstanding the adoption of the most judicious practice.

"The only probable cause ascertained is, the drinking a quantity of porter before going to bed last night, but not to intoxication."

Causes.—The causes are similar to those which produce other bowel complaints; as cold feet, suppressed perspiration from sudden exposure to cold, cold drinks when the body is much heated from exercise, crude vegetables, fruits, constipation, &c.

Cholera prevails in this country chiefly in the autumn months succeeding to hot summers. In 1808, many very bad cases fell under my notice, and again in the autumn of 1825.

Treatment.—An emetic, consisting of a teaspoonful of mustard, in a large tumbler of warm water, is often very serviceable when a suspicion is entertained of acrid matter in the stomach, whether it be vitiated bile, or indigestible food. Fomentations should be applied to the abdomen, and the extremities warmed.

It is too much the practice to exhibit strong purgatives in such cases, with a view of assisting nature to expel quickly offending matter from the intestines; but I could never convince my mind of the propriety of such a proceeding, when the evacuations are already so numerous; on the contrary, it always appeared to me that opiates are indicated, and experience has convinced me of the necessity of this practice. Opium ought to be conjoined with calomel, in the proportion of two grains to three or four grains of opium for an adult.* These two powerful remedies conjoined are found to allay irritability of stomach better than any other means. The calomel may be of service in improving the secretions; particularly the secretion of bile, if it be disordered. But large and repeated opiates, by the rectum as well as by the mouth, are frequently necessary. Stimulants are always to be exhibited when the extremities are cold, when the countenance and pulse exhibit signs of exhaustion, and when there are much irritability of stomach and pain in the abdomen. In general, brandy, or some other form of ardent spirits, is required.

[If, however, the disease does not yield to this simple treatment, and especially, if there should be great pain in the bowels, cups or leeches should be applied, or a stimulating poultice of bran and flaxseed moistened with spirits and put on hot. Occasionally the reaction is so considerable as to require bleeding from the arm: and it is not uncommon for dysenteric symptoms to ensue.]

During recovery, care must be taken to restore the healthy action of the stomach and bowels, by gentle, unirritating aperients; perhaps a short alterative mercurial course, and slight bitters, may be of use. The stimulants should be withdrawn by degrees, and finally omitted as the case improves; and the stomach should not be oppressed too

* [I have seen the best effects from much smaller doses, viz.: a quarter of a grain of calomel and the same of opium repeated every half hour; or the calomel may be exhibited in small doses in gum-water, without opium.]

early with food. The most suitable diet on the subsidence of the vomiting, is gum-water, and the farinaceous articles.

2*d. Asiatic cholera.*—This, the most formidable disease of modern times, has obtained several appellations, viz., cholera spasmodica, cholera asphyxia, &c. The term "Asiatic Cholera," is adopted in this work, until a proper pathological name can be given to the disease: every one, even in common life, knows its signification, while the other appellations imply erroneous theoretical views of the nature and seat of the disease, the adjunct "Asphyxia" being quite as appropriate to pneumonia, bronchitis, or fever of any variety. In truth, it might be added to the name of any dangerous disease, as most people "die from want of breath."

Nearly two hundred years ago, a Portuguese, named Mandelo, in describing the diseases at Goa, makes the following statement: —"The change of seasons from one extremity to another, is the cause of many diseases among the Portuguese, but the most common are those which they call *Mordexin** or *Mordechin*, (the Hindostanee name for cholera,) which kills immediately,—burning fevers and bloody fluxes, against which they have in a manner no remedy but bleeding."†

Cholera appeared in India in the worst form in which it had been observed by any living individual, in August 1817; since which time it has attracted very great attention. It has also been observed in the islands situated in the Indian seas; more lately, many thousands of the inhabitants of Russia and Poland have fallen its victims, and it has since visited most parts of Europe and America, causing everywhere the most frightful ravages, and sparing, comparatively, few of those it attacked.

[*Geographical sketch.*—Previously to the year 1817, the cholera appeared most generally in the *sporadic* or *endemic* form. But about the middle of August of the above year, it assumed the character of an epidemic, and extended with rapidity over Hindostan. Since that epoch, it has traversed seas, oceans and continents. Its commencement was at Jessore, a town situated 70 or 80 miles east of Calcutta. A Hindoo was first taken with vomiting and purging, and expired in great agony, upon the second day. His death was attributed to eating spoiled rice; but the same day, seventeen individuals, presenting similar symptoms, likewise died. The disease then increased so as to destroy one-tenth of the entire population. It should be stated, as some assert, that the cholera appeared as early as the month of May, in the districts of Behar and Dacca.

In a few weeks, the epidemic extended to the capital of British India, having prevailed with violence at the intermediate towns. At Calcutta, it did not reach the height of its severity for nearly a month, and the natives were among the first victims.

During four months it pervaded the provinces of northern and

* This term has been corrupted into *mort de chien*, as Mr. Marshall informs me, by a pun made by Sonnerat.

† Travels into India in 1639, by John Albert de Mandelo, published in London, in 1662, with the voyages and travels of the ambassadors, &c. &c.

eastern Bengal, and then took a westward direction, towards the confluence of the Ganges and Jumna, where its progress was stayed; but it soon broke out with increased mortality in the rich and commercial town of Benares. This being the holy city of the Hindoos, doubtless suffered more from the crowd of worshippers often there assembled; for it is computed that 15,000 persons died in less than two months. The deaths in one single district of Hindostan proper, amounted to thirty thousand.

The English army, under the command of the Marquis of Hastings suffered most severely. The several divisions were encamped upon the banks of the Sinde, and their condition is thus forcibly portrayed by an eye witness:* "It was here the disease put forth all its strength, and assumed its most deadly and appalling form: the old and the young, the European and the native, fighting men and camp-followers were alike subject to its visits; and all equally sunk, in a few hours, under its most powerful grasp." Nearly nine thousand were cut off in one fatal week.

The epidemic next ravaged the countries lying between the rivers Nerbuddah and Kistna; and in twelve months from its appearance at Calcutta, it traversed the greater part of Hindostan.

There was no uniform order of progression; for Bombay on the western, and Madras on the eastern coast, were invaded in August, 1818; the difference of invasion being only two days.

As it is not intended to detail very minutely its march from place to place, we shall merely observe that in 1819, the disease manifested itself at Ceylon, and taking an eastern course, appeared at Malacca, Java, and other of the Oceanic islands; advancing then in a northerly direction, it entered the kingdom of Siam, and destroyed 40,000 persons in the town of Bankok. In 1820, Cochin China and Tonquin were invaded, together with other parts of Eastern Asia.

Its progress has been traced north and east of Hindostan: let us now follow its course northwest. Starting from Bombay, it crossed the sea of Arabia, to the city of Muscat, one of the principal commercial ports of Arabia. This was in 1821. Here its mortality was truly frightful, for 6,000 died, many of whom were not sick above a few hours; and we are told, "that the living did not trouble themselves to bury the dead; but sewing the bodies up in mats, turned them adrift into the harbour. The chief port-towns along the Persian Gulf felt the influence of the pestilence, particularly Bassora, where nearly a thousand died daily for fifteen days; while at Bagdad 30,000 perished.

In 1822, Servia and Turkey were affected by the disease, together with other neighbouring countries; and the following year it appeared along the Asiatic coast of the Mediterranean, and at the same time took a retrograde tract, and showed itself at a town bordering upon the Caspian sea, and shortly after at Astracan.

During 1824–5–6 and 7, it revisited many of the countries already mentioned.

Astracan was attacked a second time in 1830, together with the

[* Dr. James Jameson.]

adjoining provinces; and during this and the succeeding year, the ravages of the cholera throughout Poland, Austria, Russia, and along the coast of the German Ocean, are well known. In October 1831, it prevailed at Hamburg; and about the latter end of the month, it appeared in England at Sunderland, on the river Ware. Advancing northerly, it entered Edinburgh, in Scotland, and prevailed there and in the neighbouring places with considerable mortality, in the early part of 1832. At the same time that the towns in the north were attacked, those in the south also suffered; for London had become the seat of the disease in February; here, however, the number of deaths was very small in comparison to other places. About the last of March, the epidemic was raging at Cork and Dublin, in Ireland, but did not continue long either there or in Scotland.

On the 26th of March, it was officially announced that the disease had reached Paris, although the supposition was that it had existed there for some time previously; however, from this date it spread rapidly. At first those living in the densely populated and filthy parts of the town were seized, and its earliest victims were those wretched and imprudent mendicants who infest the environs of all large cities; but eventually it made less distinction, and attacked many persons in higher ranks of life. Its mortality can be judged of, when it is stated that between ten and eleven thousand perished in less than a month. From Paris it pervaded the greater part of France.

We shall now contemplate the progress of the cholera upon our own continent.

In fifteen years from the irruption of the malady in the Delta of the Ganges, it spread over Asia, traversed Europe, and commenced the work of death upon the banks of the St. Lawrence, without any mitigation of severity.

Quebec was first attacked on the 8th of June, 1832. It broke out among the Canadian French, and emigrants, many of the latter having just arrived from Europe in utter indigence. The number of cases and of deaths increased alarmingly, and 2000 were eventually destroyed. The height of its violence was attained as early as the seventh day; and it continued moreover to rage, with greater or less fatality, for three months. Montreal was affected two days subsequent to Quebec: being one hundred and eighty miles southwest of that city.

Meanwhile the pestilence visited the towns and villages along the St. Lawrence, and many places both on the British and American shores of the lakes.

It appeared at New York on the 24th of June; but the Board of Health did not commence to report cases until the 5th of July, when twenty-one were announced. There, as in other places, no communication could be detected between the original cases. New York, from this visitation, lost nearly three thousand inhabitants. From this city the cholera passed up the Hudson river, and on the 3d of July, showed itself at Albany.

The towns immediate to the two cities remained unaffected, at that time, but have suffered more or less since. "From the apparent

progress of the disease from Asia into Europe, it was supposed to have been transmitted along the great routes, communicating from one country to another. In the instance of Quebec, this general fact meets a contradiction. The disease commencing at Quebec, ascended the St. Lawrence, and passed along the lakes until it reached the Mississippi and Missouri. It did not follow the land route into the states."*

In Philadelphia, the first well-marked instance of cholera occurred on the 5th of July. Four days after, a second case was announced, and from this date up to the 30th, there was a slight increase of cases. It raged with the greatest violence amongst the inmates of Arch-street Prison and the Philadelphia Almshouse, although cases were scattered all over the city. The maximum of cases and of deaths happened between the 6th and 10th of August, inclusive. During these four days, 722 cases, and 287 deaths were reported. By the 26th inst., the epidemic had nearly subsided. On that day, only seven new cases were announced.

In Philadelphia, as in Cincinnati and in other places, the black population were more obnoxious to the epidemic than the whites; and it was more fatal among adults, likewise, than children—among men than among women.

Dr. Jackson remarks, "during the prevalence of the epidemic" in Philadelphia "an augmentation of other diseases took place, with an increase of their mortality. The diseases which appeared to be thus influenced by the epidemic, were those congeneric in character to the cholera, such as inflammatory diseases generally, gastric and enteritic disorders, gastro-enteritic fevers, inflammation of the abdominal viscera."

During the months of July and August, the cholera was prevalent in several sections of New Jersey and Delaware.

About the first of October, after the disease had continued three months along the valley of the St. Lawrence, it suddenly broke out at Cincinnati.

"Nearly simultaneously with the invasion of Cincinnati, Madison, at the distance of 80 miles, Louisville 150 miles, and St. Louis 400 miles below, were attacked; and by the latter end of the month it broke out at New Orleans."†

Departing from the banks of the Ohio, it proceeded to the neighbouring states — to Tennessee, Illinois, Indiana, and Kentucky. Several of the towns of the first and last-mentioned states suffered very much, particularly Lexington, Maysville, Danville, and Shelbyville.

Subsequently, the epidemic diffused itself through the valley of the Mississippi, and raged with great severity among the slaves at the south and west.

During the same year the cholera appeared in its most appalling form at Campeché in Spanish America. Here, in one month, 4000 out of a population of twenty thousand, fell victims to the scourge. In one day 400 were buried. Such was the dismay of the inhabit-

[* Dr. Jackson on Malignant Cholera.] [† Dr. Drake.]

ants that houses were closed, streets deserted, and the physicians fled or secluded themselves. Coffins and graves were denied to some of the most respectable inhabitants. They did not pretend to give burials individually to the dead. Bodies were heaped together, and conveyed to the water's edge, where they received a partial covering of sand. The remains of several who attempted to fly into the country, were found partly eaten up by birds, or beasts of prey. What is singular, we are told that the susceptibility of those exposed to the malady, was dependent upon, or modified by, the proportion of impure or negro blood which they contained. Instances occurred where all the domestics of large families were cut off, and not a white took the disease.

The epidemic has since appeared in Cuba, and the Charib Islands, and has revisited, with different degrees of violence, various parts of the United States. The seaport towns, with few exceptions, have been comparatively free from it. Sporadic cases of the disease have continued to occur in various parts of this country; and in the month of September, 1836, it assumed the epidemic form in Charleston, South Carolina, where it showed considerable malignity.]

In the former editions of this work, I was necessitated to compile the article on cholera from what were considered the best sources, having never had an opportunity of investigating the disease myself. Since then, I have unfortunately had ample means of seeing the disease, and investigating its nature and seat, having acted as physician to the Drummond-street cholera hospital, in Edinburgh;* into which

* It was with much reluctance that I accepted the appointment, from a feeling that, having a large family, I had no right to place myself in such a dangerous position. I likewise felt that my health, which was then rather impaired, would break up under an increased demand made upon my time, already too much occupied; and lastly, that my private practice must suffer considerable injury, as few people, when cholera was almost universally believed to be contagious, would send for me, knowing that I might come to them loaded with the contagious virus from the hospital. With all these feelings against the undertaking, and the urgent entreaties of particular friends, and having, at the same time, neither expectation of reward to myself if I survived, nor suitable provision to my family if I perished, I at last accepted the office; having done so, I made every preparation, even by increasing my establishment of horses, to enable me to perform the duties to the best of my ability. The disease lingered a long time in Edinburgh and its vicinity. The Drummond-street hospital was in great favour with the suffering poor; on an average, during the eleven months that cholera prevailed, I made seven visits daily, often the number amounted to ten. Every night, with few exceptions, I made a visit between the hours of twelve and two. During the epidemic, I remained in the hospital, going from room to room, thirty complete nights—which was sometimes necessary, from the young medical gentlemen being worn out, and also from the drunkenness that too often prevailed among the nurses. With few exceptions, each body was carefully examined after death, with a view of unravelling the mysteries of this dreadful disease, and ascertaining its true pathological character, and, for the most part, these examinations were conducted with my own hands. Two hundred and eighty bodies were opened, and we were generally occupied two hours with each. Twice was I seriously injured with punctures; and on one of these occasions, my life was in jeopardy, from the inflammation spreading along the absorbents, accompanied by erysipelas of the whole arm and side of the body. Had I expected any honour or reward for my services, how grievously disappointed must I have been! The epidemic having at length terminated, there was no offer to remunerate me even for the expense incurred in purchasing and keeping an additional pair of carriage horses; there was no letter of thanks,

establishment there were received 461 patients, of which number 291 died; of these, 280 were examined most minutely, to ascertain the cause of death.

Phenomena.—The disease consists of three stages. The first stage may be called *premonitory;* the second, *the stage of collapse;* the third, that *of consecutive fever.*

The 1st *stage* is characterized by symptoms of indigestion, flatulent disturbance in the abdomen, præcordial weight or oppression, slight nausea, acidity, griping pains, diarrhœa,* vertigo, some degree of headache, or tinnitus. These symptoms, even when accompanied by spasms, are too often either disregarded or concealed, till the second stage is far advanced. It is most unfortunate, that this reluctance to confess the early part of the indisposition should so frequently exist in all classes of society, but particularly among the poor, because few of the more severe maladies to which flesh is heir are so remediable as cholera in the first stage, and not one more hopeless after the lapse of a few short hours.

It is stated by the Russian physicians, that at Orenberg, Moscow, and other places, scarcely a person escaped during the season when cholera prevailed, without some disorder of the stomach and bowels —indicated by nausea, vomiting, and oppression at præcordia, indigestion, pain in the belly, and looseness of bowels. Many instances of disorder of the stomach and bowels prevailed during the epidemic season, and for some weeks before there was a well-marked case of cholera in Edinburgh.

2d Stage.—The duration of the premonitory or first stage is various; sometimes the unpleasant symptoms suddenly cease, and the patients recover quickly; but this happy issue is comparatively rare, when proper remedies are not used; and, in some few cases, from the peculiarity of constitution of the patient, remedies seem to have little effect in arresting the progress of the disease, even when applied in this early stage. The stools, which were at first feculent and bilious, now become characteristic of the true Asiatic cholera. They have the appearance of very thin gruel, or rice-water; sometimes they are watery, limpid, with small flakes of curdy-looking

till the circumstance was mentioned to one of the members of the board of health, who went to the office, and desired the secretary "to write a letter of thanks to Dr. Mackintosh, and that he could scarcely make it too strong!!" Knowing the irregular and shabby manner in which it was got up, I put no value upon this document, and this is my only reward! Soon afterwards, two vacancies for physicians took place in the Royal Infirmary of Edinburgh. I will confess I was most anxious to obtain one of the appointments, but felt reluctant to become a candidate, till a memorial was presented to me, signed by almost all the students, attending the Royal Infirmary, requesting me, for their sakes, to offer my services. The influential managers of the infirmary had been members of the board of health; they all knew, and acknowledged to me privately that they knew of my great exertions, not only in attending the sick, but in investigating the nature and seat of the disease, and in having mainly assisted in organizing an efficient hospital establishment. But when the day of election arrived, I was passed over; for which I stand indebted to the honourable medical managers. To console me for this disappointment, I had, by calculation, sustained a loss of two hundred pounds by the falling off of my private practice. This is my case, and I take this opportunity of giving it publicity.

[* In the United States, diarrhœa was most generally present hours, or days prior to an attack, but this premonition was not uniform; for in some of the worst cases we met with, the bowels, up to the moment of the disease, were not deranged.]

matter intermixed; at other times, they present an appearance of water in which fresh beef had macerated. The usual feculent smell has vanished, instead of which the stools have a peculiar odour, which struck me to resemble that produced by macerating fish in water; a similar odour is generally observed from the surface of the body. More rarely, the stools look like the lees of port-wine; and it was remarked, that almost none recovered who passed "port-wine stools;" I recollect at present one recovery only in which there was this appearance—it was the case of Field, who was saved by saline injection into the circulation. The desire to go to stool is irresistible and instantaneous; tenesmus is great in some cases, sometimes preceded or accompanied by a sense of heat or griping. The stools are generally very copious—sometimes, however, scanty; often accompanied by loud discharges of flatus from the bowels. Along with the bowel-complaint, there are burning heat in the region of the stomach, and vomiting of large quantities of a similar fluid from the stomach. The abdomen feels doughy. The thirst is intense, and there exists an urgent desire to drink cold water. The mind, for the most part, remains comparatively entire, but the vertigo and tinnitus increase. Cramps are general attendants—sometimes confined to the fingers and toes; at other times they affect the muscles of the extremities, and often those of the trunk of the body, more particularly of the abdomen. The urine is generally suppressed early in the disease. The voice is whispering, the person being unable to speak in any other tone. The respiration, although weak, is often nearly natural in other respects, even at times when the pulse is scarcely perceptible at the wrist; occasionally, however, the breathing is hurried and oppressed, sometimes laborious. The pulse becomes weak and rapid early in the disease, even when the action of the heart is comparatively strong and tumultuous; but frequently both the pulse and action of the heart are feeble. As the disease goes on, both become more and more weak; the pulse is only now and then felt, like a "flutter," and often ceases to be perceptible at the wrist for some hours before death. The tongue is cold and shrunk. It is quite painful to a bystander to watch the restlessness and impatience of the sufferers, who are constantly in a state of jactitation, more particularly when restrained, and when heat is applied. Indeed, they seem to have a horror at, and to suffer pain from, warm applications. The temperature of the body, but more particularly of the extremities, diminishes early in the disease, and goes on sinking. It is often impossible to raise the temperature of the body during life, but the moment death takes place, and for two or three hours afterwards, the body becomes warm—even the icy coldness of the extremities gives place to a genial warmth. The colour of the hands and feet becomes changed, more particularly the nails assume a blue appearance; the face often is similarly affected; occasionally the whole surface presents a blue colour, and, consequently, the second stage has sometimes been termed "the blue stage;" but it is an error to suppose that the blueness is invariable, or that it is an attendant only on the worst forms of the complaint—the patient who had this appearance more strongly marked than any

other was the one who made the most rapid and the most complete recovery. Blood drawn from an artery or vein during this stage, flows with difficulty, is of a dark colour, does not coagulate or separate any serum. It remains in a semi-fluid state, and has the appearance which the ancients called "*dissolved blood.*" The surface of the body is covered, for the most part, with a cold exudation, the features and eyeballs shrink, and death closes the scene—sometimes very unexpectedly, at others the body seems to have been long dead, while the functions of the brain are still going on and comparatively entire.

Sometimes the prostration of strength is extreme; but it is my belief, that muscular debility is no part of the disease, till far advanced in the second, or collapsed stage. I have been surprised at the efforts made by patients when they were thought to be near death. Several patients ran to the hospital after seizure, and one walked from Bonnington Bridge, near Newhaven, to Drummond-street, a distance of two and a half miles at least; he was as blue as indigo, and his pulse was so weak, before starting, that it could scarcely be felt. The appearance of muscular debility is occasioned by the vertigo, which renders the gait unsteady and tottering, as well as by the dread of motion producing cramps.

Many exceptions might be made to this account of the symptoms in these two stages. Sometimes no premonitory symptoms can be traced. I know of one case, where the person appeared to have died under the effects of the first attack of cramps; he was known to have laboured under slight bowel-complaint for several days, but he did not confine himself, and was lying without any complaint on a sofa; he was dressed, and engaged in reading. A noise was heard, and he was soon after found on the floor on his face, dead, with the book clenched in his hand, and his muscles rigid.—I have seen several cases where the urine was not entirely suppressed, and others in which the stools were feculent and bilious up to the moment of death. But those cases are to be regarded as exceptions to the rule, which they do not contravene. The symptoms, in this disease, as in all others, must suffer modifications from peculiarity of constitution, previous condition of health, and habits of the patient affected.

The symptoms which present the most unerring characteristics of Asiatic cholera, are diarrhœa, and other symptoms of disordered stomach and bowels, in the first or premonitory stage. I believe previous diarrhœa may be discovered in at least four out of six cases, and probably exists in all, if the history of each were perfect. Thus, in the city of Albany, U. S., diarrhœa occurred in 282 out of 336 cases; in the remaining 54, it could not be ascertained whether this symptom had or had not existed. In the stage of collapse, there are the whispering voice, great restlessness, characteristic discharge upwards and downwards, cramps, suppression of urine, excessive thirst, weak, faltering pulse, weak respiration, coldness of the extremities, shriveled hands and feet, bedewed with a cold exudation. The general blueness, when it exists, is also quite peculiar to cholera. It is remarkable how quickly an extremely collapsed state of the features takes place. The blood-vessels, on such parts of the body

as the temples, where they are comparatively superficial and easily seen, are observed to be full of blood of a very dark colour; even the serpentine branches of the temporal artery can be traced in this manner, and the motion of the blood is very slow.

3*d Stage.*—A large proportion of patients died in the 2d stage; there were few immediate recoveries from collapse, without undergoing the danger and miseries of a consecutive fever, which is now to be described. I shall never forget the joy expressed by all who were watching the first case of cholera in which death did not take place in the stage of collapse. This feeling was increased as the watery diarrhœa, vomiting, and cramps diminished, and at last ceased, and as reaction became more evident and permanent. Nor shall I attempt to describe the subsequent disappointment, as bad symptoms arose one after another, to convince us that the patient, although he had made an escape from one set of dangers, was still surrounded by another, which experience speedily proved to us was extremely formidable.

The symptoms that denoted an escape from the horrors of the second stage, were, diminution in the number and quantity of the evacuations, both from the bowels and stomach; cessation of restlessness, thirst, and cramps; increase of the temperature of the body, and strength of the pulse; an expression of animation in the countenance, and a disposition to sleep. Sometimes the stools lost the characteristic watery appearance, and became feculent; but this change was generally gradual. Sometimes the secretion of urine took place early after the reaction was established, but this favourable circumstance rarely occurred so soon. In some cases, after every thing appeared to be going on well, the vomiting and purging suddenly returned, the pulse became weak and quick, and the patient rapidly died.

The phenomena of the third stage presented every appearance of fever; sometimes of that form denominated in this country "typhus," and in several cases a similitude was easily traced to the last stage of yellow fever. In fact, the general opinion that was, and still is maintained, that cholera is nothing but a fever, with violent irritability of stomach and bowels, suppression of the secretions of bile and urine, with a cold stage, appeared to derive support from the resemblance to the phenomena of intermittent fever. But it will soon be in my power to show how erroneous this opinion really is, when the pathology of cholera falls to be considered.

After the complete development of reaction, patients for a time appear to be doing very well, not teased with violent tenesmus and vomiting, nor disturbed with intense thirst and violent cramps. The restlessness has ceased, and they seem to be enjoying tranquillity. But this state is generally to be regarded as a calm which is soon to be followed by a storm. The subsequent symptoms vary much in different cases, depending on the previous state of health and habits of the patient, and his peculiarities of constitution, as well as on the phenomena of the previous stage, and the treatment pursued.

These symptoms were, lethargy or coma, which were frequent; delirium; convulsions; paralysis; rigidity of the flexor muscles of

the extremities; distressing nausea; bilious vomiting, and thirst; dyspnœa, or hurried respiration; cough, expectoration; palpitation and irregular action of the heart, and more or less heat of skin; bilious diarrhœa; port-wine stools; tenesmus; and pain or tenderness, increased on pressure, in some part of the abdomen. Of all these symptoms, convulsions were the most rare. The others existed variously combined and modified.

Causes of cholera.—The undivided opinion of medical men, who saw the disease in India, is, that in the east it is not contagious. After the appearance of cholera in Russia and Poland, however, a belief became prevalent that the disease had been modified by climate, and the habits of the people in Europe; that it had more resemblance to a fever, and was highly contagious. There were few medical men who were not influenced by this specious statement; and I confess that my mind was at one time so strongly impressed with the belief in the contagious nature of the disease, that for the first five or six weeks after its appearance in Edinburgh, when I retired to bed at night, I scarcely expected to find myself alive in the morning. But my fears were at last dispelled, and my opinion is, that, if it be contagious, it is not so in any very great degree. The following are the grounds on which this opinion is formed.—It was intimated to me, by authority, that, as the disease was so contagious, every possible precaution must be taken to prevent its extension, and that *few bodies could be allowed to be opened*, as the contagion was more virulent and searching after than before death. But from the moment my mind was made up to accept the appointment, I resolved that fear should not be allowed either to interfere with my attendance on the sick, or to hinder my investigations after death. Accordingly, in attending the first case of cholera in the hospital, I remained in the ward all night, and became so much exhausted, that I fell fast asleep in the bed next the dying person, and slept for above an hour, at a time when my animal spirits were low, and my physical strength diminished by the fatigues of the previous day. Subsequently, I have more than once accidentally fallen asleep on a bed on which some unfortunate had died, and in a ward in which there were several dying persons at the time. None of the house surgeons, the number being between twenty and thirty, who were seldom out of the wards, had the disease; although their bodies must have been ready to receive the contagion, if fatigue of body, anxiety of mind, and want of sleep, ever predisposed any person to take a disease. Two male nurses had cholera. One was a sober man, and although he had the warning diarrhœa, he neglected himself, but had the disease slightly. The other was a complete tippler; he had a slight bowel-complaint, which he concealed, and by way of curing it, obtained leave to go home to see his family; he got drunk, and was brought to the hospital with cholera, but never became collapsed. Several female nurses were also attacked; but that is no wonder; for, independent of the fatigue they underwent, they were drunkards, and bad characters in other respects; and were actually in the habit of drinking the spirits and wine served out to their patients. Two of these characters, after much fatigue and a hard

course of drinking, went to bed one night quite drunk; they were both speedily seized with cholera—one died. But there is no proof of the influence of contagion in these cases. In truth, no case has ever been advanced in proof of the contagious nature of cholera that cannot be explained on other and more satisfactory principles. Is it because four children, with father and mother, in one family, have had cholera, and because communication can be proved between them and an infected house, by means of a bundle of dirty clothes, or a web of linen, or actual personal contact, that we are rashly to attribute the whole to contagion? The same story may, perhaps, be told in a different way. The father is a dissipated good-for-nothing man, who spends almost all his wages on whisky; he deprives his family of the means of procuring suitable nourishment; the poor mother has pawned her last blanket, to purchase a few potatoes for her starving children, who have all had loose bowels for several days or weeks. The explanation is easy to show the strong predisposing cause—insufficient clothing, deficiency of food, &c. What answer can be made to this fact, that I have seen several mothers suckle their children when they themselves were dying of cholera, and in one instance I found an infant suckling its dead mother's breast—and yet not one of them had a symptom of cholera, at least for months afterwards? The wife of the first person attacked with cholera in Edinburgh, was found "*dead drunk*," lying with her face on the breast of her dead husband, whom she had robbed of his stimulants; yet she escaped the disease!—I shall drop this subject, after submitting the following statement to my readers. In the Drummond-street cholera hospital there were 280 bodies examined. Two, and sometimes three hours, were spent in examining each body. From the economical arrangement of the board of health, and the difficulty of procuring a proper apartment, the dead-room, where these examinations were conducted, was a miserable place about eight feet square; generally six or eight persons were present, sometimes more; and in an inner apartment, about ten feet square, there sometimes lay six dead bodies. Not one of those who frequented this den of death, and who had their hands imbrued in the secretions of the dead for six hours out of the twenty-four, were affected with cholera, although their hands were irritated and punctured daily!

[It may be added, that when the cholera was raging in Moscow, it is said that 40,000 persons fled to the country; but there was no instance of the disease having been conveyed by them to the districts that received them.

Dr. Jackson remarks, that "the routes or lines of communication leading from the river St. Lawrence to the United States do not appear to have been the means of conducting it into our territories, for it commenced in New York without a possibility of tracing its immediate origin."

Further, contagious diseases generally advance slowly and progressively; but we have seen, both in this country and abroad, that towns, hundreds of miles distant from each other, were affected almost at the same time.

In Philadelphia, the first cases reported were in separate and distinct parts of the city, and had no intercourse with each other. In New York, and some of the western towns, similar facts were noticed; facts which are directly opposed to the acknowledged phenomena of contagion.

If the contagious theory be correct, we cannot understand how it is that the epidemic has often skipped from one point to another at a distance, leaving the intermediate places unaffected: as illustrations, we refer to the immunity of villages between Canada and Cincinnati to the healthiness of the towns between New York and Albany, &c., at the very time that the disease existed in those places themselves. Instances of the kind were numerous in this country; but we shall close these remarks by the following striking facts, (which are sufficiently conclusive,) from the last edition of Dr. Eberle's Practice of Physic.

"In the report of the extraordinary committee of health at Moscow, it is stated 'that at the opening of bodies of persons who had died of cholera, to the minute inspection of which four or five hours a day, for nearly a month, were devoted, neither those who attended at the operations, nor any of the assisting physicians, nor any attendants, caught the infection, although, with the exception of the first day, scarcely any precautions were used.' In the cholera hospital of this city, (Cincinnati,) in which, during a period of nearly five weeks, there were constantly from fifteen to twenty cholera patients, not a single case of the disease occurred among the attending physicians, nurses and other attendants, although some of these remained in the wards day and night, during the whole period, and frequently slept on beds where cholera patients had lain and died. Dr. Walker, speaking of the disease as it prevailed at Moscow, says, that 'persons had put on the clothes of patients who were very ill, or had died of cholera—had lain in their beds, and even along side of dead bodies—had bathed in the same water where very bad cholera patients had been bathed just before, and that, notwithstanding, not one of these individuals was attacked with the disease.'"]

It cannot be denied that some mysterious influence was operating at the period cholera prevailed, by whatever name it may be called —that it selected its own victims—exercised its poisonous qualities in one district, town, or hamlet, more than in another—changed the scene of its ravages suddenly and capriciously, and made its progress from place to place, by strange detours, avoiding many populous situations, in the direct tract of human intercourse.

This influence showed its visible effects on the stomach and bowels, by embarrassing the functions of the various organs connected with the digestive functions. Mr. Dick, the professor of veterinary medicine in Edinburgh, published a paper in the "Veterinarian" for April, 1833, wherein it is shown that cholera was by no means uncommon among domestic animals, particularly horses and cows, during the epidemic season in Edinburgh. They had diarrhœa and rigid cramps; the blood was viscid and dark; the discharge from the bowels resembled that from the human subject. Several animals

died suddenly, and the appearance, on dissection, resembled those in the human subject, particularly in the stomach and bowels.

Were any persons more prone to contract cholera than others? This is an important question, and it is rare that a point in medical investigation can be so satisfactorily answered. All who had any important visceral disease, or tendency to bowel-complaint from slight causes, and drunkards, were the persons generally attacked. It is no doubt certain, that in each locality where cholera prevailed, some instances may be quoted to the contrary; but these are very few indeed, and are to be regarded as exceptions to the general rule. Nothing could be more unsatisfactory than the accounts we received of the previous health and habits of patients; very frequently we found them to be quite the opposite of what had been stated; but when we opened the bodies, in the careful and minute manner in which the dissections were conducted, we had the best evidence that few subjects were even tolerably sound.

Persons advanced in age, had, in the epidemic that I saw, a bad chance of recovery. Females seemed to be more liable to the disease than males. Almost every woman we opened, under a certain age, had the catamenia; and we found a great number of diseases, of various kinds, of the uterus, ovaries, tubes, and broad ligaments.

Morbid appearances observed in cholera.—These might be divided into those appearances connected, and those unconnected, with cholera. It appears to be not only proper, but necessary, to separate these into two classes of morbid appearances, when we are collecting evidence to enable us to draw legitimate conclusions regarding the nature and seat of any disease. This may not be easy, or even possible, in every case of cholera; but in general it is a task readily achieved by any one who has been so much employed as I have been, for nearly thirty years, in making pathological researches. A distinction must also be made between the appearances found in persons who died in the stage of collapse, and those in the consecutive fever, or third stage.

Among the appearances we met with unconnected with cholera, may be mentioned, tumours, and old abscesses in the brain; ancient thickenings, and osseous productions of the membranes; diseases of the heart, lungs, and blood-vessels; morbid lesions of the liver, gall-bladder, and ducts of the spleen, kidneys, and uterus, of the stomach and bowels. Diseases of these organs we saw in almost every case, either singly or in various combinations. Although this distinction is necessary when employed in searching for the true nature and seat of cholera, yet all the morbid appearances must be again combined in considering the dreadful mortality of the disease. In doing so now it appears to me that the influence, whatever it may be, whether electrical, dietetical, atmospherical or terrestrial, selects diseased subjects.

No other conclusion can be drawn from the facts I have seen. On the other hand, some of these appearances, such as ulcerations of the bowels, diseases of the kidneys, extensive diseases of the lungs and heart, and more particularly extensive diseases in the inner surface of the arteries, must be placed in pathological connection with other

circumstances, to enable us to account for the varieties of the disease, the occurrence of certain symptoms, their obstinacy, the effects of remedial agents, as well as the causes of death.

The morbid appearances peculiar to cholera observed in those persons who died in the collapsed stage.—The blood attracted our attention in the first dissection, and it had the same appearances to the last. It was dark-coloured, and had lost much of its fluidity; this was expected, from the accounts that had previously reached us from other countries. But we were astonished to find that it was contained in the arteries and veins, in the most minute capillary, as well as in the larger vessels; that it had the same dark colour in both sets of vessels, to some of them containing a small quantity, others being enormously distended.* The capillaries and large veins on the surface of the body contained as much blood after death as during life. On opening a vein in the dead body, the blood flowed almost as readily as it had done during life in the same person. The surface therefore retained the same dark appearance as it presented during life, and the muscles were of a dark red colour. In the act of death, or immediately afterwards, in all other diseases, the blood leaves the capillaries, recedes from the surface, and collects in the heart and large veins near it; the arterial system is generally quite empty, but occasionally a little blood is found in the aorta. Here are at once observed three remarkable facts; 1*st*. An alteration in the appearance and consistence of the vital fluid; 2*d*. A change in its distribution; 3*d*. Blood can be drawn from a vein almost as readily after death as during life; and the important circumstance may be noticed, that there was an appearance everywhere of abundance of blood. Every incision that was made even in parts not depending, occasioned a flow of blood, so as often to be troublesome, by impeding our examinations. Some thought the blood oily.

In the head.—Great vascularity was observed on the surface of the brain and in the membranes;—not only were the capillaries injected, but the trunks of both arteries and veins were filled with blood —the vertebrals, carotids, and circle of Willis, as well as the vena Galeni, and the longitudinal and lateral sinuses. In the longitudinal and lateral sinuse, however, the blood was not always in a semi-fluid state, but often coagulated; and sometimes there was a fibrous clot extending through the course of the sinuses of the brain, into the jugular veins. This appearance of fibrine was observed also in those who died in the consecutive fever. On the lateral surfaces of the hemispheres of the brain, we frequently observed an extensive ecchymotic patch; sometimes there were several patches of this kind. This appearance was produced by an effusion of bloody serum between the arachnoid and pia mater. The injection on the surface of the brain was more florid than that in any other part of the body. The ecchymotic spot occupied in some cases only about an inch and a half in length; in others it was very extensive, involving the whole of the hemispheres, and occasionally extending down between them.

* In one case the following were the dimensions of some of the abdominal vessels: Diameter of abdominal aorta, 1 inch; above the bifurcation, 6-10ths of an inch.
——— Cava, 1 inch and 3-5ths.
——— Emulgent Vein, 8-10ths of an inch.

The vessels of the pia mater, the velum interpositum, the plexus choroides, and the lining membrane of the ventricles, were injected. The surface of the fourth ventricle, in general so white, was seen vascular, occasionally slightly strained with blood. The ventricles, whenever they were examined with a view of ascertaining the point, were found to contain a considerable, sometimes a large quantity of serum. Sections of the brain displayed the cortical substance much darker than usual, and the brain generally exceedingly vascular. As soon as a section was made, there immediately appeared numerous large drops of blood, in size and number much greater than are observed in other diseases, even in active inflammation of the brain. In above one hundred and fifty cases, the spinal marrow and its membranes were minutely examined. In all, there was a very considerable quantity of serum, the membranes highly injected, the rachidian veins gorged with dark-coloured blood, and the substance of the spinal marrow, in a few cases, appeared a little softer in texture than natural. In a large number of subjects, there were ossific depositions, in the form of scales, seen on the arachnoid surface; occasionally they were very numerous and large.

The general practice was, to place the subject on the face as soon as death occurred, with a view of preventing engorgement of the spinal marrow and brain, from a depending position.

In the thorax.—The lungs were found gorged with dark viscid, oily-looking blood; they were heavier than natural, in some instances weighing 3lb. 9 oz.* Pleura minutely injected; in those who died rapidly, both the pleura and pericardium had a dry appearance; in other cases the pleura had an unctuous feel, also the serous surface of the pericardium and heart. Ecchymotic spots, of the form and size of petechiæ, were frequently seen on the pleura costalis and pulmonalis, extending in many instances a line or two into the substance of the lungs. Occasionally, in those who died in this stage, there were seen one, or perhaps two, small portions of the lung indurated, and stained of a dark red colour, presenting all the characteristics of "*pulmonary apoplexy;*" this appearance, however, was more frequent in those who died in the consecutive fever. The bronchial membrane was injected, the tubes occasionally gorged with mucus, of various degrees of tenacity and tinges of colour.

The surface of the heart and large vessels was very vascular, presenting many ecchymotic spots, more particularly on the acute margin of the right ventricle and aorta. In many instances, these were found to extend deep into the subjacent tissue. On making sections, to display the cavities of the heart, the left ventricle was almost invariably found in the state of *hypertrophy*, with diminution of the cavity, and generally empty. In the right auricle and ventricle, there was found a fibrinous clot, sometimes white, like coagulable lymph, at others, stained with blood, consisting partly of lymph and coagulated blood of a dark colour. When a mass of lymph was found in the right auricle and ventricle, it invariably extended into the pulmonary artery, and in many cases could be traced into the

* This subject was a male. The smallest weight in a male aged 33, tall and well proportioned, was 1 lb. 1 oz.; and in a female aged 38, it was the same.

smallest ramifications; and sometimes the pulmonary veins had a similar plug. On several occasions, the auriculo-ventricular opening was closed by the plug, prolongations from which were found interlacing between the columnæ carneæ and cordæ tendinæ.

In the inner surface of the aorta, and in a few cases in the pulmonary artery, also, there was seen a distinct false membrane, completely covering the inner membrane, and extending into the vessels that are given off from it; this membrane did not always seem to be of recent date, but in many of the dissections it was observed in an incipient state. It was most completely formed near the heart; and on some occasions it was seen below the arch of the aorta, in the act of forming, presenting an appearance like tenacious mucilage, continuous with the portion already organized. Occasionally it was tinged of a dark, sometimes of a bright red colour; but generally it was white, and easily separated from the proper lining membrane, even with the handle of the scalpel. In the few cases in which it was found in the pulmonary artery, it was thinner, and not so completely organized. In the aorta, we frequently traced it to the bifurcation of the iliacs; sometimes half-way from the heart, perfectly organized, the rest being in a gelatinous state. When separated, the proper shining smooth character of the inner membrane was seen beyond all doubt, except at parts where there were artheromatous depositions, which were sometimes confined to the false membrane, at others extended into the proper coats of the artery.

We carefully removed the contents of the thorax, not only with a view of submitting them to minute examination, but also to investigate into the condition of certain nerves and ganglions. I shall now show the state in which we found the pneumogastrics, phrenics, splanchnics, and semilunar ganglia. The dissection of the neck showed minute injection of the large vessels, both sets containing dark-coloured blood, more particularly the veins, which were often not only full but distended.

The pneumogastric nerve was frequently seen stained of a dark red colour, through its whole course in the neck and thorax. Sometimes there was merely vascularity on its surface, till it crossed over the subclavian artery, where, in many cases, it was enlarged, so as to resemble a ganglion. This enlargement was always tinged of a bright purple colour, and existed on the right side only. But the nerve was frequently similarly tinged at this point through its whole substance, when there was no enlargement. On tracing these nerves onward in their course, they frequently presented a red appearance.

The phrenics, as they passed over the pericardium, were observed to partake of the general injection; and when the pericardium presented a half-dried appearance, these nerves were similarly affected.

In a great many cases, we carefully traced the splanchnics on both sides of the spine, to the semilunar ganglia. In this part of the thorax, there were minute injection of the vessels, and ecchymotic specks, like petechiæ. These nerves were implicated in the injection on their surface, but in two subjects only was there any discoloration or other mark of disease in the substance. In one or two cases,

it was thought the ganglia were somewhat changed from the natural colour, but we discovered our error, having had, at that period, several opportunities of examining these ganglia in persons who died of other diseases, when a similar appearance was seen.

Abdominal organs.—In the stomach, in two or three cases, we found a considerable quantity of undigested food that had been eaten a few hours before the attack, and, on one occasion, a number of small stones, pieces of slate and tiles. In some cases, there was considerable injection of the peritoneal surface of the viscera, but this was by no means frequent. The stomach was in general contracted, sometimes remarkably so, and several times divided by contraction in the centre, into two cavities. The intestines contained more or less of a matter similar to that vomited during life. Unless the patient lingered long in the second stage, no appearance of bile was seen in the bowels. The mucous membrane of the stomach was occasionally, but not always, vascular; sometimes quite white, but almost always much softer than natural, and in many cases thickened and quite pulpy, so as to be removed with the slightest touch of the handle of the scalpel. The mucous membrane of the intestines was in general more vascular than that of the stomach, sometimes more minutely injected than if size and vermilion had been thrown into the vessels. Occasionally there was ecchymosis, and frequently softening of the mucous membrane, sometimes ulceration, particularly in the ileum and colon. The mucous follicles were generally enlarged, and Peyer's patches, so rarely seen in adult age, were seldom wanting; they were large, elevated, soft, and spongy, and sometimes slightly ulcerated.* In many cases, we found the colon, and sometimes the ileum, thickened, the mucous membrane soft, dark-coloured and disorganized, as in some of the worst forms of dysentery.

The liver was frequently diseased, and the disease not of recent date. Occasionally this organ was very vascular, and we rarely missed seeing sufficient quantity of bile in the pori. In two instances only were there such appearances of engorgement as are described by the India writers.

The gall-bladder was in every instance filled; sometimes distended with dark-coloured and somewhat viscid bile, the organ itself being very vascular, and in many cases containing gall-stones. In no instance, save one, did we discover any impediment in the passage of bile through the ducts into the duodenum. In that solitary instance, a spherical-shaped calculus obstructed the passage.

The kidneys were generally diseased. The disorganization described by Dr. Bright, was very frequently met with. The vessels of these organs were almost uniformly highly injected—a puriform fluid was always found in the papillæ.

[* M. Buillaud remarks, that "this hypertrophy, this species of erection of the follicles of the mucous membrane of the digestive tube, prevails sometimes distinct, at others confluent; and imitates, to a certain extent, the variolous eruption in the first stage. The same gentleman found the mucous membrane, in several instances, to be in a state of putridity, which lesion appeared more frequently in the small than in the large intestine. Andral and Louis also found gangrenous appearances in the mucous membrane of the small intestines in severe cases.]

The bladder was always contracted, so as to be as small and dense as a virgin-uterus.

The following appearances were found in the bodies of those who died in the third stage.—Marks of inflammatory action in the membranes, and more rarely in the substance of the brain. In almost every case the vessels ramifying in the membranes were injected; there were traces of ecchymotic patches and turbid effusion between the arachnoid and pia mater, as well as in the ventricles. In many cases we found the fibrinous plug, formerly mentioned, in the sinuses adhering to the sides of the vessels. In several cases, inflammatory disorganization was seen in the substance of the brain; sometimes the white ramollissement, or liquefaction of the septum lucidum and walls of the ventricles, and in two or three cases the red ramollissement and destruction of considerable portions of the brain. It must be confessed, however, that in a few cases the brain was to all appearance sound. The traces of bronchitis, pneumonia, pleuritis, and pericarditis, were frequently observed too decidedly marked to be mistaken; such are to be expected from the injected ecchymosed condition of these parts in the previous stage. We frequently found the fibrinous plug in the right side of the heart, extending into the pulmonary artery; it was generally more dense than in the second stage. I never saw so many examples of inflammation of the tissue of the lungs, as in the dissection of persons who died in the third stage of cholera. In the abdomen, traces of inflammation of the peritoneum were also discovered. The mucous membrane of the stomach, bowels, lungs, and kidneys, presented similar appearances to those noticed in the second stage. Feculent or bilious matter was always met with in the intestinal tube, and frequently urine in the bladder; sometimes the latter organ was much distended. The coats of the gall-bladder were still highly injected; the organ itself, instead of bile, now contained a serous fluid, having a yellowish or greenish tinge. If the person lived some days in the third stage, the state of the blood and its distribution more and more resembled the appearances seen after death from other diseases.

[For the following cases, illustrating the pathological appearances observed in Philadelphia, I am indebted to my friend Dr. R. R. Porter.

Case 1st.—Peritoneal coat of the intestines and of the other viscera dryish externally; the intestines presented a very reddened appearance. The stomach had in it one or more gills of whitish fluid: several highly reddened patches were scattered over the villous coat. The glands of Peyer enlarged in certain parts of the small intestine; its inner coat injected, softer than natural, and had upon it an adherent whitish matter, which Dr. Horner remarked was coagulable lymph; the upper portion contained an abundance of cream-like fluid, in which there was a large quantity of the lymph; towards the lower part, the fluid was of a serous nature. The mucous membrane, at various points, was reddened, softened, and the coagulable lymph could be easily washed or scraped off.

Case 2d.—Bowels externally dry, and much injected. The stomach contained one pint of thin yellowish fluid; mucous coat softened,

and easily raised; about the pyloric region it was injected. Duodenum externally injected with a bluish-red colour; its contents were yellowish; below this the intestine was nearly filled with a whey-like fluid; inner membrane sanguineous, and had much fibrinous matter attached to it, flakes of which were most beautifully seen when a portion of the bowel was put in water. In the colon, the same fluid and matter were observed.

Case 3d.—Dryness of the intestines, which were externally of a red-bluish colour. The stomach had in it a pink-coloured fluid; the mucous coat was of a mottled or whitish marbled appearance; duodenum contained an abundance of a similar fluid as the above, with flakes of lymph floating in it, the latter in some places so abundant as to appear for inches as a deciduous membrane. There was much whey-like or rice-water fluid in the ileum. Inflammatory points seen throughout the digestive tube.

The anatomical researches made by Dr. Horner, during the continuance of cholera at Philadelphia, in 1832, have very much tended to elucidate its pathology. He has not only confirmed some of the observations of others, and attached to them their deserving importance, but he has also ascertained some new morbid anatomical characters of a highly interesting nature. By him the cholera is regarded as the consequence of an increased flow of blood to, or throughout the mucous membrane of the stomach and bowels; followed by subsequent inflammation and *sloughing* of the same, or of its superficial venous layer;* after speaking of the extent and minuteness of the gastro-enteritic venous system, he adds, that the morbid derangements of the vascular and follicular structure of the mucous membrane, endowed with vital actions the most important to life, constitute the essential characters of cholera.

He demonstrated that the small intestines especially, were often lined with coagulable lymph, the membranous nature of which was proved by maceration in alcohol, and by the process of drying.† This substance has been considered as mucous by most persons, whilst a few regarded it in its true light, but did not lay that stress upon it of which it was deserving: otherwise the therapeutic measures handed down to us, would have been far less numerous and contradictory.

In several cases he met with a vesicular eruption in the bowels, which he believes to be independent of, or distinct from, an enlargement of the mucous follicles or glands; its form is spherical, and about an hundredth of an inch in diameter. In a recent state it is supposed the vesicles contain a fluid; but in a dried state they are empty, and transparent. They appear in groups, isolated or in thick patches; in the upper portion of the intestines, they are far more numerous than they are towards the ileum and colon. Upon this point he thus speaks: "I observed, besides the vesicles, which were

* [The mucous coat of the digestive tube is made up almost entirely of veins, the meshes or intertexture of which are arranged into deep and superficial layers.—*Horner.*]

† [Both in India and England the analysis of cholera fluid detected the presence of coagulable lymph.]

as distinct from each other as marbles on the same ground, that some were clustered. In the stomach, I found a single bunch, resembling a bunch of grapes standing on its base; and in the ileum and colon, I found clusters resembling bunches of grapes reposing on their sides. Such clusters had for their nidus, and for connecting them together, a deposit of coagulable lymph."

In three cases he also discovered that the epidermis and venous lining of the intestinal canal were destroyed, more especially of the stomach and colon. After a most successful injection of certain parts of the bowels, he states, "in regard to the veins, when the parts were dried, they opened on the internal surface of the stomach and bowel, as if excoriation had left them bare; the superficial venous layer of the colon was entirely detached, except in a few places; and there it seemed like the skin of a locust just ready to fall off, it being so loose that the injecting matter had not passed into it.*]

Pathological considerations respecting Asiatic cholera.—After having reflected on the morbid appearances seen in the first twenty cases that occurred, and having compared these with the phenomena of the disease in its different stages, and contrasted them with the symptoms, terminations, and morbid appearances observed in other complaints, I began to suspect the correctness of the opinion promulgated by the medical men in India, at different times since 1817. Every hour's experience strengthened a belief, that their views were unfounded and erroneous. The general belief is, that cholera (however produced and propagated,) affords the best example of a disease consisting of a loss of balance in the circulation, and consequent accumulation of blood in internal organs;—that death is occasioned by stagnation of the blood, and the impossibility of creating reaction. This view of the nature of the disease seemed to receive support from the following circumstances:

1*st*. The difficulty in procuring a flow of blood on opening a vein or artery; the slow motion of the blood, its dark appearance, and its imperfect coagulation. These are circumstances frequently observed in intermittent and other fevers.

2*d*. The success of venesection, when employed early in the disease in India, made practitioners conclude, that the practice of venesection operated by unloading the internal organs of the accumulation of blood that oppressed their action, and restored the balance of the circulation.

3*d*. The phenomena in the third stage appeared to support the analogy between cholera and those forms of fever preceded by a cold stage.

The following facts appear to me to disprove these views in a satisfactory manner.

1*st*. The absence of rigors. I have not seen any practitioner who stated that he had ever observed this phenomena in cholera. The absence of rigors struck my mind early in the epidemic, as a remarkable circumstance, distinguishing cholera from all other diseases, but

* [The reader is referred to vols. xvi. and xvii. of the Amer. Journal of Medica Sciences, where he will find in detail the views of Dr. Horner in relation to the pathology of cholera.]

more particularly those characterized by a decided loss of balance of the circulation, and accumulation of blood in some internal organ or organs.

2*d*. Every individual remedy, which in the other forms of disease connected with loss of balance of the circulation occasions remarkable mitigation of suffering, produces discomfort, and even pain, in cholera.

Thus, in cholera, hot applications and drinks are dreaded, which in the cold stage of other diseases are urgently and importunately demanded. In the cold stage of intermittent, for example, there is a demand for warm drinks and hot applications; in cholera for cold.

3*d*. The full state of the blood-vessels on the surface of the body in cholera, after death as well as during life, contrasted with their empty condition, particularly after death, in all other diseases.

What persons were most frequently attacked?—The answer to this query has been already given, and is now a matter of history. The weakly, particularly those who are liable to complaints in the stomach and bowels, and who are subject to diarrhœa. The destitute, who can command neither proper food nor raiment. *And above all*, the dissipated, particularly those who are addicted to the habitual use of ardent spirits.

The condition of the blood is very remarkable, and has attracted the attention of the most superficial inquirer. Even without the assistance of chemical analysis, it is quite evident that the blood is thick, tenacious, dark in colour and has an oily appearance, flows with difficulty from vein or artery, and coagulates imperfectly. But by the analysis of different chemists, it is established that the serous part of the blood, the salts and the albumen which the serum holds in solution, are found deficient to a great extent. These experiments differ in minute results, but the broad fact is as above stated.

This thick blood, after finding its way into the arterial capillaries, cannot easily escape, owing to its viscidity. This is one cause of the slow motion of the blood. In many parts, these small vessels give way, and ecchymosis is the consequence. This appearance has been seen in every organ of the body.

It is not unreasonable to suppose, that the blood becomes viscid by the abstraction of the serum, and that this is effected by the copious watery discharge from the stomach and bowels. If this view be correct, it will enable us to apply the doctrines, by which Boerhaave attempted ineffectually to explain the pathology of inflammation, to Cholera Asiatica.

In reviewing the long list of morbid appearances already described, it becomes a matter of the first importance to determine accurately, if any of these lesions are peculiar to cholera. If so, can they, by a fair process of reasoning, be connected with the symptoms in the relation of cause and effect?

It has been already admitted, that a large proportion of the morbid appearances must have existed before the attack of cholera. They are brought forward as decided proofs of the previous diseased condition of the system of those attacked, acting as powerful predispos-

ing causes of cholera, and also to assist in accounting for the fatality of the disease.

I must further state my opinion, that a number of the morbid appearances considered peculiar to cholera, are undoubtedly occasioned by the diseased condition of the blood, and cannot be considered as causes of cholera. But they are strictly connected as causes of death in the collapsed or blue stage, and of the phenomena of the third stage. They prove satisfactorily why so few made rapid recoveries, and why so many had necessarily to undergo the miseries and dangers of the consecutive fever.

Treatment of Asiatic cholera.—No better evidence can be offered of the ignorance of the profession generally as to the nature and seat of any disease, than the number and variety of remedies that have been confidently recommended for its cure. This was never better exemplified than in the disease now under consideration.

The following long catalogue was made out at the time cholera prevailed, but it is not even pretended that all the remedies are enumerated.

Venesection; cupping; dry cupping; arteriotomy.—Emetics of mustard, ipecacuanha, antimony, and sulphate of copper.—Calomel; colocynth, singly and combined; castor oil; croton oil; jalap; opium; calomel and opium; fluid mercury, mercurial frictions; opium combined with antimony; opiate confection; colchicum; cajeput oil; peppermint oil; capsicum; charcoal; camphor variously combined; æther; mint tea; spt. ætheris nitrici; magnesia; milk; milk and magnesia combined; lime water; alkalies; spt. ammon. aromat.; Dover's powder; ox. bismuth.—Various balsams.—Acetate of lead; nitrous acid; soda water; cold water *ad libitum;* water prohibited; effervescing draughts; strychnia; various rubefacients in the shape of frictions, sinapisms, embrocations.—Various contra-irritants—as blisters, antimony ointment, moxas, actual cautery, bastinadoing the feet! Cutting the throat! Suffocating under a feather-bed! Injections of oxygen gas into the bowels! The application of heat in the shape of warm bath, vapour bath, fomentations; dry heat; the application of cold.—Galvanism.—Injections of beef tea, starch and opium, turpentine, chamomile tea, hot water, cold water, strong solution of potassa fusa, tobacco, port-wine, alcohol, sulphate of copper, acetate of lead, &c. Stephen's drug; saline injection into the veins.

The above list would be humiliating to the whole profession, were it not remembered how much anxiety and excitement prevailed among medical men at the time; so much so, that several lost their reason, and many their lives on the occasion. Many of these remedies are totally opposite in their nature and principles of action; many of them were proposed upon erroneous principles, and many more upon no principles at all; but by far the greater number were recommended on the prevailing notion, that cholera was a disease affording the purest example of a loss of balance of the circulation, and consequent accumulation of blood in internal organs. The diarrhœa and vomiting were regarded as efforts of nature to unload the engorged vessels, and therefore formed an important part of the sanatory process.

I have already attempted to show that this was a pathological error; and, if the views which have been given in these pages be correct, the practice must have been very prejudicial. I allude more particularly to the following remedies — bleeding, purgatives, and emetics.

Another theory, that cholera depended on deficiency of the biliary secretion, requiring large and frequently repeated doses of mercury, has, I believe, been also prejudicial.

With respect to the advantages that may reasonably be expected from abstracting blood, I believe that venesection may be employed in the first or premonitory stage, when it acts by checking the diarrhœa, and allaying the irritability of stomach. After collapse took place, bleeding in any form rarely proved serviceable, and was injurious in most instances in which it was employed within my observation. But it is a remedy which ought to be kept in view, to moderate febrile movement, and to extinguish local inflammations in the third stage.

Having made these brief general remarks, I shall now describe the treatment which experience at the bed-side, and morbid anatomical investigations, have led me to adopt; postponing for the present the consideration of the practice of saline injection, which it is my intention to notice in a separate article.

A patient should be treated according to the actual state in which he is found; this circumstance, therefore, leads me to consider the treatment in the different stages of the disease.

Treatment in the first stage of Cholera.—This it will be remembered, has been likewise termed the premonitory stage. If there be evidence of the stomach being loaded, vomiting may be induced by a copious draught of tepid water, chamomile tea, or mustard and water. [The mustard emetic is made by dissolving a teaspoonful of common salt in a tumbler of warm water, and mixing therewith a tablespoonful of finely powdered mustard. This is taken at a draught.] The stools should be examined: if they contain hard masses of feculent matter, a mild injection may be administered, or a small dose of castor oil exhibited. But should the stools be watery, copious, more particularly, should they have assumed the characteristic appearance, the diarrhœa should be immediately checked by a dose of laudanum, an opium pill, combined with a small quantity of calomel,* or a few grains of opium introduced into the rectum. A

[* Calomel, in cholera, should be mainly given with a view to its alterative effects, for which purpose it is best combined with opium, in the proportion of two grains of the former to one of the latter, repeated every half hour or hour until the discharges are checked, and the stomach is tranquilized. Larger doses are sometimes allowable, and even requisite. Dr. Porter informs me that a very malignant case was cured in the Philadelphia Almshouse Hospital in 1834, after all other means had failed, by the exhibition of a drachm of calomel, which was repeated in three hours; the stools then became tinged with bile, and convalescence soon followed.

The western physicians, however, have used it most profusely, making it the basis of their practice; and they assure us that it produced the happiest results even in highly malignant cases. The mode in which they administered it will appear to many both rash and dangerous: but it should be remembered, that the inordinate doses were mostly given in desperate cases, where other remedies had proved unavailing. Thus, Dr. Corinth, of Indiana, who has had extensive experience in cholera, commences the treatment with an emetic, followed by fifty or one hundred grains of

warm bath should be used, and the patient afterwards put to bed. If the patient have been previously in good health, temperate in his habits, and the pulse strong, a vein may be opened, and a sufficient quantity of blood abstracted. It is in such circumstances that venesection may be expected to be useful.

[Venesection in the United States, has been confined to a comparatively small number of physicians. Dr. Chapman observes that, when he is called at the commencement of an attack, unless there is extreme depression, he bleeds freely, and cups the epigastrium. Dr. Jackson considers venesection as but partially applicable to cases of cholera. "It should be restricted to those only where the constitution is vigorous, and the patient has not been enfeebled by age, previous disease, or dissipated living, and when the forces of the general circulation do not manifest a tendency to decay." He adds that, on the approach of collapse, it is a hazardous remedy. We are also informed by physicians, who have practised in the western states, and had ample opportunities of observation, that the results of general bleeding were not of a character to inspire confidence. Experience, in this country, has indeed fully proved, that venesection is inadmissible after the system has become collapsed from large and frequent serous discharges, and especially when these contain an abundant flocculent or fibrinous matter. Local bleeding by cups and leeches, is of great advantage; they should be applied to the epigastric and iliac regions, and are particularly demanded when venesection is equivocal.]

I have known many individuals destroyed when in this critical state, apparently by taking a laxative, even a small quantity of calcined magnesia, or an emetic. Saline medicines should be proscribed during the continuation of a cholera epidemic, for I have seen several people sink rapidly into a fatal collapse under their operation, who had had no previous bowel-complaint, but felt slight oppression, which made them wish to unload their bowels. The patient should be carefully watched, so that the heat of the body may be kept up to the natural standard by proper applications—the discharge opportunely restrained by the employment of opiates—and the pulse supported by the exhibition of stimuli. Digestion being in all such cases impeded, the lightest food only, such as arrow-root, should be allowed, and in small quantity at a time. It is in this stage that copious draughts of any liquid prove injurious. When patients escape from the condition just described, a slight febrile movement,

calomel every hour, until the diarrhœa ceases: the quantity is then to be reduced to twenty-five grains every two hours, until salivation occurs, which he assures us is always followed by a restoration of the healthy secretions. In one hundred patients in whom ptyalism was induced, he lost not a single case; and he further declares that some of his patients took, before recovery, a quarter of a pound of calomel!

But of all the advocates of the mercurial plan, Professor Cook is the warmest: he gives calomel in two-drachm doses in mild cases, and in those of severe character, he increases the dose to an ounce, and repeats it several times: and one case is reported which recovered after having taken a pound of calomel!*

These facts are here stated as matters of curiosity, not for imitation. It is surprising what the human system will sometimes undergo without annihilation; and its capability of supporting the ultra-calomel practice is marvellous indeed.]

*[Dr. Eberle asserts that even a pound and a half have been given in 48 hours.]

symptoms denoting cerebral irritation, or considerable bodily debility, frequently follow, either singly or combined, and must be treated accordingly. Confinement to the house, great quiet, and attention to the functions of the stomach and bowels, must be enjoined for some time, as relapses are frequent; and I have known fatal collapse to take place suddenly in several cases after one or two such warnings had been neglected.

Treatment in the second stage of cholera.—Although I have known venesection employed advantageously, and strong purgatives used without producing death in this stage of the disease, I cannot state the fact too strongly, that they are dangerous remedies. In taking a retrospective view of the cases as recorded in the books of the Drummond-street Hospital, I cannot but condemn the practice which I myself had recourse to, but more particularly, that which relates to the exhibition of purgatives; and were I treating the disease again, I would avoid exhibiting any remedy that would in the least degree tend to produce one additional alvine evacuation, or irritate the stomach.

Rubefacients form another class, along with irritants, which cannot be too strongly condemned in the second stage. They were recommended upon the old view of producing a flow of blood to the surface, in order to relieve internal organs. Long before I knew the error of this theory, I had arrived at the conclusion, that they never do any good, while they irritate and annoy the sufferers. Much have I been pained to see moxas and the actual cautery applied. I never observed beneficial results in any case from these remedies, although the hot iron has been drawn along the spine on each side, from the occiput to the sacrum. Hand-rubbing would seem to be serviceable, by assisting the motion of the blood; and it appeared to allay the severity of the pain occasioned by cramps. Although hot applications seemed to create uneasiness and impatience, still I am convinced that warmth is necessary, when the temperature of the body is much reduced. Warmth appeared to mitigate the violence of cramps, if it did not prevent their recurrence. It appeared to me that dry heat was best. I therefore had tin cases constructed the length and breadth of the body, to contain the vapour of boiling water. Each tin case was open at both ends, was deposited in the centre of a loose straw bed, and covered with a folded blanket. It formed rather a hard bed, but there were few patients who could not endure it for two or three hours, and there was seldom occasion to keep them longer. After a number of experiments, I succeeded so well that I could heat a bed sufficiently in three minutes, and support the heat for any length of time, or reduce it at pleasure, by vapour from a boiler, which communicated by pipes furnished with stop-cocks, with several beds in each receiving-ward.

Cholera patients suffer from intense thirst, and their anguish always appeared greatly increased if they were restricted as to the quantity of liquid. In the Drummond-street Hospital every method was tried, viz.: by restricting the quantity of liquid, by allowing a moderate quantity, or affording an unrestricted supply; and we came

to the conclusion that the last was the best method. [Broussais found nothing so good as ice in the treatment of cholera; he further says, that in the cold stage he began with hot drinks, but soon abandoned them for ice itself. It is now adopted everywhere, the patient being directed to keep small pieces of it almost constantly in his mouth, during all stages of the disease. It reduces the irritability of the stomach, quenches thirst, and alleviates the general distress of the sick.

The sickness of stomach is a most distressing symptom: when all the usual means of allaying it have been tried in vain, Dr. Eberle assures us that nothing is so effectual as camphor dissolved in sulphuric ether.*]

Stimulants are necessary when the pulse and action of the heart become feeble, but should be discontinued upon the occurrence of reaction.

It has been already stated, that the discharge from the bowels should be checked as early as possible. For this purpose opium, in various shapes, has been used. Perhaps the best method is to give repeated small doses by the mouth, or to introduce an opiate suppository into the rectum. The acetate of lead and sulphate of copper have been used for this purpose, but not with good effect. I was induced to employ strychnia as an astringent, and began with doses of 1–12th of a grain; we gradually increased the quantity to 1 grain, repeated, according to circumstances, every hour, or second hour. We thought good effects were produced; and in one or two instances only, did spasmodic twitches or other unpleasant symptoms arise, although this powerful remedy was pushed to considerable extent. It appeared to act by not only restraining the discharge from the bowels, but by shortening the collapse, and rendering the reaction more permanent. I frequently wished that gentlemen who proposed new remedies, would look at the morbid appearances. If the mucous membrane of the stomach were so soft and pulpy as to be easily separated from the subjacent coat by a touch of the handle of a scalpel, surely irritating medicines are contra-indicated! If there were great irritation, inflammation, ulceration, and an appearance of sphacelation of the large intestines, surely injections of port-wine, alcohol, salt dissolved in water, and more particularly, potassa fusa, were improper. In truth, from indiscreet zeal, much mischief was occasioned; by doing too much, the sufferings of many a patient were greatly increased, and odium was thus brought on the profession. In the Drummond-street hospital, we fairly tried all the remedies recommended, but observed no advantage from a large majority of them. Thus, Stephen's saline solution, which, it was stated, had operated like magic elsewhere, was tried and laid aside. This medicine was used for the purpose of restoring the serum of the blood; but no one who has seen the mucous membrane of the stomach and bowels in cholera subjects, can have any faith in such a remedy. It was not found serviceable in any one case, and was injurious in many, by exciting vomiting and purging. The oxide of bismuth

[* Appendix, Prescrip. 70.]

and nitrous acid were prescribed according to the directions received; but we never could discover any advantage from their use, although they were less injurious than most of the other remedies.

[For the cramps, frictions, saline pediluvia, the tourniquet, &c., are all in use, though sometimes they afford little relief. In the last case of cholera that came under my notice, and which was attended by the most distressing cramps I ever witnessed, I had tight stockings drawn on the legs, over which a bandage was tightly applied beginning at the toes; the relief was immediate, and with occasionally renewing the bandages still more firmly, the spasms were entirely subdued, and the patient recovered. I have not met with this plan in any of the works that have come under my notice; but whether it be new or not, I can confidently recommend it to the notice of the profession.]

Treatment of the third stage of cholera.—It has been already stated, that as soon as the stage of collapse begins to give way to reaction, stimulants should be diminished, and ultimately omitted entirely. Looking at the vascular engorgement of the capillary vessels in every organ in the body, together with the ecchymotic spots, so frequently discovered on dissection, there is nothing very encouraging to support us in any plan of treatment. But we must recollect that recoveries do take place, and that there are no limits to the efforts of nature when she is in difficulties; and that the chances of recovery are greatly increased, if we are acquainted with the morbid condition of vital organs, and know the kind of assistance that ought to be afforded. My impression is, that we do not trust to nature sufficiently in the early part of this stage; that we have always been too anxious to increase the force of the circulation; and in too great haste to produce feculent evacuations, and a copious flow of urine. By erring in this respect, irritability of stomach is created, and when this is once established it is very intractable. I know of no remedy which can restrain the violent bilious vomiting except extensive leeching, and irritating the surface of the abdomen. I have seen much benefit produced by venesection in this stage, as also from repeated applications of leeches to relieve the brain, lungs, heart, and organs in the abdomen, when oppressed with too much blood, or inflamed. Often have I had to deplore my own timidity upon finding lymphy effusion, the undoubted product of inflammation, in all the cavities after death. But, notwithstanding these remarks, it cannot be denied, that great discrimination and experience are required in investigating the physiological and pathological condition of each patient. If there be cerebral disturbance, it must be treated on ordinary principles. The symptoms are generally vertigo, lethargy, or coma. We must keep in recollection the vascular state in which the brain and its membranes are left at the termination of the stage of collapse, the ecchymotic patches produced by effusion of a bloody serum, between the membranes, and the plug or coagulum found in the great venous channels. We may do a great deal by shaving the head, and keeping it cool, by frequent cupping, or application of leeches. Subsequently, the application of antimonial ointment to the head, to produce long-continued irritation, was found very beneficial.

The use of opium in this stage is to be suspended. I have seen it employed by itself, and conjoined with calomel, to restrain the bilious vomiting, but without effect.

In this stage, we frequently pushed mercurial preparations to considerable extent, both internally and by means of inunction, so as to affect the system speedily. I cannot say they did harm in every case, but they often did mischief; and I was never sensible of any good effects.

In this stage, blisters and other contra-irritants are serviceable; keeping the morbid appearances in view, I scarcely think we were active enough in this respect.

If the bowels are not moved sufficiently, the most gentle and unirritating laxatives, such as rhubarb, should be used. If the urine be scanty, particularly if there be pain in the region of the bladder or glands, draughts, composed of camphor mixture, with a few drops of laudanum, and a little sweet spirit of nitre, may be useful. It is advisable, in some cases, to introduce the catheter, which often allays irritation. I have seen large collections of urine in this stage, when not suspected.

Many persons died in the course of the consecutive fever, from pneumonia, pleuritis, pericarditis, peritonitis, but still more from bronchitis. This is to be expected from the morbid appearances found in those who died in the previous stage. Many persons died of old organic diseases of every organ, but more particularly of the lungs; as long-standing chronic bronchitis; chronic, calcareous and tubercular degenerations, and emphysema of the lungs; together with diseases of the heart; aneurisms, and other diseases of the arteries.

Treatment of Asiatic cholera, by injection of saline solution into the veins.—That there is a deficiency of serum in the blood in cholera patients, was soon suspected; and the point having been well established by chemical analysis, the attention of practitioners was directed to discover the cause of the deficiency, and means were employed to restore the loss.

I have no doubt of the correctness of this view, which appears to be proved by the following facts. 1*st*. When artificial serum has been added by injection, and mixed with the circulating blood, the bad symptoms have vanished, and every appearance of health has been restored. (Vide page 314.)

2*d*. Blood drawn from the system, after the saline injection, generally presented the natural appearance.

3*d*. Unfavourable symptoms have frequently returned with all the horrors of collapse, after copious discharge of similar fluid from the stomach and bowels; and again and again has the system been restored by venous injection, and the patients ultimately saved.

The bold idea of restoring the loss at once, by injecting a large quantity of saline solution into the venous system, occurred to the original mind of the late Dr. Latta of Leith, who, by his unwearied and unremitting exertions on this occasion, contracted bad health, and died soon afterwards of consumption.* He was ably and zeal-

* Although Dr. Latta's exertions and fate must have been well known to a number

ously supported in his investigations by Dr. Lewins, who encouraged and assisted him, when others threw every obstacle in the way of his experiments, and too often gave erroneous reports of his practice.

When first informed of what Dr. Latta had done, my mind became terrified at the contemplation of all the evil consequences which might result from such extraordinary means. The danger of air finding its way into the vascular system, the rupture of blood-vessels, dropsy, and the fatal effects of inflammation of veins, made me, as I have no doubt it did others, regard the cure as worse than the disease. I was anxiously urged to try the practice; but I resisted until Drs. Latta and Lewins afforded me an opportunity of examining the body of a woman who had been injected. After a very minute and careful examination, I could discern no rupture of blood-vessels—no effusion of liquid into the cavities of the cellular tissue. In fact, I could see no appearance that was not usually seen in other victims of cholera, when the ordinary treatment had been pursued.

I was too old to be led away by any very extraordinary expectations of the results of this practice; and in order that we might err on the safe side, it was determined, after deliberate consultation with my kind friend and able colleague Mr. Meikle, that no one should be operated upon in this manner till every other means had been tried in vain, till the collapse was extreme, and the patient appeared to be in the very jaws of death. While this will be admitted to be the prudent course we were bound to pursue, it will be allowed it was not calculated to give the practice the best chance of success. On the contrary, in looking over the cases, my only surprise now is, that one of the individuals recovered by any means that human ingenuity could suggest.

The substances injected were in the following proportions: Muriate of soda, ℥ss.; bicarbonate of soda, ℈iv.; water, lb. x.* The temperature was from 106° to 120°. The solution was carefully strained twice through leather. The salts must not be carelessly thrown into very hot water, and subsequently cooled, as we found that water at a high temperature gradually decomposed the salts, and the solution remained turbid. The good effects of the injection were rapid in proportion to the heat of the solution, but patients could not bear a higher temperature than that above-mentioned. The precautions necessary in making and using the injection are of vital importance. If solid saline matter be thrown into the circulation, death in all probability must inevitably ensue. If the solution be strained through linen, or a towel, no precaution will prevent minute portions of flaky threads from intermingling, and should even one such portion be injected, recovery can scarcely be expected. I need not speak of the danger of injecting air; but I may relate what happened in the Drummond-street hospital with respect to the tubes. Reid's

of influential men, his grave does not exhibit any monument of public gratitude, nor have his orphan children received any offer of support or protection.

* We commenced this treatment on the 12th May, 1832; the solution was made in the proportions above stated till 21st August, after which the quantity of each of the salts was doubled.

syringe was the instrument employed with connecting tubes; every precaution was taken to have the valves of the syringe in good order, and the tubes air-tight. At one period of our operations, twenty-nine cases of death took place consecutively, without a single recovery;--this happened after we had had eight recoveries out of thirty-four cases. The result alarmed us, and we entered into an anxious investigation to discover the cause of such fatality, and in the end, we suspected a faulty state of the tubes; they were cut open, and we had the mortification to discover the spiral wire corroded, with scales separating, and others hanging loose. There can be no doubt that many of these minute portions of oxidized metal had passed into the system with the injection. I had a conical-shaped tin vessel for containing the solution, fitted with a cover; the temperature, ascertained with a good thermometer, was supported by placing this vessel in a large tin basin containing hot water. In order to prevent the lodgment of particles of dust, a deal box was made to hold the apparatus. To show the necessity of carefully straining the solution, it may be stated, that at the second straining, nearly a teaspoonful of saline matter has been collected from the leather strainer. At first we used linen, or a clean towel as a strainer; and I have reason to suspect that some of the deaths may be attributed to the circumstance mentioned above.

The operation should be performed by two persons; one to open the vein, introduce the tube, and keep it in position; the other to take charge of the fluid to be injected, and the apparatus. It is necessary to have an assistant at hand to do any thing that may be required, so that the attention of the operators may be entirely devoted to the parts they have to act. The position of the operators is a matter of some consequence, as the operation will occupy fully half an hour; the person whose duty it is to open the vein, should be comfortably seated on the side of the bed corresponding to the arm on which he is to operate; the other should be seated across a form, or narrow table, with the vessel placed between his legs. His first duty is to pump the fluid through the tubes for a few minutes, in order to get rid of any air that may be attached to any part of the syringe, or sides of the tubes—the extremity of the tube being kept under the surface of the liquid. When the vein has been opened, and the nosle introduced, the operator is to keep it in its place with the finger and thumb of the left hand, and take hold of the extremity of the tube with the right; he is to place his index finger to stop the mouth of the tube, it being still under the surface, while the other operator gently pushes the piston down—this is to satisfy him that it is full; he then directs the point towards the nosle, which, if not filled with blood, ought to be filled with the injection before the tube is finally connected with it. All this, to insure success, must be quickly and dexterously done. Upon a signal given by the first operator, the other is to commence pumping, being careful to hold the syringe perpendicularly, and never take his eye from the vessel, or direct his attention to any other matter. The whole of the fluid, consisting of ten pounds, may be with safety introduced in thirty minutes; in which time we may reasonably suppose the blood will have per-

formed the circulation several times, and the injection been mixed in a very gradual manner with the vital fluid. All danger of overloading the system suddenly, and rupturing vessels, is in this manner avoided.

It was wonderful to witness the effects speedily produced by the injection. These I shall now state under the following heads:—

1*st*. On the pulse.
2*d*. On the cramps.
3*d*. On the temperature of the body.
4*th*. On the respiration and voice.
5*th*. On the expression of countenance.
6*th*. On the restlessness, and other uneasy feelings.
7*th*. On the thirst.
8*th*. On the secretion of urine.
9*th*. On the period of death.

1*st*. *On the pulse.*—It is remarkable how speedily the injection affects the pulse, making it perceptible after it had ceased to be felt at the wrist. By the time four ounces were introduced, the pulse could generally be distinctly counted; and when about three pounds were introduced, it became a tolerably good one, although it might be still feeble, and perhaps rapid. At last, when the pulse became of natural strength, the injection was suspended for a little. The quantity injected depended principally upon the state of the pulse, and we were always glad when the object was effected with the smallest quantity of fluid. At the same time, as we sometimes found the pulse flag again, requiring an immediate repetition of the injection, we became careful not to discontinue the operation too soon.

2*d*. *On the cramps.*—The effect on this symptom was quite remarkable; they generally ceased as soon as the pulse became good, and seldom troubled the patient again. Many cases that appeared to us hopeless from age, and the ravages of previous disease, were injected solely with a view to mitigate the sufferings of the patients, produced by cramps.

3*d*. *On the temperature of the body.*—The effect on the animal heat is also almost instantaneous; the body, which could not previously be heated, now becomes warm, and instead of a cold, damp exudation on the surface, there is a gentle and genial moisture.

4*th*. *On the respiration, &c.*—The respiration, however weak previously, soon became stronger. It sometimes happened, when about 4 lbs. of the injection were introduced, that the respiration became rather laborious, which generally gave way after more fluid was thrown into the system. The voice, which had been whispering, now became quite natural.

5*th*. *On the countenance.*—In proportion as the pulse and the temperature were restored, so did the countenance improve. The eye, from being sunk, became prominent; the shrinking of the features, and the dark colour of the face and of the body, generally disappeared. The expression, in fact, became animated, and the mind lively.

6*th*. *The restlessness and uneasy feelings* vanished. The de-

spondency, vertigo, tinnitus aurium, præcordial oppression, gave way to pleasurable feelings; and I have not unfrequently seen patients sit up in bed immediately after the operation, in perfect possession of themselves, and speak with joy on the sudden transition from agony and death to happiness and life.

7*th. Thirst*, however urgent it might have been previous to the operation, soon ceased after its commencement.

8*th. The secretion of urine*, in general, soon returned after the injection; but in this we were more frequently disappointed than in any of the other favourable symptoms.

9*th. The period of death* was undoubtedly postponed, sometimes for hours, more frequently for days, and sometimes even for weeks, and in some cases a perfect recovery took place.

In noticing, in a previous page, the bad effects which might naturally be expected from this operation, inflammation of the veins was spoken of; but it is remarkable how few instances of this took place, and those which did occur were generally slight, and never appeared to be the cause of death.

The usual and very gratifying effects of this remedy have been already detailed at sufficient length, to show the complete alteration produced on the character of the disease. But I have now to mention that rigors, severe rigors, almost invariably followed the saline injection. They generally commenced a few minutes after the completion of the operation, sometimes during its performance. If there were nothing more to offer, the occurrence of this phenomenon affords proof the most decisive of a pathological change in the system, as no one has ever seen a patient labouring under cholera shiver, or present any thing like a decided rigor.

Early in our operations, several patients, who had been twice or thrice injected, asked me what had become of all the liquid they had received into their veins. This was a natural question, and had intensely occupied my thoughts; but however mysterious the subject appeared to us at the time, it was at last unravelled by watching the operations of nature; for in the course of twenty or thirty minutes after the injection, one or two very copious discharges of a watery fluid took place from the stomach, without nausea, and sometimes there was a large watery stool. Soon after this, unfavourable symptoms again frequently took place; all the appearances of cholera returned, the patients occasionally sank into a collapsed condition, and unless the operation was repeated, death followed. One woman, who recovered, was injected six times: between the first and second operation, three hours intervened; between the second and third, six hours; between the third and fourth, four hours; between the fourth and fifth, four days; and between the fifth and sixth operation, twelve days. In all, fifty pounds and a half were thrown into the system.

In eleven successful cases, one operation sufficed; in these, the quantity varied from three to ten pounds of fluid.

In six successful cases, the operation was twice performed on each patient; the quantity injected varied from ten to fifteen pounds.

In another successful case, the operation was performed three times; the whole quantity introduced was seventeen pounds.

In two other successful cases, the operation was four times repeated in each; in one of these, twenty-four and a half pounds were introduced; in the other, thirty-one and a half. The intervals between the operations varied, in these two cases, from four to twenty hours.

From memory, I may state that about one-half of those who recovered after this operation, were bled or had leeches applied. One, for instance, was bled three times, and had sixty leeches applied; and on looking back at the cases, I believe that several were lost from want of depletion, as febrile symptoms almost always followed the injection, and many of those who died were destroyed by inflammatory action in different organs.

Short account of other substances introduced into the system along with the saline solution.—Finding the patients sometimes returned rapidly into a state of collapse, after this operation had been performed successfully, it appeared advisable to make the fluid resemble, as much as possible, the serum of the blood, by adding albumen, obtained from eggs. In the first case, we added three ounces to the ordinary saline solution; and again, in three hours, four ounces. It was employed in several cases. It did not appear to do any harm, but was laid aside, as no decided beneficial effects followed that were not produced by the ordinary injection. Several patients, thus treated, besides the one whose case is alluded to above, recovered.

Quinine, and the solution of morphia, were also mixed with the injection—in the proportion of ten grains of the former, and ten drops of the latter—with apparent benefit; but our experiments were not repeated sufficiently often; our operations were hurried, and our bodies and minds too much exhausted, to enable us to proceed deliberately in such an interesting and responsible field of experiment and enterprise.

Alcohol was used in the injection in one case of extreme collapse, and with the happiest effects for the time. The patient spoke and laughed, and had every appearance of being slightly intoxicated; but in a few hours he again collapsed, and died.

In the Drummond-street Hospital, there were one hundred and fifty-six patients injected, twenty-five of whom recovered.

An important question has often been put to me in reference to these cases,—"Did you diminish the proportion of deaths by this practice?" It may be necessary to remind my readers of the undeniable fact, that of the really collapsed or blue cases, in which the pulse was either so weak as scarcely to be felt, or was imperceptible at the wrist, one case only out of twelve recovered; I think this calculation too high, and that the number of recoveries is not more than one in twenty. The number of recoveries by injection has been already stated—it gives the proportion of recoveries to deaths as 1 in $6\frac{6}{25}$.

Dr. Latta, of Leith, saved three patients out of nine in his first set of cases; and in his second set, he saved five out of seven. If these were added to the cases in the Drummond-street Hospital, it would

give more favourable results; but I am not entitled to make any such calculation, nor is it our wish to stand in a more favourable position in reference to this extraordinary practice. Not one of the patients operated on had a chance of recovery by any other means; we saw no such miracle out of 461 cases in the Drummond-street Hospital. Should I ever have charge of cholera patients again, I shall, profiting by the experience I now possess, use the saline solution at an earlier period of the stage of collapse, nay, at its commencement, in order to lessen the thickness of the blood before organic mischief is done, and to prevent the formation of the fibrinous clots so frequently, nay, almost invariably, found in the right side of the heart, extending into the branches of the pulmonary artery, also in the great venous channels in the head. It appeared to all who watched the symptoms, and witnessed the *post-mortem* examinations, that these plugs were formed during the progress of the stage of collapse, and not after death.

It may be noticed, in conclusion, that consecutive fever took place in our injected cases, as well as in the first set of Dr. Latta's; but in Dr. Latta's second set, none of the five persons who recovered had any febrile movement—which that gentleman attributed to the employment of the vapour bath for an hour before the operation was performed.

It would have been easy to enlarge on every topic contained in this article, but a certain space having been allotted to cholera in the original plan of this edition, condensation became indispensably necessary. But I hope brevity has not been carried so far as to injure the facts and conclusions. I must confess, that although I always saw the *advantage* of publishing a report of the cases of cholera treated in the Drummond-street Hospital, with tables of results, and delineations of morbid appearances, I now see the *necessity* of completing the work as speedily as possible. Indeed, some explanation is required for the delay;—our story is very easily told.—Mr. Meikle and I were anxious for some delay to renovate our shattered nerves for such a work of labour, and to allow all the effects of excitement to pass from our minds, that we might write deliberately, and reflect dispassionately, on a retrospective view of all the facts connected with the disease. In the meanwhile, Mr. Meikle's duties called him back to India, and I have never had a command of time to enable me to take the task in hand. It is to be hoped, however, that sufficient information has, in the mean time, been given, to silence those who sneered at our exertions, and were pleased to predict that nothing could be expected to spring from our investigations. It is amusing to hear the jeers of the idle and uninvestigating portion of the medical community.—"You are as ignorant (say they,) of the nature and seat of cholera, after having opened *three hundred bodies*, as those who never examined one subject." If this were the exact state of the case, it can be easily shown that we are not more ignorant of the causes, and the nature, and seat of cholera, than we all are of every other complaint. Let me ask, Who knows any thing whatever of the causes and pathology of measles, scarlet fever, or any other fever, hooping-cough, pulmonary consumption, tetanus, ileus,

hydrophobia, rheumatism, gout, and, I might have added, every other disease in the medical nosology? Does this query humiliate the profession, or tend to unrobe it of its dignity? There are many very worthy persons who will think it does; but I would desire to have my name enrolled in the list with those who, above the influence of professional craftiness, sought after, and exposed the naked truth, and who will at last command a moral influence which others can never attain. But our case is not quite so bad, to say the least in our own favour, as some worthies may think; for if I have failed to show what cholera really is, it is clearly proved that cholera is not what it has hitherto been supposed to be. This consideration leads me to hope that other and more able investigators may throw more light upon the subject.

INFLAMMATION OF THE INTESTINAL MUSCULAR AND CELLULAR TISSUES.

I SCARCELY believe that *acute inflammation* ever primarily affects the muscular and cellular tissues. On dissection, they are certainly frequently found altered in appearance and structure by inflammation and its consequences, but never, according to my experience, without distinct marks of the diseased action having extended by contiguity from the mucous and serous tunics. This part of pathology, however, is still open to future investigation; and the subject is merely introduced, to show that it has not been entirely overlooked, and to mention one symptom which is generally supposed to distinguish inflammation of the muscular coat from that of the other parts of the intestine, and to notice chronic inflammation, with thickening, induration, and permanent constriction of the bowels.

It has been repeatedly observed by writers, and has been shown in this work, that in pure peritonitis the bowels are generally easily moved by the ordinary remedies; and that, in inflammation of the mucous membrane, there is generally diarrhœa. Now the peculiar circumstance to which I have alluded, when the muscular coat is in a state of inflammation, is obstinate constipation. Provided a practitioner is aware that inflammation is going on in the abdomen, it is really a matter comparatively of little consequence, what tissue is primarily affected; and it will be almost invariably observed in practice, that those who are most apt to draw minute distinctions, are not the most profound thinkers.

Portions of the alimentary canal are often observed, on dissection, to be thickened and indurated, and contracted in proportion to the thickening. The parts most frequently found in this state are, *first*, the point of junction between the stomach and duodenum; *secondly*, the point of junction between the ileum and cæcum; *thirdly*, the termination of the sigmoid flexure of the colon, or some part of the rectum; and *lastly*, the whole extent of the colon. In all these

situations, the peritoneal coat is generally found sound, and the mucous membrane is sometimes observed to be in no other degree affected than being puckered; so that I am led to conclude, that although the muscular coat and cellular tissues are not so liable to be primarily affected with acute inflammation, yet they are frequently the seat of *chronic* inflammatory action. It must be confessed, however, that there may be some deception here, as the inflammation may have extended from the mucous membrane to the subjacent tissues, as it has been shown that the former is capable of restitution, even after it has been in a state of extensive ulceration. The cellular membrane of the intestines is more frequently found to be the seat of thickening than the muscular tunic; but occasionally we see the muscular fibres very much enlarged and thickened, in the state that has been denominated hypertrophy. This thickened condition of the coats of the alimentary canal, which is produced by an effusion of lymph, has been too often confounded with scirrhus and cancer; and many people are still in the habit of calling every structure in the body scirrhus, which is ascertained to be harder than natural.

In general, it is impossible to determine by the symptoms, whether or not the parts are in this condition, except the contraction is within reach of the finger, at the lower part of the bowel, or is situated about the termination of the sigmoid flexure of the colon. When the thickening has been found at the pylorus, the symptoms were those of indigestion, attended with uneasiness after food had been many hours in the stomach, and when it might be supposed to be in a state of preparation to pass into the duodenum. When situated in the ileo-cæcal valve, or in the course of the colon, constipation, distension of the abdomen, with frequent threatenings of ileus, have been remarked, together with pain in the situation of the caput cæcum.

In one case, where the colon was affected, the hardness could be traced during life throughout the whole extent of its tract. When the termination of the sigmoid flexure and the rectum, are the seat of the disease, besides constipation and occasional threatenings of ileus, the history of the case and the state of the stools will, in general, lead us to suspect the existence of this morbid condition of parts. In addition to habitual constipation, we shall find that there has long been inclination to considerable straining when at stool, which has gone on increasing, so as to induce the habit, which has at last become inveterate, of sitting and straining for a very considerable period, before a moderate discharge of fæces can be procured; and, after all, the person rises dissatisfied with his efforts, and with a full, loaded sensation in the belly. In such circumstances, when the evacuation from the bowels is of the ordinary degree of consistence, the fæces have, as is alleged, a very peculiar form, being either of a worm-like shape, or flat and tape-like; but I have little faith in this. The only cases which are capable of being cured, are those situated in the rectum, which are within reach of a common bougie, or low down in the sigmoid flexure of the colon. With respect to the contractions in the other parts, much may be done to arrest the disease, and alleviate suffering, by attending to the diet, and to the state of the bowels. To prevent the parts running into true scirrhus or cancer,

the occasional application of leeches and blisters is to be had recourse to, and every cause is to be avoided which can have the effect of irritating the parts, particularly drastic purgatives.

Scirrhus of the stomach and intestines.—In the last article, simple induration was described, affecting various parts of the alimentary canal, in which the tissues were not confounded, but merely in a state of hypertrophy, and owing, it is conceived, to chronic inflammation, attended by new deposition. In true scirrhus, on the other hand, there is a thickening of parts, with disorganization, so as to confound the different tissues. It is supposed by Meckel, and other pathologists, that scirrhous degeneration commences in the tissue which incloses the vessels and the mucous glands, from which it extends itself so as to involve the mucous and the muscular coats, destroying their natural appearance, rendering them thicker and harder, and terminating at last, if the patient live long enough, in carcinomatous ulceration.

Notwithstanding the great attention which has been paid by many eminent men to the formation of scirrhus, it is still involved in mystery. It will be found, however, to be a prevalent opinion, that it depends upon chronic inflammation, of a specific nature, which has a tendency to the formation now under consideration ; in the same manner that long-continued inflammation in gouty subjects, being of a specific character, has a tendency to deposit calcareous matter. It is interesting, however, to know, that the serous coat of the stomach and bowels is the part last affected in these cases, so that, on dissection, it is found either quite healthy, or only slightly thickened or opaque-looking, still preserving its natural gloss; if there are traces of inflammation, they will, in general, be observed to be recent. In two preparations only have I seen tubercles projecting from the serous coat, while the other structures were affected with scirrhus; one of these, a cancer of the stomach, is now in my museum. There is always a difficulty in examining an indurated part with a view to ascertain the state of the vessels; but I think I have seen the veins much thickened in their proper coats, not in the part itself, but in the second texture in its vicinity. In the soft cancer, which particularly affects the stomach, I have repeatedly seen vessels, supposed to be veins, thickened and enlarged, and on two or three occasions, a cream-like fluid was found in them.

Scirrhosities are most frequently found in the situations enumerated under the last head, viz.: the pylorus, the caput cæcum, and in the course of the rectum, which may be attributed, so far, to these parts being more exposed than others, to be irritated by the substances which have to pass through them. Scirrhosities may also, however, exist in other parts, more particularly near the cardiac orifice; they are sometimes extensive, so much so as to involve the whole of the stomach, and sometimes a large portion of the intestine.

Fungous excrescences, of a cancerous nature, are rarely met with in comparison to the scirrhous indurations; nevertheless they have been found in every part of the alimentary canal, and were probably denominated polypi by the older writers. Brechet has lately de-

scribed a case, which appears to me to be of this kind, under the name of polypus, which extended from the cardiac orifice into the duodenum. This kind of affection is noticed in Professor Monroe's excellent work on morbid anatomy of the gullet, who has denominated it the melt-like cancer. It certainly so far answers the description, because it is white and soft; but being fibrous, cannot be washed away or softened down like a melt; it rather resembles a young placenta well macerated. Cancerous excrescences are also sometimes found in the rectum. Meckel says they are more frequently seen in this part of the bowel than any other; but they differ considerably from those found in the stomach, which are more soft and spongy, and less pendulous. I have several times met with a white projection, almost the size of a pea, from the mucous membrane of the stomach and bowels. The base is sometimes broad, at others the tumours hang by a narrow pedicle. Perhaps this is the white tubercle of authors. I have a preparation showing these bodies along with open cancer of the stomach; indeed, my museum is very rich in this department of morbid anatomy.

Symptoms of cancer of the stomach, &c.—In the early stages it cannot be distinguished from dyspepsia; and sometimes, even to the very last, the symptoms are not more severe. There is a preparation in my museum, showing a section of the stomach, more than half an inch thick, exactly like fibro-cartilage; and although the whole stomach presented the same appearances, the symptoms were those of ordinary dyspepsia. In general, however, there are progressive emaciation, restlessness, fever during the night, thirst, sallow colour of the skin, and shooting pains extending in different directions from the part affected. In scirrhous or cancerous affections of the stomach, we are generally able to tell whether the cardiac orifice, or the pyloric, is principally affected; if the former, pain is experienced in attempting to swallow as soon as the article gets low down in the œsophagus, where it is felt to lodge; frequently the patient is obliged to force it up by eructation, from the pain excited by its presence, but which ceases as soon as the food passes into the stomach. The pain is sometimes so great, that patients avoid eating till nearly famished; and some have described to me, that they experienced as much difficulty in introducing a tablespoonful of milk, or any other fluid, as from a mouthful of solid food. But when the disease is situated in the body of the stomach, the food may pass readily in, but occasions so much suffering, that the patient is obliged to discharge it by voluntary efforts to vomit; sometimes a considerable quantity of serous fluid is discharged by eructation, as in water-brash. When the pylorus is affected, it will be found that the uneasiness does not become very great for some time after taking food, particularly if motion be avoided, but at length the pain becomes intense, nausea is excited, and the only temporary relief for the unhappy sufferer, is to get rid of the offending matter by vomiting. On some occasions there is ardent thirst with burning pain, and the patient describes his sensations as if his stomach were corded to the spine. When he changes his posture in bed, he feels the stomach falling from side to side, in the same manner that a woman for some days after delivery feels the uterus.

Feculent matter is occasionally vomited; this happened lately in a remarkable case under the care of Mr. Mitchelhill, and to whose kindness I owe a valuable preparation of the parts. A large oval opening was found in the centre of a cancerous mass in the stomach communicating with the transverse arch of the colon. In all cases the pain is increased more or less on pressure; and in some the induration may be felt, but I imagined only when the whole stomach, or a considerable portion, is affected. In one case the stomach was felt by myself and others at the umbilicus, and the woman placed our hands upon it; but in that instance the whole stomach was indurated, in some places thickened to the extent of more than an inch, with such a diminution of its cavity, that it could scarcely hold six ounces of alcohol thrown in, after it was removed from the body, in order to distend it. The immediate cause of death, in a considerable number of cases, is acute peritonitis, occasioned by the contents of the stomach passing into the abdomen through an ulcerated opening. This happened in the case alluded to above, and my museum contains several such specimens.

Cancerous affections about the head of the colon and the rectum, but particularly the former, are apt to give rise to symptoms of ileus. There is, in general, great irregularity of bowels; they are either constipated or loose. The evacuations are more than usually fetid, and there is a pain of a shooting character in the situation of the disease. If in the caput cæcum, there are frequently considerable fulness, and increased tenderness on the application of pressure; if the disease be confined to the rectum, frequent tenesmus and excoriations about the anus may be expected, together with lancinating pains and considerable discharge of sanguineous-looking matter when the disease is far advanced.

Causes.—The disease appears to our senses to be produced by accidental causes; but it is probable, that as pathology advances, it will be found to depend upon some other circumstances, perhaps upon original formation, either independent of, or connected with, specific action in the capillary arteries or veins. The woman from whom the stomach was taken which was so much indurated, had been for many years a notorious dram-drinker; she attributed the commencement of her complaint, and I believe truly, to a blow received eight months before her death, in the region of the stomach. A gentleman who had a large cauliflower excrescence in the stomach, had been all his life fond of good eating and drinking, and, perhaps, rather indulging in these respects; yet he was strong and healthy, and had no complaint till he received a fall from his horse one night returning home from a jollification. He pitched upon his shoulder, and sustained such a contusion, as induced him, I believe for the first time in his life, to seek for medical advice. The doctor purged him well with drastic medicines, till he made the poor man really sick; and then, being resolved to make a good job out of a bad customer, fancied he discovered some obscure disease of the liver, and as he knew mercury to be a remedy for affections of that organ, he mercurialized him well, so much so, that he kept up a salivation for many weeks. During this period, the patient felt, for the first time, that he

had a stomach; his appetite became impaired, and as the doctor knew that tonics were good for that, he sent many bottles of such drugs. Bark, steel and bismuth, were at last had recourse to, but, alas! the patient got weaker and weaker; the doctor grew tired of his patient, and the patient dissatisfied with his doctor, so that they parted, as it were, by mutual consent. Some time after this he fell under my care, when the symptoms of scirrhus of the stomach were so decided, that I had not the slightest hesitation in giving an opinion to that effect.

The history of both these cases is quite distinct; and a great many such might be quoted, in which the commencement of the affection could be traced to a particular cause; but it would be a pathological error to assert that the disease in the one case was owing to the blow, or in the other, to the specific action of mercury.

Treatment.—Although no means hitherto devised will cure carcinomatous affections, yet a great deal may be done in the way of checking the violence of the disease, mitigating suffering, and prolonging life. The chief circumstance to be attended to is to avoid eating any article which is likely to produce irritation. In very bad cases, patients have been much benefited by ass's milk, and have even recovered considerable flesh and strength under its use; thin arrow-root and gruel are to be tried; if ass's milk cannot be procured, fresh whey, with or without an addition of cream, is to be substituted. If the body still emaciate, additional nourishment may be thrown into the rectum, in the shape of beef tea, mutton broth, &c. The bowels must always be attended to; and the best manner of doing this is by an injection of senna and castor oil, administered every second or third day, as may be necessary. If the patient be teazed with vomiting, and worn out by pain, the most likely method of allaying both, is to exhibit small, but repeated doses, of the sedative solution of opium, which, after trying every other means, I have found to be the best. Should the pain, however, still persist, a few leeches may be applied; or if the patient be very weak, contra-irritation is to be produced with the ointment of the tartrate of antimony. Frequently, when the patient feels a little better after this treatment, his relatives will be found anxious to force nourishment upon him, such as beef-tea, animal jellies, and even wine; but they seldom fail to produce an increase of suffering in severe cases; therefore, physicians should be particularly careful to impress upon friends the necessity of attending strictly to the regimen prescribed.

CHAPTER VIII.

DISEASES OF THE LIVER AND SPLEEN.

In this chapter, I shall treat of Inflammation of the Liver; Abscesses; Tubercular Formation; and Scirrhus; also of Jaundice; Gall-Stones; and Diseases of the Spleen.

INFLAMMATION OF THE LIVER.

Acute inflammation of the proper substances of the liver is of comparatively rare occurrence in this climate: I believe that the peritoneal coat of this organ is more frequently the seat of the disease, and that inflammation of the liver is often confounded with functional and structural derangement in neighbouring organs.* I have seen some remarkable cases of this within these few years. One dissection revealed pericarditis, another inflammation of the inferior lobe of the right lung, and a third a collection of matter in the thorax; all of which had been mistaken during life, and treated for hepatitis by sundry courses of mercury!

The liver, like other viscera, may be affected with inflammation in various degrees of intensity and extent of surface; and these will give rise to symptoms of corresponding severity; but it will be sufficient to describe the acute and chronic hepatitis.

Some are of opinion that acute hepatitis is an inflammatory condition of the hepatic artery, and chronic of the vena portæ; Winslow asserted, that each had its origin in the ramifications of the vena portæ; but it is easier in such matters to make assertions than to bring forward good proof. The truth is, that we are ignorant of the matter; and although an interesting pathological question, yet it does not appear to me to be one of much practical importance, at least in the present state of our therapeutical knowledge.

[* "Dr. Bell, who has written on the diseases of India, describes two forms of acute hepatic inflammation, which are different as to their seat and character. In one of these, which he terms *sero-hepatitis*, the disease is on the surface of the liver: in the other, which he terms *puro-hepatitis*, it exists in the centre. In the sero-hepatitis he states that the patient is attacked with sudden pain in the region of the liver; and this is so severe that even the weight of the bed-clothes is insupportable; the patient cannot bear to turn, or to lie on his left side, from the pressure exerted in that position on the inflamed organ. But the deep-seated, or puro-hepatitis may go on in such a latent manner, that the first symptoms you have of liver disease are those which mark the occurrence of suppuration."—*Dr. Stokes's Med. Rep.*]

Symptoms of acute hepatitis.—The acute and sub-acute varieties almost always commence with some chilly feelings, succeeded by heat of skin; furred tongue having a yellowish appearance; irregular state of bowels, the stools being generally costive, like whitish clay, or dark-coloured at first, and assuming the whitish appearance as the disease advances. Sometimes there are vomited and passed by stool, considerable quantities of dark-coloured matter, occasionally resembling grumous blood; but this generally takes place, it would appear, when there is great accumulation of blood in the liver, and also in the vessels of the mucous membrane of the intestines. The urine is scanty and very dark-coloured; the skin hot, dry and harsh; there is some degree of dyspnœa and anxiety of countenance, together with nausea and vomiting, which are sometimes intractable, and considerable thirst. The pulse is sometimes, but not always, quick, strong and hard. In the most acute form, the pain in the region of the liver is severe, increased on pressure, accompanied by swelling and tension of the abdomen; pain is occasionally experienced about the top of the right shoulder, which is supposed by many to be pathognomonic of an affection of the liver; but nothing is more deceptive. The patient prefers lying on the right side. This complaint, whether slight or severe, is liable to be mistaken for affections of the neighbouring viscera, more particularly of the stomach and duodenum, and the serous membranes which cover both surfaces of the diaphragm, as well as inflammation of the lower lobe of the right lung. These are attended by some degree of cough, which, in many cases of hepatitis, is a marked symptom. A yellow discoloration of the skin, known in common language by the term jaundice, occasionally takes place in hepatitis, as does hiccup; but neither the one nor the other, nor both conjoined, can be said to be symptoms peculiar to hepatitis. When the inflammation affects the peritoneal coat of the liver, the pain is much more intense, generally speaking, and the fever higher, than when confined to the substance of the liver. Nothing is more unsatisfactory than the result of external examination, made to ascertain the condition of the liver when suspected to labour under disease. The contraction of the muscles of the abdomen; distension of the colon or stomach; disease of the kidneys; a collection of matter in the thorax pressing down the diaphragm, are all sources of deception. The patient is to be placed in such a posture as will relax the muscles of the abdomen, which will be best effected when lying in bed with the head and shoulders well elevated by means of pillows, and the knees drawn up towards the abdomen. In this position the examination is to be made; percussion is to be employed, to inform us whether there is any flatulent distension; and the patient should be fasting. He should be told to take a full breath, when pressure is to be made in the region of the liver, while the lungs are yet distended. With all these precautions, little satisfaction will, in general, be obtained from the examination, unless the liver be very large, because the right lobe is the part most frequently affected, which is concealed by the false ribs. The stethoscope will afford satisfactory negative information respecting the condition of the lungs. In the acute disease, the patient may die

either from the rapid destruction of the liver, or from the extension of the inflammation to surrounding parts.

Symptoms of chronic hepatitis.—This disease is very slow and insidious in its progress, and uncertain in its termination. There is a dull dragging pain in the right hypochondrium, increased by any considerable exertion, attended occasionally by feverish symptoms, and a dry, parched skin, irregular bowels, scanty high-coloured urine, tympanitic distension of the abdomen, sallow countenance, and frequent attacks of jaundice. The pulse is much affected, perhaps, for some time. On many occasions the patient is cut off by an acute attack of inflammation in a part of the liver which had not, perhaps, been previously involved in the disease, or from peritonitis, or from inflammation of the lungs or pleura. There may be pain in the shoulder, and sometimes a weakness of the right arm; the tongue is scarcely ever free from yellow fur, and is seldom very dry; the appetite is bad, and an eruption very often attacks the face and back between the shoulders, generally in the form of acne; the patient passes bad nights, although he may be able to attend to his ordinary affairs through the day, and is frequently teased with diarrhœa, tenesmus, and piles. In the chronic disease the patient may die dropsical, or sink under acute inflammation of the peritoneal coat.

We are assured by Mr. Twining, (in his Clinical Illustrations, &c. p. 146,) that inflammation of the liver is often far advanced (in Bengal) towards suppuration without the patient having suffered much pain; but he has never known a case terminate in abscess, without being able, by careful examination, to detect the disease in progress long before there was any reason to believe that suppuration existed. Among the diagnostic marks of central abscess of the right lobe of the liver, is a much greater degree of tension of the *right rectus abdominis* muscle than the left.—(P. 148.)

Mr. Twining introduces the subject of diseases of the liver, by remarking that they "occur so often among Europeans, in combination with the fevers and alvine fluxes of Bengal, that it is hardly possible to give a correct and complete account of hepatic affections, without alluding to the cases wherein fever or dysentery may have been the original or more important complaint, to which the liver affection has supervened."—(P. 135.)

Appearances on dissection.—The following are the appearances most frequently found in acute cases of hepatitis in this country. Adhesions between the liver and surrounding parts; fulness or enlargement, the organ having lost much of its elasticity; easily broken down between the fingers, its edges thick, and more rounded than natural. The colour will depend much upon the quantity of blood in the vessels of the organ; but in general it will be of a brighter red in the inflamed portions. It must, however, be kept in recollection, that venous engorgement produces discoloration of the liver; and sometimes reduces it into a pulpy state. In either case, the distinction between the red and whitish-yellow parts of the liver is destroyed. In those affected with jaundice, the colour of the liver will have a similar tint. The termination by abscess is by no means rare in tropical climates, and it is sometimes seen in this country, although

I believe that tubercular degeneration in a state of softening, is not unfrequently mistaken for abscess. This termination of hepatitis in the formation of abscess, is, however, not always fatal. The matter may escape in various ways:—1*st*. Externally through the parietes of the abdomen, by the intervention of adhesive inflammation between the peritoneal surfaces. 2*d*. It has been expectorated, after finding its way through the diaphragm into the substance of the lungs. 3*d*. It may find its way into some part of the intestinal tube, and pass off by stool. I have seen instances of all these terminations, the patients recovering partially, but never completely, although permanent cures are said to have taken place after such events. The matter has escaped from the liver into the cavity of the abdomen—into the thorax—the gall-bladder. [A single example of this kind has occurred in my own practice: the purulent evacuations were abundant and of long duration; and, from the attendant circumstances, I have no question of their hepatic origin. "Two instances of recovery," says Dr. Chapman, "I have known myself. The first of these was the captain of a ship in the India trade, and the second in a lady of this city, both of whom had unquestionably abscess of the liver, and were permanently cured, after immense evacuations of pus, upwards and downwards."*] Andral alludes to a case in which an abscess of the liver communicated with the interior of the vena cava, and another with the pericardium.

Mortification is, I believe, unknown as a termination of hepatitis; it is often mentioned by the older writers, who called every part which was dark-coloured and soft by that term.

Under the sub-acute and chronic forms of hepatitis, there is, perhaps, a greater variety of morbid appearances. The following are the principal alterations observed, viz.: enlargement; hardness; contraction; (atrophy;) granular appearance increased, sometimes diminished; red parts increased, and whitish; yellow parts diminished; or *vice versâ*. We sometimes see the liver variegated green; a brick colour; sometimes there are darkish-red bodies in a yellowish ground, or yellowish bodies in a red ground, at others greenish bodies in a bright yellow ground. The whole liver is sometimes converted into a diseased mass, the surface of which looks of a mottled green, with projections from its surface of different sizes; a section produces a thick, tenacious, bloody exudation, and when wiped away, leaves the surface of a curious variegated appearance, containing spots, some the size of a half-crown, others smaller than a sixpence, of a yellow colour, streaked with red and white lines, each spot appearing to have a distinct centre, with red and white lines running towards the circumference. In a case of this kind, of which I have drawings, the cystic duct was destroyed, the gall-bladder much distended with dark-coloured viscid bile, and its coats greatly thickened. In many cases of chronic inflammation of the liver, I have distinctly traced increased vascularity in the vena portæ and its branches, together with thickening of the coats of the vessels to such a degree as to resemble layers of cartilage. Similar appearances are to be observed also in the lower animals.

[* Lectures on some diseases of the thoracic and abdominal viscera, p. 317.]

Mr. Twining mentions having observed tumours, varying from the size of a grain of barley to that of a bean, situated in the capsule of Glisson. According to this gentleman's observation two small bodies can always be found by dissection, which he believes are absorbent glands. One of these bodies is situated near the termination of the gall-bladder, in the *cystic duct;* the other at the upper part of the *ductus communis choledochus.* He thinks enlargement of these bodies, with inflammatory excitement about the capsule of Glisson, may cause an obstruction, and in some cases obliteration, of the biliary ducts.—(P. 142.)

Causes.—There can be no doubt that the disease is more frequent in warm climates than in this country, and still more so in the East Indies than the West; which shows that heat alone is not a specific cause of hepatitis. Indolence, along with full living on high-seasoned food, and a neglected state of the bowels, are, I imagine, the principal causes of hepatitis in all climates; and when to these are added high temperature, atmospheric vicissitudes, and constant and copious perspiration, it is no wonder that the disease should be very prevalent among Europeans in India. We are assured by Mr. Twining, that Europeans recently arrived in Bengal are very liable to liver diseases, from exposure to atmospheric vicissitudes, or to the common causes which produce fever in Europe; and that habitual plethora, and an abundance of stimulant food, beyond the real wants of the constitution, doubtless to keep the greater number of Europeans in India in an almost perpetual state of high predisposition to inflammatory and suppurative disease of the liver. (P. 153.) In this country, dram-drinking is an alleged cause; but I believe this pernicious habit produces disease of the stomach more frequently than of the liver. A congested state of the vessels of the liver must also tend to produce inflammation of its substance; hence it often succeeds to intermittent and remittent fevers. Various other causes have been assigned; but for these, and for many valuable observations, the reader is referred to the various works published by authors who have had the charge of sick in India. But it is with pleasure that I take this opportunity of earnestly recommending every medical man going to India, or any similar climate, to take with him Mr. Twining's works.*

I believe that women are more liable to diseases of the liver than men in Great Britain, owing probably to their sedentary occupations; but it is confidently stated by Mr. Twining, (p. 256,) that in India, European women are less liable to *acute liver diseases* than men of a corresponding class of society, by reason of their more temperate habits of mind, as well as less exposure to the exciting causes, and more abstemious mode of living. But they are liable to insidious diseases of the liver after fevers, and in consequence of disorder of the digestive organs. Diseases of the liver are well known to be a frequent consequence of chronic phthisis.

Treatment.—The more intercourse I have with intelligent practitioners, who have been in India, the more I am convinced that the

* The London publishers are Messrs. Parbury, Allen & Co., Leadenhall-street.

action of mercury has been too much trusted to, to the neglect of the lancet, and particularly of local bleeding; and that drastic purgatives are too much in use. Therefore I would recommend the lancet, in the early part of the disease, to be used with decision; but if it be too far advanced, the application of leeches may be trusted to, together with gentle laxatives, frequently repeated, assisted by injections. I have a high opinion also of long-continued contra-irritation; but to act beneficially, it must be persevered in, and assisted from time to time by local abstractions of blood. Occasionally, the solution of tartar-emetic may be given, if the stomach be not already in a too irritable condition. Mercury may be used, as a powerful assistant to these means, rather than as the principal remedy; perhaps it may be found, in such cases, to be more useful in restoring the proper functions of the liver, after diseased action has been reduced, than in reducing that action itself. The warm bath is to be frequently employed. The diet should be of the blandest description, and the patient must avoid fatiguing exercise, particularly on horseback, for a considerable time after his convalescence.

"The object in the treatment of severe acute cases of hepatitis," says Mr. Twining, p. 155, "is considerably to diminish the quantity of circulating fluid, and permanently to subdue the action of the heart and arteries; and by abstaining from food, and taking very little drink, at the same time that we use purgatives, to keep the system so empty and low that absorption shall be performed with activity. This condition is to be maintained by a steady perseverance in purgation, and repeated vascular depletion, until we have effected the dispersion of the vascular turgescence, and absorption of that interstitial deposit, more or less of which exists in almost all acute inflammations of the liver, very soon after the disease commences. Supposing the patient to be first seen in the morning, an active purgative should be given, and he should be bled from the arm to one pound and a half, or two pounds. The bleeding must be repeated every six hours, until the pains in the side and fulness of epigastre are relieved. Three hours after the second bleeding, 20 leeches should be applied." Again, he states that, "in all severe cases of hepatitis, the patient's life depends on systematic pursuance of general and local blood-letting, with quiescence, and strict attention to almost entire exclusion of food; even drink should be taken in limited quantity while we are endeavouring to empty the vascular system."—(P. 156.)

Mr. Twining states, that when the disease is severe in India, removal to a colder climate is considered essential, and remarkable recoveries have taken place during the homeward-bound voyage.

It must not be supposed, from my statement regarding the limited use of mercury, that I have joined the standard of those who pertinaciously resist the employment of mercury in all diseases, and who insist that every little eruption, or accidental disease of a bone, or chronic ulceration of the throat, is produced by the action of mercury, although the individual may not have taken a grain of it for twenty or thirty years.

It is said that mineral waters, as those of Cheltenham and Harrowgate, are found exceedingly useful in diseases of the liver, as also

the nitro-muriatic acid bath; and I think benefit has been derived from the use of iodine, but it becomes me to speak doubtfully respecting these remedies. Chronic hepatitis, and other diseased states of the liver, are to be treated pretty nearly upon the same principle; except drawing blood from a vein, which is rarely called for; whereas, the action of mercury is likely to be more beneficial than in the acute form of the disease.

Much mischief is done in this country generally, and particularly in South Britain, by the conduct of many medical practitioners, who denominate every little indisposition "a fit of the bile," and attribute a great deal too many of the phenomena that daily present themselves, to disorder of the liver. They either pour mercury quickly into the system, or keep people for months under the gentle influence of an alterative course of blue pill, with an occasional five-grain dose of calomel, followed by a drastic purgative next day. All this is too frequently done when nothing whatever ails the liver, the complaint consisting of a vascular state of the mucous membrane of the stomach and duodenum; the cause of which is, perhaps, some error of diet, or persevering in eating more than the wants of the system require, or drenching the stomach with too much liquid. Many examples of this description fall under my care annually; in which a properly restricted diet, gentle, unirritating laxatives, a warm bath twice or thrice a week, and the application of a contra-irritant to the epigastric region, occasionally, for a month or six weeks, produce as much relief as can be expected after years of maltreatment and quackery.

I have a few words to say respecting scirrhus of the liver and tubercular formation. The true scirrhus of this organ is, I imagine, as rare as mortification; and as a congested appearance is often mistaken for mortification, so is tubercular formation for scirrhus. A diseased state of liver, corresponding to scirrhus in other organs, is, however, occasionally seen, and is to be distinguished by its indurated condition, and its white bands. Another appearance, similar in every respect to medullary sarcoma, is occasionally observed, of which I have seen two or three instances, and possess drawings taken from two cases. Sometimes tubercular formation may be traced, extending from the peritoneum into the substance of the liver: the peritoneum having a thickened, opaque, and sometimes puckered appearance, occasionally contracted inwards, so as to give a resemblance of loss of substance from the discharge of an abscess. On some occasions, the tubercular masses project from the surface of the liver, producing a lobulated appearance. Sometimes, however, the peritoneum looks perfectly healthy, although there may be considerable enlargement of the organ itself; and when cut into, large tubercular masses are discovered, sometimes near the surface, at others deep-seated, which look yellow, and resemble the general tubercular infiltration which takes place in the lungs. The liver is sometimes found studded with yellow bodies of different sizes and shapes. The organ is of a reddish tint, and these bodies look like yellow wax sunk into the texture. They are not like tubercles. Andral considers that they are merely the white substance in a state of hyper-

trophy. Laennec believed them to be an accidental tissue found in the liver, and termed the disease *cirrhosis*. Sometimes the peritoneal coat only is studded with tubercles of the miliary kind, in various degress of progress, some being quite vesicular, and others crude.

We sometimes meet with a liver of a pale or bright yellow colour, exceedingly soft and tender, containing a large quantity of oil. This is called the fatty liver, and although most frequently seen in phthisical subjects, is yet met with when the lungs are not diseased. A liver in this condition, looks, when superficially observed, of uniform colour, but when minutely examined, there will be seen minute brown, red, or greenish spots or lines on a yellow ground. Sometimes the fatty liver does not exceed the natural size, at others it is greatly enlarged. I have seen one so large that its inferior margin extended rather beyond the brim of the pelvis. Another weighed nearly 16 pounds; large sections of this liver floated even in strong alcohol. Sometimes the fatty matter is not universally infiltrated through the liver, but deposited in small masses here and there. [Fatty liver is also a very frequent occurrence in persons who have lived intemperate lives.]

A preparation of a diseased liver was presented to me some time ago, in which there was a large effusion of lymph thrown out between the diaphragm and the liver, with adhesions round the edges, which closely resembled a tuberculated liver.

Cysts containing hydatids are sometimes found in the substance of the liver, sometimes two or three in number, containing large quantities of these vesicular bodies. Various opinions are entertained respecting the origin of hydatids, but after an attentive consideration of the whole subject, and a minute examination of the bodies themselves, I think they are not animals, but ought to be regarded as diseased products like tubercles.

JAUNDICE.

It has already been stated, that jaundice is not an invariable attendant on hepatitis. It would seem occasionally to depend upon diseases of the gall-bladder and biliary ducts, perhaps inflammation. It is sometimes occasioned by obstructions of various kinds, as thickening and obliteration of the ducts, and during the passage of gall-stones. I have seen jaundice where no morbid appearance or mechanical cause of obstruction could be discovered after death. It must be confessed that much remains to be done in the anatomy, physiology and pathology of the liver. Jaundice may be produced, however, by one or other of the following causes: diminished secretion of bile, greatly increased secretion, viscidity of the bile itself, acute or chronic disease of the liver and gall-bladder, inflammation and obliteration of the biliary ducts, obstruction from gall-stones, and possibly, by spasm of the ducts.

Phenomena.—Jaundice takes place, as has been already stated, as an occasional symptom of hepatitis, but sometimes it occurs suddenly in cases where there could have been no acute action, or

disorganization of any kind, and preceded by languor, some degree of restlessness, diminution of appetite, flatulent distension, and other symptoms which attend indigestion, nausea, vomiting, and dull pain, or sense of weight in the right hypochondrium. The tongue is generally furred and yellow; the urine scanty, commonly of a deep yellow, sometimes tinged green, and occasionally like the grounds of porter; bowels slow, and the evacuations whitish. The tinge of the skin is somewhat preceded by a tingling or itching of the whole body, and the colour of the surface is various, from that of pale citron, almost to black. The conjunctiva of the eye partakes also of the colour. Occasionally there is some fever, and the nights are disturbed. Jaundice sometimes comes on insidiously; at others, suddenly. Thus, I have known a man to sit down to dinner in tolerably good health, and be soon obliged to retire, from feeling indisposed, with his whole surface suddenly tinged; the first circumstance which excited attention was a remark which fell from himself, that the table-cloth was of a greenish colour. This observation leads me to remark, that I have known several individuals who saw every object discoloured.

Treatment.—The treatment of jaundice is not well understood. When it accompanies disease of the liver, it must be treated as a symptom; if it seem to proceed merely from functional derangement, the warm bath, one or two emetics, and continued laxatives, should be employed, together with a gentle course of mercury. If there be pain, the application of leeches may be necessary, conjoined with contra-irritation. Great attention must be paid to the diet also, which may be more or less antiphlogistic, according to the urgency and duration of the symptoms. The nitro-muriatic acid bath has appeared to be serviceable in many cases. [Dr. Johnston, of London, announces that he has succeeded in curing several very severe cases of jaundice, with inspissated ox-gall, in doses of five grains, gradually increased to ten grains, three times a day. We confess ourselves at a loss to explain the probable modus operandi of this substance; and Dr. Johnston himself appears to attribute the benefit derived from it to the fact of its being the best substitute that can be found for the human secretion.]

GALL-STONES AND WORMS.

As long as gall-stones remain in the bladder, they seem to be productive of little annoyance. I once found two hundred and forty in the gall-bladder of a subject, whose history was not known; but on several occasions, I have met with them after death, in which no suspicion of hepatic disease had existed. Sometimes there is only one calculus, which fills, or nearly fills, the gall-bladder; and I owe a very splendid preparation of this kind to the kindness of Dr. Combe and Mr. Cheyne of Leith.

Gall-stones create pain, it would appear, only when they are in the act of passing towards the intestine. In such circumstances, the patient is seized with violent paroxysms of pain, during which his

sufferings appear to be as great as any human being can well endure; he ascribes his sufferings to spasms. The abdomen is sometimes painfully distended by flatus; it is very curious, however, that the pulse frequently remains quite natural during a paroxysm, although sometimes it is rather accelerated. The bowels are sometimes constipated, at others diarrhœa takes place, and a considerable quantity of mucus is occasionally discharged.

Treatment.—We have to direct our attention, in this case, to moderate symptoms. Sometimes bleeding will be productive of relief; at others, it does not seem in the least to mitigate the patient's sufferings, but I conceive it to be good practice to open a vein in a strong, plethoric person. The warm bath, and hot fomentations, are to be frequently employed. Large doses of opium are to be exhibited, and the bowels must be carefully and daily attended to. It may be mentioned also, that leeching and cupping are sometimes necessary. [The emetic treatment recommended by some physicians, is not always allowable: yet it will often relieve the paroxysm in a decided manner, and by relaxing the duct, assist the passage of the stone. Where, however, the attacks are frequent, this passage requires caution or the stomach may sustain a permanent injury. I have lately met with a case which is relieved only by emetics, and in which I cannot doubt that small concretions have repeatedly passed into the intestine.

The liver and its appendages, like various other parts of the human organization, are occasionally infested with worms. The most remarkable of these is called the Fluke, (*Fasciola hepatica*, and *Distoma hepaticum* of naturalists) which is found in the gall-bladder and biliary duct. It has a flattened, elongated oval form, rather pointed at each end. There are no characteristic symptoms attendant on the presence of these worms, which belong equally to man and several of the inferior animals, and especially in the sheep, constituting the disease called *the rot*.

The liver is not unfrequently the seat of worms of the *hydatid* kind, of which the following have now become familiar to the researches of the pathologists.

1. *Acephalocystis endogena*, which infests the liver in vast numbers, but always encysted. They are sometimes found after death, without having occasioned any appreciable disorganization or distress during life. In other instances they form a large tumour in the hypochondriac region.

2. *Echinococcus hominis.*—This parasite, observes Dr. Farre, closely resembles the preceding one, and is found not only in the liver, but also in the spleen, omentum and mesentery. It consists, like the former, of a simple bag, which appears to be formed of two layers, to the *inner* one of which are appended other animalcules of the following kind:

3. *Animalculi echinococci.*—These creatures, says Dr. Farre, are chiefly remarkable for being "the parasites of a parasite," for they are found loosely floating in the cavity of the echinococcus.]

INFLAMMATION OF THE SPLEEN.

It is not easy to determine when the spleen is inflamed, for when found diseased, on dissection, there have been no symptoms during life which could be said to indicate disease of this organ more than any other in the abdomen. In all probability this matter is not likely to be discovered, until we know more of the physiology of this organ. It is occasionally found diseased in this country, but still oftener in warm climates, more particularly in situations where intermittent fevers prevail. It has been known to weigh above eight pounds; sometimes it is hard, but most generally we find it, when diseased, soft like a coagulum of blood; it is in such circumstances that the erectile tissue is best seen, a fine specimen of which is in my museum. The spleen, like the liver, is also subject to the formation of tubercles, both in its substance and capsule. In two or three cases of tuberculated spleen, which were examined minutely, I found the tubercles almost spherical, each inclosed in a capsule.

Some time ago, a preparation was presented to me, of a large abscess in the spleen, the walls of which were partly formed by the stomach and diaphragm. In the centre of the abscess, a portion of spleen, the size of a large nut, was found quite detached. In the thorax, the pleura, covering the corresponding part of the diaphragm, was inflamed, and the interior surface of the right lung adhered. In this case, there were no symptoms to show that the spleen was affected. The patient died after amputation of the leg, which was performed with great reluctance, after the occurrence of mortification, as the only chance of prolonging life; extensive disease of the arteries was discovered. There is a splendid dried preparation in my museum, showing the state of parts.

Inflammation of the spleen is *said* to be recognized by heat, fulness and tenderness in the proper region, with pain on pressure: for instance, Cullen has given the following definition: "Pyrexia, tension, heat, tumour and pain in the left hypochondrium, increased by pressure, without any signs of nephritis."

Discharge of livid blood from the stomach and bowels has often been observed during life, in cases where extensive disease of the spleen was afterwards discovered on dissection; but the same thing happens from other causes.

A new light is thrown on this much neglected subject, by the pathological investigations carried on by Mr. Twining, at the General Hospital at Calcutta. I feel that no apology will be necessary to my readers for the following long extracts from Mr. Twining's work already quoted. I place more confidence in the writings of this gentleman, from the gratifying accounts I have from time to time received from several of my former pupils, of the zeal of the writer, and the correctness of his facts.

"Diseases of the spleen," says Mr. Twining, "may be deemed important, not only by reason of their frequency, severity, and the danger with which they are attended in Bengal; but on account of the change which the constitution undergoes previous to their ori-

gin, and during their existence; as well as the modifications which they produce on the nature and tendency of other diseases, that may occur at the same time. Instead of viewing the enlargement of the spleen as the principal object for investigation, it will be consistent, with a correct view of the disease now under consideration, to speak of the enlargement of the spleen as one of the phenomena usually attendant on a peculiar description of constitutional disorder. The characteristic symptoms of this disorder are generally debility, paleness, and a deficiency of red blood in the capillary system of vessels; this is most remarkable in the pale and bloodless aspect of conjunctiva, hectic blueness, or pearl colour of the sclerotica, and chlorotic discoloration of the visage, tongue, and gums. The circulation is generally languid, and the extremities are apt to become cold; the skin pale, shriveled and arid. In the chronic disease, affecting emaciated subjects, we often find a dry furfuraceous desquamation of the cuticle. We sometimes see a chronic enlargement of the spleen in adults of pale, sallow and unhealthy aspect; who eat and drink as they did in health, and seem to endure the disease for many months without much suffering, except the inconvenience of a tumid belly, attended with shortness of breath, and occasional returns of indistinct ague. The disease is far more distressing to children: in them, if careful attention to diet and correct medical treatment be omitted, the enlargement of the spleen, and corresponding decay of general health, are in most cases progressive, and they sink into a state of marasmus. In fact, a person who has arrived at a mature growth and strength, may exist for a while, with a degree of induration and enlargement of the spleen which is incompatible with growth, or even the continuance of life, in those below puberty, for we find that children with this disease, soon become poor, languid, weakly creatures; whose breath and the exhalations from their bodies, have a nauseous, sickly odour, indicative of the unsound state of their constitutions. This distressing and obstinate malady is not peculiar to the natives of this country, nor is it confined to the poorer order of Europeans. I have observed the disease in its severest form, to come on after fevers, affecting the children of wealthy Europeans, who lived in every comfort, and were attended with the greatest care. It is not unfrequently accompanied, in such patients, by the extreme degree of constitutional disorder, which marks its advanced stages in the poorer classes of natives.

"Females affected with enlargement of the spleen, are liable to suffer from amenorrhœa; and cases of spleen disease, in which the periodical return is not obstructed, may, for the most part, be considered as having a favourable prospect of recovery. During the continuance of vascular engorgement of the spleen, patients are very prone to foul sloughing ulcers, from slight wounds or bruises; and when local inflammations exist, those peculiar characters of active inflammation, and that healthy constitutional energy, on which deposition of coagulable lymph depends, and by which we find injuries repaired, and the extension of ulceration, as well as the progress of

sloughing, arrested on ordinary occasions, seem to be in great measure, if not entirely subverted.

"Blood drawn from veins varies much in appearance; sometimes it coagulates imperfectly and no serum is separated; in other cases the cruor is black and soft, and after being exposed to the air, its surface does not generally assume that more florid colour which we observe on the top of a coagulum of blood drawn from the vein of a healthy person, and it seldom exhibits a buffy coat, except when ardent pyrexia is present, or when the disease is attended with acute pain in the side. The serum, when heated, coagulates as firmly as that of a healthy person, but the coagulation is more friable, and less tough; and this coagulated albumen frequently has a slightly yellowish appearance; sometimes it has a greenish colour.

"Several of the characteristics of scorbutus are present during the vascular engorgement of the spleen: there is a tendency to hæmorrhage from slight causes or injuries; leech-bites, blisters and issues are apt to ulcerate during the rainy season; and at times the slightest ulcerations are apt to slough. Foul gangrenous ulcers of the lips and gums, are liable to form in consequence of slight local irritation, (and often without any obvious cause,) whereby the jaw bones become carious, and exfoliate, and the teeth fall out. Hæmoptysis as well as hæmatemesis occasionally occur when the spleen is very large, and probably the blood which is vomited sometimes flows into the stomach from vessels communicating directly with the splenic vein, as the intumescence of the spleen has been observed, in some cases, to be immediately reduced by these evacuations of blood. It is true, that profuse hæmorrhages from the nose, lungs, or stomach, sometimes suddenly destroy life; but we see other cases, where the functions of the system not having been much disordered previously, the patients recover quickly after these profuse losses of blood; and the disease of the spleen is thus entirely cured. The results of these spontaneous hæmorrhages should not be forgotten, in deciding on our plans of treatment in ordinary cases of spleen disease.

"Most patients, with enlargement of the spleen, are affected with a short and imperfect respiration; the general appearance of the patient evincing that decarbonization of the blood is insufficiently accomplished, and every attempt to take active exercise excites panting and distress at the chest. Among the usual attendants on vascular engorgement of the spleen, we may observe impaired appetite, difficult digestion, and imperfect assimilation of the food. There is generally despondency and depression of spirits; inactivity of body and torpor of mind, with much muscular debility; and this latter symptom is remarkable, although the patients be not much emaciated. When active pyrexia is not present, the urine is pale, often copious. In the latter stages of the disease œdema of the feet is present, and sometimes the face and eyelids are swollen. The majority of protracted cases that terminate fatally, suffer from dysentery, or dropsy of the belly; and when the abdomen is much distended from this latter cause, the superficial veins on the side of the chest and belly appear large and numerous; showing the extent and degree to which the circulation in internal organs becomes ultimately obstructed.

"Diseases of the spleen often occur in conjunction with dysentery, intermittent and remittent fevers, scorbutic affections, and sometimes with the diseases of the liver.

"The tumefaction of the spleen occasionally comes on very suddenly, in the course of remittent fevers, in Bengal; and in a few days the enlargement can be seen as well as felt, extending far below the cartilage of the left false ribs. The degree of enlargement which takes place is variable; it is very common to see the spleen extending downwards on a level with the umbilicus; and laterally, from its usual situation, as far as half-way between the cartilages of the ribs and navel. In extreme cases the diseased spleen fills more than half the belly, extending to the right of the navel, while its lower extremity reaches the left iliac region. Several cases of this enormous tumefaction may be seen every year in Calcutta; and some of them recover. Besides the globular tumefaction of the spleen above mentioned, there is a more oblong enlargement, in which the anterior edge of the organ is felt deeply indented with fissures. In this description of disease, there is more induration than attends the globular tumour; and the patients are cured with greater difficulty. This is considered by the native practitioners a very dangerous and intractable form of the disease.

"The greater number of cases of the affections above described, are unattended with local inflammation; although there is almost always morbid sensibility on pressure being made over the left hypochondre, during the early stages of enlarged spleen; and sometimes slight pressure over that part causes exquisite pain. Splenitis, or acute inflammation of the peritoneal coat of the spleen, would appear to be a rare disease; it sometimes exists without much enlargement of the organ, and then the symptoms very much resemble pleuritis of the left side; doubtless splenitis is occasionally cured, by the antiphlogistic treatment pursued, when pleuritis is supposed to exist. Pain in the left shoulder is rarely present.

"The progress of vascular engorgement of the spleen is more or less rapid, according to the injury which the constitution may have suffered from damp climate, and the nature and duration of the fevers which the patient may have recently suffered.

"Enlargement of the spleen sometimes appears as an idiopathic disease in children, and in persons of delicate and feeble constitution; and is produced by the combined influence of a damp climate, variable temperature, want of exercise, unsuitable clothing, and insufficient nourishment, during the slow and silent influence of long-continued grief and distress of mind; the secretions generally appear to be perverted, the cutaneous circulation becomes languid, healthy transpiration obstructed, and then we often find enlargement of the spleen take place in Bengal. The disease, when dependent on such causes, is always difficult to cure. The most part of the cases of vascular engorgement of the spleen in this country, follow intermittent and remittent fevers; and tumid spleen may be stated as the most invariable consequences of acute and debilitating diseases among children of weak constitutions in Bengal. The same sort of enlargement takes place here in the spleen of adults, in consequence of various

debilitating diseases, (but more especially after protracted remittent and intermittent fevers,) which we occasionally meet with at all seasons; but they are seen in their worst forms about the latter end of the rains, and commencement of the cold season, just when concentrated exhalation and considerable diurnal changes of temperature co-exist, which repress the action of the skin, and force the circulating fluids on the internal organs of the body. At that season of the year congestive fevers are frequent, and lamentably fatal at the low and damp situations in these tropical regions. These fevers prevail not only in the country forming the delta of great rivers, but in the marshy situations at the foot of hills and mountains, where the soil is composed of alluvial and vegetable remains, washed from the neighbouring hills into situations where there is no drainage, and an imperfect ventilation. The assemblage of constitutional symptoms, described in the foregoing pages, constitutes the endemic cachexia of those tropical countries that are subjected to paludal exhalations. The enlargement of the spleen is the most frequent attendant on this cachexia; and its increase, or subsidence, generally corresponds with the unfavourable or favourable changes which are taking place in the constitution. It is, however, proper to observe here, that the constitutional symptoms sometimes exist in a very marked degree, where neither enlargement nor morbid sensibility of the organ itself is very palpable.

"On dissection of subjects in whom disease of the spleen has terminated fatally, we find a considerable variety in the morbid appearances of that organ, which may be described under the following heads: the most frequent diseased appearances being placed first in order.

"1.—A soft rounded enlargement of the spleen, the texture less firm than in the healthy state, and easily broken if the finger be pushed abruptly against it. In some cases the part is so much softened, that it resembles a great clot of blood, wrapped in a thin membrane; this varies in colour from black, to brown or blue, and in the extreme degree of softening, when we attempt to lift the tumid spleen, the fingers are thrust through the membrane, and the organ breaks down in the hands, becoming a putrid gore. This soft globular enlargement, from vascular engorgement of the spleen, most commonly attends, or follows, the severe remittent fever of the rains and cold season, when that disease attacks weak and unhealthy young persons.

"2.—Oblong enlargement of the spleen; the organ being more firm in texture than in its natural state, its edge thin and notched; the colour being sometimes a pale brown, though more generally a dusky red. This morbid change of structure would appear to be the result of more slow and gradual degeneration, which, in its earlier stages, has probably been attended with some inflammatory condition of the internal structure of the spleen; in such cases we also find evidence of superficial inflammation attended with adhesions to adjacent parts, more frequently than in the rounded enlargement from simple vascular engorgement.

"3.—Opaque patches of various sizes; some of these extend over

half the convex surface of the spleen, and are nearly 1-8th of an inch thick; they may be deemed the result of albuminous depositions during superficial inflammation.

"4.—Adhesions of the peritoneal coat of the spleen to contiguous viscera; which adhesions are by no means a general result of tumid spleen in Bengal.

"5.—In a few old cases, we find a more indurated friable spleen, that breaks when handled without much force, like a piece of old moist cheese.

"6.—Still more rare, is the firmer induration intersected with septa of condensed fibrous structure; to which we give the name of scirrhus.

"7.—Tubercles of various sizes, generally small, and of gray or brown colour.

"8—An organized coagulum in the splenic vein.

"9.—Encysted tumours.

"10.—Abscesses of the spleen.

"The four last-mentioned morbid appearances are extremely rare in Bengal.

"Besides the above appearances of disease, we sometimes see an uniform pale white, or milky colour of the peritoneal coat of the spleen, which tunic is unusually tough, like a thin bladder that had been dried and afterwards wet in hot water, the substance of the spleen being soft and flexible. This has been observed in the *post-mortem* inspection of persons who had been long subject to agues. In patients who have suffered from spleen disease, and are destroyed by a purging, numerous small ulcers are found on the internal membrane of the great intestines, while the peritoneal coat appears either quite healthy, or paler than usual; the mesenteric glands, in such subjects, are often enlarged.

"Our treatment of the early stage of enlargement of the spleen must depend much on the nature of the co-existent pyrexia, and the degree of morbid sensibility, when pressure is made over the left hypochondrium, as well as the nature of other acute symptoms that may be present. We would also be much guided by the degree of plethora, and general condition of the patient. But mercury must never be used with a view to cure the diseases of the spleen.

"The treatment found most useful in that modification of enlarged spleen, which consists in vascular engorgement of the organ, is perseverance in a course of purgative medicines, combined with bitters, and some preparation of iron, of which small doses of the sulphas ferri appear to be the most efficacious. My usual formula, for cases where there is not much pyrexia, is, Pulv. jalap.—Pulv. rhu., Pulv. Columbæ.—Pulv. zinziberis.—Potassæ supertartratis, āā ℥i. Ferri sulphatis, ℥ss.—Tinct. sennæ, ℥iv. Aquæ menthæ sativæ, ℥x. Misce.

"This prescription is called the spleen mixture.* The dose is one ounce and a half for an adult, at 6 A. M. and repeated at 11 A. M.

* The efficacy of preparations of iron in the cure of enlarged spleen, is pointed out by Magnatus, in his Thesaurus de Materia Medica, vol. ii. page 901, as well as in Pinel's Nosographie Philosophique, vol. iii. page 547. See also Celsus de Re Medica, lib. iv. c. i. sect. 5.

daily. For children, the doses are regulated so as to produce not less than three, and not more than four stools daily. This medicine acts as a purgative, tonic, and diuretic. The purgative properties in the two first articles in this prescription, will be assisted by the cream of tartar, while that medicine with the jalap generally acts on the kidneys; the principal effects of the other ingredients, may be referred to their tonic and astringent properties. The cure of the enlarged spleen, may probably be, in some measure, owing to the effects produced on the circulation in that organ, by the frequent application of a powerful astringent to its immediate vicinity. The natives of this country are decidedly of that opinion; for, on administering remedies containing sulphate of iron in spleen disease, the patient is commonly directed to lie on the left side, that the medicine may flow to that part of the stomach in contact with the spleen. I have formerly used the above prescription with treble the proportion of sulph. ferri now directed; and on dissection of some young subjects, who came under my care in an advanced and desperate stage of the malady, and who died of the diseased spleen while taking the mixture with the larger proportion of sulphate of iron, I found the stomach quite white, and exceedingly contracted, more resembling a man's thumb than a young child's stomach. I now consider the smaller quantity of sulph. ferri more proper for ordinary cases; and sometimes add ʒi of pulv. scammon. comp. to the above mixture, for patients who are very costive, and require stronger purgatives. On the other hand, in very delicate and emaciated subjects, who are easily purged, it is requisite to substitute compound tincture of cardamoms for the tincture of senna; and if there be any disposition to paroxysms of intermittent fever, I add to the mixture the same quantity of quinine as it contains of sulphate of iron.

"When the disease is obstinate, there is an advantage in changing the prescription occasionally; and after the above has been used for 10 days, the patient, if an adult, is directed to take eight grains of compound extract of colocynth, with two grains of gamboge, in pills, at bed-time; and 20 drops of tinct. ferri muriat. in a wineglass of water, with ʒi of tinct. gentian. comp. at 7, and repeated at 11 A. M. These medicines are to be continued for five days; and then, after taking the spleen mixture for ten days more, the patient is ordered to take ʒss of the powder of black myrobalan, with ʒss of black salt, every morning; and eight grains of compound extract of colocynth, with two grains of sulphate of iron, and two grains of aloes, in pills at bed-time. Thus, for two-thirds of the time, the patient is taking the spleen mixture, with the occasional change to another medicine for a short interval, whereby the efficacy of the principal remedy is not weakened by its habitual use. It cannot be of importance to adhere invariably to a precise number of days in using each prescription, but an occasional change is requisite; and at any time during the treatment, if the patient becomes feverish, the above medicines are omitted, a dose or two of jalap is given, and leeches or venesection employed. In a few cases, we find enlarged spleen attended with cough, and the febrile stage of catarrh; and these cases are better treated for a few days by venesection or leeches,

purgatives and tepid bath, before we begin the mixture containing sulphas ferri.

"As a general plan of treatment for Europeans, those adult subjects, who are not much reduced in strength, must be bled from the arms, and have from four to ten leeches applied over the region of the spleen every second day, for a fortnight. Should there be pyrexia, the venesection should be repeated once or oftener; the blood should always be taken while the patient is in the recumbent posture, and it is seldom requisite to take more than one pound of blood at a time from an adult. In all cases where fever exists, or venesection is requisite, I have found much benefit from directing a purge of compound powder of jalap, or of scammony, with cream of tartar, and a grain of gamboge, to be repeated for two or three days before the sulphate of iron was administered in combination with bitters and purgatives, as above directed.

"In the treatment of diseases of the spleen, a careful attention to regulate the patient's diet is of the utmost importance. During the continuance of fever, the nature and quantity of food must be directed with reference to the degree of pyrexia, and symptoms of local inflammation that may exist. When patients not much reduced in strength are suffering from the early stage of vascular engorgement of the spleen, and having only occasionally slight pyrexia, it is advisable that the medicine should be given twice a day, so as to operate freely three or four times; no meat should then be allowed; they must live on tea, bread, sago, gruel, and chicken-broth or kid-soup, in very small quantity. But in the more chronic cases, where we must patiently wait for slower changes in the constitution, and the gradual removal of the enlargement of the spleen, the mixture is given once daily, in the morning, and in such doses as to act less powerfully only twice a day. It is then not inconsistent to allow some roasted or boiled meat, and curry. A small quantity of port-wine and water, or beer, is also taken with benefit at dinner time, in most cases where meat can be allowed with propriety.

"Natives suffering under the early stage of spleen disease, attended with fever, live on barley-water, sago, bread, and *coee*, or parched rice; but in more chronic forms of the disease, they may with safety be advised to eat their usual curry and rice. It seems generally admitted that milk is improper food for patients labouring under disease of the spleen, and I am now quite satisfied that the prohibition of milk is almost always justifiable. The native practitioners also prevent patients from eating fat, or oil, although castor-oil is often administered by them as a purgative, and with great benefit."

PART III.

DISEASES OF THE ORGANS CONNECTED WITH THE RESPIRATORY SYSTEM.

CHAPTER I.

GENERAL REMARKS ON DISEASES OF THE RESPIRATORY SYSTEM.

In approaching the subjects which are to be treated of in this part of the work, I gladly seize the opportunity of expressing the greatest admiration of the talents and powers of observation of the late M. Laennec, and of acknowledging that he is the individual of this age to whom the science of medicine stands most deeply indebted. I know not which to admire most—the extreme patience with which he carried on his investigations in diseases of the chest, or the zeal and tact which he displayed in surmounting the obstacles which must have daily come in his way.

The diseases of the chest were once the opprobrium of medicine; and although we are still liable to be mistaken, yet by percussion and auscultation, we are enabled to judge correctly of the nature and seat of some affections which otherwise would be mere matter of conjecture.

It is scarcely more than half a century since Avenbrugger suggested the probability of ascertaining the state of the organs within the thorax, more perfectly, by percussing the chest with the points of the fingers. M. Corvisart translated Avenbrugger's Treatise into French, and subsequently brought the practice of percussion into general use and great repute. It must be confessed, however, that percussion is a much less satisfactory practice than auscultation, either with or without the stethoscope, which instrument is the invention of Laennec, and which is now too well known to require any description in this work.

A great deal of opposition has been made, and many frivolous objections have been urged against the employment of auscultation, principally by three classes of practitioners. 1*st*. Those who are too well employed, and who have not time to learn any thing new. 2*d*. Those who are dull of hearing, or devoid of the power of discriminating between sounds which have some resemblance to each other. 3*d*. Those who are too indolent or too old.

With respect to the first class, I need not say much, as no observations of mine will improve such medical men, by inducing them to pay more regard to the science than to the trade of the profession. But as to the second class, I have only to observe, that it is too bad for men who are deaf, to decry the employment of a means which is found to be so advantageous in practice; and the only method by

which they can be silenced, is for others to state their defect—a task, which, though ungracious, I shall not shrink from performing in respect to those whose statements are likely to influence the too numerous "herd of imitators" in the profession. In this class, there are some who can hear perfectly well, but who, from the want of what is called a musical ear, are incapable of discriminating sounds, in the same manner as some are unable to detect the difference between a hard and a soft pulse, or a full and a sharp pulse; or as others who, from a defect in the organs of vision, cannot see any thing twenty yards distant. Such individuals, then, will never be capable of availing themselves of this additional means of investigating diseases of the chest; but they have no right to prejudice others in the profession, who are, perhaps, too happy to avail themselves of any excuse which is likely to save trouble. In the third class of objectors, I have placed the indolent and the aged. With respect to the first of these, I have to remark, that the public have not so much to complain of the ignorance of medical men, as their indolence and want of zeal; and it is as difficult for a camel to pass through the eye of a needle as to make an indolent physician active and zealous; therefore, it is not to be wondered at, that they should advocate the advantages of remaining ignorant. As for many of the aged opponents, they act, no doubt, upon the principle which is observed in old dogs, of not learning new tricks. Before quitting this unpleasant part of the subject, it is proper to impress on those who are fond of indulging in sarcasms against the cultivators of pathology, that ridicule is not argument, and that perfection is scarcely to be expected from auscultators, any more than from others in the profession. It is also very unwise in any lecturer to decry auscultation, and to bring forward solitary instances of mistakes made by those who use the stethoscope, or pretend to use it, in the investigation of diseases of the chest. It is not very prudent in any one to run the risk of instilling bad principles into the minds of students, by recommending them to make a show of using the stethoscope in practice, and "thereby pretend to see as far into the heart of a stone as their neighbours." What would be said by such an individual, if the mistakes made by medical men in practice were brought forward by those inimical to the profession, in proof of the inefficacy of physic and surgery! I have seen the wrong leg amputated by mistake, and the operation of lithotomy has been frequently most cruelly bungled; yet no one is entitled, from the knowledge of many such facts, to say that surgery is altogether useless, or that there are not some clever surgeons.

Some individuals have stated objections against the use of the stethoscope; they say it requires a lifetime to arrive at any thing like perfection. I have already shown that it requires great patience and good ears to learn it at all, and that those who possess neither the one nor the other, will never be able to use it advantageously. But if the difficulties of any task were allowed as an argument against making attempts to overcome them, it may be asked, what would become of all the sciences?

They also state, that it is indelicate to examine the chest of a female with this instrument in any circumstance; and that it fre-

quently cannot be done, in consequence of the fatigue it occasions to the patient. With respect to the first, I have to observe, that it is an objection which I should have expected from one individual only in the British empire—Sir Anthony Carlisle. I feel convinced that every professional man of experience will join me in the following statement, that fewer objections are started by females possessing delicate and innocent feelings, to any kind of examination which their medical adviser may think it necessary to propose for their advantage, than by those who unfortunately are differently constituted. It is to be lamented that this objection is brought forward more in the spirit of special pleading, than with a view to benefit either science or good morals. It may be maintained, however, with truth, that the examination may be made in such a manner as not to occasion the slightest blush; the patient need never be exposed, the different sounds of respiration being sufficiently audible for all useful purposes, through the texture of an ordinary nightgown. Instead of meeting with objections on the part of females, it has always appeared to me that they were anxious the investigation of the nature and seat of any disease in the chest should be carried out to the most complete elucidation. Cases no doubt, occur, in which it is inconvenient and painful to move the patient much; but these are comparatively rare, and must be so far disregarded when life is at stake.

I shall now turn to a more agreeable part of the subject, by shortly stating a few cases, showing the advantages derived in actual practice from auscultation. A few years ago, I was requested to see a patient who had been under the care of several medical men, and by way of giving me every necessary information, his friends put me in possession of all the recipes which had been recommended—they would have made a moderately-sized quarto volume. At one time, it was supposed that he had stomach complaint, and all known tonics were prescribed; at another, it was supposed to be scrofula, for which he took large quantities of the muriate of lime; at last, he was suspected to have diseased liver, and he got large quantities of mercury, and was several times completely salivated. Upon applying the stethoscope, I discovered a cavern in the superior lobe of the right lung, and was doubtful whether another did not exist in the left. Next day, I had the advantage of a consultation with Dr. Scott, whose superior knowledge of diseases of the chest, and stethoscopic tact, I am happy to have this public opportunity of acknowledging. He was merely asked to see a patient with me, without knowing the result of my previous examination, which he confirmed, with this addition, that he had no doubt of the existence of a cavern in the left lung: and it was afterwards proved to be correct.—A remarkable case was under my care some years ago, at a time when I was only beginning to make some progress in the use of the stethoscope. A man presented himself, with many of the ordinary symptoms of indigestion, and without a single sign indicative of disease of the lungs. I examined him carefully with my ear, with a view of perfecting myself in the natural sounds elicited by respiration, and the tones of the voice, when, to my astonishment, I thought I dis-

covered a small cavern in the superior lobe of one of the lungs. At that time, Dr. Wavel, an excellent stethoscopist, was a pupil at the dispensary. He was requested to examine the man, without knowing my suspicions. Upon comparing notes, he was of the same opinion. It was subsequently discovered that the man coughed a little in the morning, but not so much as to attract even his own attention; upon dissection, some months afterwards, our diagnosis was fully verified.

Dr. Henry, of Manchester, and others, will not forget the case I had occasion once to examine with him, in which we discovered empyema of the left side of the thorax, which had been treated for disease of the heart, by the late Dr. Buchan, because the pulsations were felt to the right of the sternum, instead of the left. By auscultation and percussion, we were enabled to state most confidently that there was extensive effusion, which pushed the heart to the other side of the chest. The patient did not survive above a fortnight, and the correctness of our opinion was fully proved, by the existence of an immense effusion in the left side of the thorax, amounting, I believe, to twenty or twenty-six pounds of fluid, with large masses of lymph.

Liver complaints are often confounded with disease of the lungs, in which it is of the greatest consequence to the patient, that the physician should be able to form a proper diagnosis, which he cannot do, in many cases, without the assistance of auscultation and percussion. A case of this kind once fell under my notice. A physician treated a patient during some time for a pulmonic complaint, without knowing its exact nature or seat, which he could not fail to have discovered, had he been able to use the stethoscope. After a little time, the patient complained of uneasiness in the abdomen, and the liver was felt rather prominent on the right side, but pressure did not aggravate the symptoms. It then came out that the man had been in India for several years, and as that was the case, it was supposed he could not fail to have drunk plenty of arrack, and consequently to contract an affection of the liver. He was accordingly salivated over and over again, but the enlargement continued to increase; and it may be briefly stated, that the man died. Upon dissection, his liver was perfectly sound, and it was found that the protrusion was occasioned by an immense effusion into the left side of the chest, which pressed down the diaphragm, and encroached upon the abdomen.

By auscultation and percussion, we shall be always able to discover the existence of collections of fluid in the chest, which, by ordinary symptoms, cannot be ascertained. Dr. George Gregory, a late writer on the Practice of Physic, in his article on hydrothorax, or dropsy of the thoracic cavity, (627, ed. 1825,) states as follows: "*The diagnostic symptoms of this form of dropsy are very fallacious. Sometimes we are confident of finding water in the thorax, when that cavity is perfectly free from disease. At other times, we observe the thorax full, when we had no suspicion of the complaint existing.*" I have no doubt after writing this paragraph, the author applied himself most assiduously to the acquirement of stethoscopic

knowledge, without which no man can treat diseases of the chest with any confidence.

It is well known, that there is a great resemblance between the ordinary symptoms of inflammation of the pleura, and a painful affection of the intercostal muscles, which is called pleurodynia; the resemblance is so great, that it is impossible to distinguish the one from the other without the use of the stethoscope. Not long ago I had three such cases within a short space of time; one only proved to be pleurisy, and that was the one in which I least expected to find it, from the slightness of the ordinary symptoms.

I have seen many remarkable cases of chronic inflammation, and I believe extensive ulceration in the wind-pipe, which the ordinary symptoms announced to be the most hopeless cases of phthisis pulmonalis;—there were cough, expectoration tinged with blood, emaciation, debility, rapid pulse, with bad, feverish nights, attended by profuse perspiration. By the sound of the respiration, and the resonance of the voice, I was enabled to assure myself that the lungs were as yet sound, and they were all cured by means to be afterwards described in the proper place. Every year I see several cases of chronic bronchitis which have been mistaken for phthisis, many of which were cured or relieved by the appropriate remedies, which must have terminated fatally if managed as cases of phthisis. In the treatment of inflammation of the substance of the lungs, it is of the utmost consequence to be able to tell whether the disease be extensive or not; whether it be in the first stage, that of active sanguineous engorgement; or in the second, that of solidification; whether the disease be advancing or declining, which can be done by no other means than auscultation and percussion.

It has already been attempted to be shown, of how much advantage it is to sound the chest in cases of fever.

Much injury, it is to be apprehended, will result for some years to come, by individuals *pretending* to use this instrument, and pronouncing confident opinions as to the nature and seat of diseases, who are unacquainted even with the natural sounds of respiration, and who, as I have often seen, do not really know how to hold the stethoscope. Few individuals can acquire the power of using the instrument advantageously from books, without the personal assistance of some one already instructed; and I have known several gentlemen give up the task as hopeless, because they could hear nothing, but who resumed it upon being properly assisted and instructed.

On the other hand, candour compels me to mention, that much mischief has been done by some able stethoscopists pretending to accomplish too much; according to them, auscultation is infallible; but that this is not to be expected from any human invention, applied for the purpose of investigating or curing diseases, I need not waste time to prove. That it is a *great assistance, as an additional means of diagnosis* in diseases of the chest, no man possessed of the spirit of truth, who has fairly given it a trial, or who has followed the practice of those who can avail themselves of auscultation, will deny. I maintain, without the fear of contradiction, that perhaps

one of the greatest advantages to be derived from auscultation, is that which enables us to obtain negative proof, in cases where we have failed in discovering positively the seat of the disease. For example, if a medical man be called to a case which has either been pronounced to be consumptive, or in which a doubtful opinion has been given, it is truly delightful for all parties, if he be able to give a positive assurance that the lungs are not affected, although he may not be able to tell exactly the seat of the disease.

Some medical men allege, that they can discover every condition of the lungs, quite well enough for all practical purposes, by ordinary symptoms; therefore I shall now take a view of these symptoms, for the purpose of showing the fallacy of this statement. The following symptoms are supposed to denote inflammation of the lungs, in the most satisfactory manner: *Cough, dyspnœa, pains in the thorax, quick and strong pulse.* When these symptoms exist, they are supposed to be peculiar to inflammation of the lungs; that is to say, when they exist, inflammation is present, and when they do not exist, the disease is absent. Experience enables me to state, that not one of these symptoms, or all taken together, indicate inflammation of the lungs in any of its textures, and that inflammation may exist without any of them being well-marked; hence it is, that physicians are so often astounded with the appearances on dissection, which they did not anticipate from the mildness of the symptoms; and hence it is, that they too often decry the usefulness of morbid anatomical inquiries.

Cough is not peculiar to disease of the lungs; it may be produced in a violent degree by any kind of irritation about the larynx, epiglottis, and even the pharynx; mere excitement of the circulation frequently produces cough, as well as diseases of the heart. I shall afterwards prove, that in some of the most hopeless cases of inflammation of the lungs, the patient *cannot cough*, in consequence of which the danger is greatly increased; *therefore cough cannot be said to be peculiar to inflammation of the lungs.*

Dyspnœa is as frequent a consequence of disease of the heart, as of the lungs; mere excitement in the circulation will produce dyspnœa. One of the most distressing cases of dyspnœa which I ever had the misfortune to witness, dissection proved to depend on an enlargement of the gland which fills up the angular space at the bifurcation of the bronchial tubes. From a mechanical cause, also, œdema of the inferior, as well as the superior aperture of the glottis, frequently produces a fatal dyspnœa. In many cases of extensive and severe inflammation of the bronchi, after free expectoration, the dyspnœa subsides so completely, that should a symptomatical physician happen to make his visit at that period, he will pronounce the patient to be convalescent, when, perhaps, within an hour or two, he will be no more. Even in pneumonia, if the inflammation be confined to a small part of one lobe, which it frequently is, there is little dyspnœa; and the whole of one lung may be destroyed by chronic inflammation, without occasioning much difficulty of breathing, if the disease go on very slowly; *therefore dyspnœa cannot be said to be peculiar to inflammation of the lungs.*

With respect to *pain*, nothing is more deceptive, for there may be severe pain in the chest without inflammation, as has been already

stated with regard to the affection denominated pleurodynia. In bronchitis there is little or no pain; in pneumonia the pain is generally little marked; and, contrary to the statement made in all systematic works respecting the severe pain in pleuritis, experience enables me to state, that it may go on most extensively, even to a fatal termination, without much complaint; hence we often see, on dissection, most extensive adhesions of long standing, between the *pleura pulmonalis* and *costalis*, in individuals who had never been known to experience any serious indisposition till their last illness; *therefore pain cannot be said to be peculiar to inflammation of the lungs.*

It has already been shown, that a hot skin is not an invariable phenomenon in inflammation, and the same remark may now be made with respect to inflammation of the lungs; indeed, in bronchitis, the heat of the skin is frequently below par.

It has also been stated, that the pulse cannot be depended upon as a certain indication of inflammation; and in addition to the remarks already made in this work, I may now state that hypertrophy of the left side of the heart frequently produces a strong bounding pulse, and also dyspnœa, when there is no inflammation going on in any organ of the body; and, on the other hand, dilatation of the ventricles will produce a weak, soft pulse, at a time, perhaps, when every form of pneumonic inflammation is going on most rapidly.

All Cullen's definitions, in the sixth chapter, which treats of pneumonic inflammation, are therefore erroneous, as well as the following paragraph, (p. 335.) "Pneumonic inflammation, however various in its seat, seems to me to be *always* known and distinguished by the following symptoms:—pyrexia, difficult breathing, cough, and pain in some part of the thorax." It will be admitted that Cullen was at least as wise, talented and observant as any of his symptomatical brethren of the present day; yet he confesses that he could not ascertain the seat of the disease by the ordinary symptoms, as will be seen upon perusing the 334th paragraph. "Under this title I mean to comprehend the whole of the inflammations, affecting either the viscera of the thorax, or the membrane lining the interior surface of that cavity; for neither do our diagnostics serve to ascertain exactly the seat of the disease, nor does the difference in the seat of the disease exhibit any considerable variation in the state of the symptoms, nor lead to any difference in the method of cure." Proving by the latter part of the paragraph that he must have been an indifferent practitioner, as the inflammatory affections of the lungs require a different treatment in each stage; bronchitis demands a different plan from pleuritis, and pneumonia from either of the others. I venture, therefore, to predict, that in a few years, practitioners, even those who now ridicule auscultation, will be compelled, in self-defence, to have recourse to this additional means of diagnosis, or they will lose their practice.

These observations were written several years ago for the first edition, and it is pleasing to perceive, notwithstanding all that many individuals have done against the practice of auscultation and percussion, that science has been steadily advancing; this means of diagnosis has been widely extending, and the influence of truth has been greater than that of prejudice.

CHAPTER II.

DISEASES AFFECTING THE MUCOUS MEMBRANE OF THE AIR-PASSAGES.

Under this title, I shall treat of Catarrh; Bronchitis; Inflammation of the Larynx; Croup, and Hooping-Cough; together with the affection which is sometimes known by the term Crowing Disease, at others Spasmodic Croup.

CATARRH.

When a patient is seized with chilliness, followed by sneezing, slight fever, impaired appetite, hoarseness, occasionally loss of voice, and cough, he is said to have catarrh, or a common cold. The bowels are generally out of order, and he has an exacerbation of fever and dyspnœa at night. The cough is sometimes slight, at others severe. A slight degree of wheezing is heard, and the disease has a salutary termination in a day or two by expectoration of mucus, which is discharged by occasional fits of coughing.

Sometimes the disease is confined to the mucous membrane of the nose and frontal sinuses, and is known by the vulgar denomination of "cold in the head."

When catarrh is a general complaint, attended by considerable prostration, and constitutional symptoms which are otherwise slight, the disease has been denominated *influenza*. After a careful perusal of all the accounts which have been published of the various epidemics of the disease called influenza, I was unable to draw pathological conclusions as to the exact nature of the affection, till I suffered from an attack of the epidemic that prevailed in 1833. Till then I had considerable doubts as to the pathology of the disease, and gave the subject the go-by in the former editions of this work. In this affection there are all the symptoms of catarrh, with extreme oppression and prostration of strength. These two symptoms, I can confidently state, are owing, in general, to an irregular distribution of blood and accumulation in the lungs. My attack came on suddenly when taking a pleasure ride. I was only three miles off, and could scarcely sit on my horse on my way home, from debility: more than once I was on the point of giving it up as hopeless. There were no violent symptoms, but I recollect well an impression on my mind at the time, that I pitied every one who had a tendency to phthisis pulmonalis, as from the dyspnœa and the oppression in the chest, I

thought the lungs were much loaded with blood. After my recovery, I saw many cases of the disease, and became convinced that my impression, when sick myself, was correct. Many did die of phthisis, and I believe more were lost in consequence of that epidemic than of the cholera which had preceded it. The treatment in slight cases consists in confinement to bed or to one room, diaphoretics, laxatives, and rubefacients, together with a strictly antiphlogistic regimen. In severe cases, one bleeding is serviceable, followed by the treatment mentioned above. Convalescence should be well established before the patient is allowed to expose himself; and it is safe to establish an irritation on the chest by means of antimonial ointment.

In considering the pathological difference between catarrh and bronchitis, it must be recollected, that in both, the same membrane is affected, but in different parts; I imagine that, in the former, the diseased action is a very slight sub-acute inflammation, affecting the mucous membrane of the nose, frontal sinuses, the larynx, and trachea. Slight cases of inflammation of the membrane lining the bronchial tubes, frequently pass also by the name of catarrh, instead of bronchitis.

Causes.—Exposure to cold, particularly alternations from heat to cold, with insufficient clothing, is the chief cause of this complaint, as well as bronchitis. It would appear to be of no consequence how cold is the air we breathe, provided the surface of the body be properly protected; hence bronchitic affections are, comparatively, of less frequent occurrence in very cold regions than in this variable climate.

Treatment.—We are seldom called upon to treat a simple catarrh, unless severe constitutional symptoms have been excited by some accidental cause; as constipation; a hard fit of drinking; or a load of indigestible food in the stomach; when an emetic, the antiphlogistic regimen, a proper course of laxatives, diaphoretics, and confinement to the house, will generally be all the treatment necessary. It may be mentioned, however, that the warm bath ought to be recommended when it can be conveniently obtained.

We are sometimes consulted in consequence of the inflammation having extended into the air-tubes, aggravated by exposure in cold damp weather, when we shall frequently find the disease has already made great progress. This is particularly the case with the children of the poor, who are badly fed and clothed, and for whom little permanently effectual can be done.

BRONCHITIS.

I SHALL treat of bronchitis in two forms, the acute and chronic.

Ancient physicians appear to have been unacquainted with the nature and seat of bronchitis, although many of them have recorded cases of the disease. Sydenham has described the affection as it sometimes occurs under the title *Peripneumonia notha;* and it will be found, that most authors since his time have copied his description, still remaining ignorant of the nature of the affection.

Hoffman's *Catarrhus suffocativus;* Lieutaud's *Fausse peripneumonie*, and *Catarrh suffocante;* Sauvage's *Rheuma catarrhal*, do not differ from Sydenham's *Peripneumonia notha.* Morgagni, who may justly be regarded as the first, and one of the most successful cultivators of morbid anatomy, seems to have been in some measure aware of the nature of the chronic form of this disease; and he has given ample proof, in his second book, that he knew it had been confounded with phthisis.

Cullen has given a good description of the symptoms of the disease, under the term used by Sydenham, *Peripneumonia notha*, but has not added any thing to our knowledge upon this subject; and moreover, he entertained erroneous notions of the true nature and seat of the disease. The same remark may be made respecting the later work of Dr. Mason Good. The profession stands indebted to Dr. Badham, now professor of the practice of physic in the University of Glasgow, for pointing out the nature and seat of the disease, in a little work he published on bronchial inflammation many years ago. Before the appearance of this valuable work, the disease was very imperfectly understood by the best physicians of the day: and even now, it is surprising that bronchial inflammations are so much overlooked and neglected, particularly in fevers, rheumatic, gouty, and erysipelatous affections, as well as in the course of surgical practice.

Pure surgeons (by which I mean surgeons who pride themselves upon their powers of cutting, and boast of their ignorance of every thing medical,) should be told that they frequently submit patients to capital operations, who are at the same time labouring under extensive inflammation of the mucous membrane of the lungs, perhaps in a sub-acute form, and which does not give rise to symptoms sufficiently violent to attract the attention of their surgical minds. The patients become worse from the progress of the disease, or in consequence, very probably, of the agony and fright experienced during the period of a painful and tedious operation; the pulse becomes weak, the skin cool, the face either very pale or somewhat livid, and the wound, of course, puts on an unhealthy appearance; adhesion by the first intention does not take place, and, at the first dressing, the lips of the wound are found gaping, discoloured, yielding a foul discharge. In such cases, patients are too often drenched with wine and bark, and crammed with stimulating food, under the idea of preventing debility and putridity. Notwithstanding these remedies, the strength fails, and gin and brandy are in vain had recourse to; the destruction of the parts in the neighbourhood of the wound takes place, and the patient dies from presumed gangrene, which is too frequently attributed to the bad air of the hospital. I do not mean to assert, that all cases which go wrong after surgical operations are owing to the bronchitic inflammation; but I maintain that many are, and particularly the cases in which erysipelas follows. But I will say more on this subject when treating of erysipelas in the second volume of this work.

Symptoms of acute bronchitis.—The symptoms excited by inflammation of the mucous membrane lining the bronchial tubes,

vary according to the severity and extent of the inflammation. The tubes of one lobe may be affected, when the symptoms will be slight; the inflammation may be still more extensive, affecting, perhaps, both lungs, and the symptoms will be slight also if the diseased action be but moderate.

The acute form of the disease, which I am now to describe, commences with some degree of chilliness, succeeded by pyrexia, hoarseness, dyspnœa and a dry cough; tightness, or sense of stricture in the chest, and oppression at the præcordia; prostration of strength; loaded tongue and costive bowels. An exacerbation is almost always observed at night. In a day or two expectoration takes place, which relieves the patient for the time; the respiration, however, becomes more difficult, but the cough bears no proportion to the dyspnœa; the tightness about the chest is increased, along with a sense of suffocation, when the pulse becomes very rapid. The deadly paleness or lividness of the lips and cheeks becomes more apparent; the countenance more and more anxious; and the patient frequently requests to be raised, and to have more air. A loud wheezing may now be heard, even at a distance from the bed-side. The voluntary muscles of respiration are brought into play. The patient becomes insensible; rattling is heard in the throat; the extremities and face become cold and livid, a cold perspiration bedews the skin, and death soon closes the scene.

Sometimes cerebral symptoms take place, and headache is much complained of, which may be attributed to impeded circulation in the head. The wheezing is produced by the air-passing through the diseased secretion in the air-passages, and may be heard by placing the ear to the chest, long before it becomes so severe as to be distinguished by any other means.

The cases of acute bronchitis most to be dreaded, are those in which the oppression in the chest being more or less considerable, there is neither heat of skin, pain, nor much febrile movement in the pulse. In fact, these three symptoms may be said to be below par; no alarm is taken till suffocation is threatened, or some organic lesion has been produced; and when, at length, the signal of distress is displayed, it will be found too late to save the patient.

The disease is very fatal in infancy and childhood; and I shall now mention its course and progress at these periods of life. It commences in the same manner as in adults, like a common cold. The breathing becomes oppressed; all the voluntary muscles connected with respiration are called into play; the shoulders are in constant motion as well as the nostrils, and the abdomen becomes more prominent, by the increased action of the diaphragm during inspiration. Sore throat frequently accompanies the disease, and the child suffers so much pain during the act of coughing, that an attempt is made to suppress it; wheezing soon takes place, which is more decided than dyspnœa; expectoration is generally followed by mitigation of suffering, which continues for a longer or a shorter period, till more phlegm is formed. The mucus secreted in the air-passages is frequently discharged by spontaneous vomiting, exactly as occurs in hooping-cough. Children under four or five years of age can

rarely be made to spit up the phlegm, unless assisted by the act of vomiting; but they swallow it after it has been discharged from the air-passages. Children refuse food, but drink greedily until the disease is far advanced, when they cannot take a long draught from want of breath. An infant at the breast sucks pretty well during the first stage of this affection; but subsequently, although it seizes the nipple with avidity, it cannot suck for any length of time, perhaps not for more than ten or fifteen seconds, when it will be observed to bite the nipple very forcibly, and discontinue sucking; it will cry, and be observed to throw its head back quickly, and will continue in this position for some time, even after the cough has produced the expulsion of the mucus.* If the disease remains unsubdued, the dyspnœa increases; the face shows the usual marks of impeded circulation; the surface becomes cold; the extremities sometimes swell, and the child dies from suffocation. Very often, the sound of the voice and the cough is as shrill as in the croup, with which disease bronchitis is sometimes confounded. Dr. Hastings, in his very excellent work on the lungs, has given a concise account of a variety of acute bronchial inflammations, to which young children are peculiarly subject, which I have often had occasion to see. Although more dangerous, the symptoms are not of corresponding severity; in truth, it is a sub-acute inflammation of the bronchial membrane throughout the whole extent of both lungs. No severe symptoms are excited as long as expectoration continues free, and is discharged with ease; but should the mucus by any accident increase, the cough at the same time ceasing, speedy death from suffocation inevitably follows, unless vomiting be excited, which seems to have the effect of emptying the air-passages of the secretion. Other cases take an unfavourable turn, by the inflammation becoming more active, from some accidental circumstance, such, perhaps, as exposure to cold. Cases of this sort are most common in spring and autumn. In the acute bronchial affections of children, there are often considerable variations in the state of the breathing and the pulse—the latter depending in a great degree on the former. The breathing for several hours continues free and easy; afterwards it gradually becomes less so; and at last great difficulty takes place suddenly, even so as to threaten immediate suffocation. These exacerbations appear to be owing to three circumstances; 1st, Collection of mucus in the bronchi; 2d, Increased circulation through the lungs; and lastly, Venous congestion. Children so affected soon fall into a comatose state; the face, which for some days, perhaps, had been quite pallid, now becomes livid, or a dark circle shows itself round the mouth, and the child sinks in the manner already described. In some urgent cases, the fatal event takes place in sixty or seventy hours from the time alarm is taken; the majority of cases, however, are not so rapid, the course of the disease being from five to fifteen days; but when it is protracted, other structures generally become involved, the inflammation spreading by contiguity; and the same happens in adults.

* This position seems to facilitate the passage of air into the lungs.

In all affections of the lungs, particularly in the acute, the bowels become constipated, and the evacuations fetid.

The expectoration in bronchitis is at first scanty and viscid, particularly so in the most acute cases; by degrees it becomes more copious and less viscid, and, therefore, more easily expectorated, till at last it is discharged in considerable quantity, having the appearance of starch mixed with small bubbles of air, and occasionally streaked with a little blood, or is discharged in the form of pellets. If the case go on well, the expectoration gradually diminishes, and becomes slightly yellow in colour; the patient is troubled with the cough and expectoration in the morning only; at length they cease entirely. Sometimes, however, the acute disease runs into the chronic form, which is now to be described.

CHRONIC BRONCHITIS.

Like other chronic inflammations, this affection sometimes succeeds to an acute attack;—sometimes, however, it takes place as a slow and insidious inflammation of the bronchial membrane. This form of the disease may affect individuals of all ages; but it is most frequently met with in old people, and those who, by occupation, are exposed to the inhalation of dust. It sometimes succeeds also to the eruptive fevers; and frequently coexists with diseases of the heart.

It is occasionally mistaken for phthisis pulmonalis; and is one of the morbid conditions of the organs within the chest, which give rise to the symptoms denominated asthma; and is likewise a frequent cause of dropsical affections.

When the disease succeeds to acute bronchitis, the fever declines, but the pulse for some time continues frequent; the cough and difficulty of breathing continue, but they are always relieved for a considerable time after free expectoration. The patient still has night exacerbations and disturbed sleep, which, however, gradually decline with the disease. The expectoration still copious, becomes opaque, yellow; sometimes puriform, and has occasionally a greenish hue; at last it diminishes in quantity. The appetite returns; and although weakened by copious night perspirations, and which take place during the day upon making the least exertion, the patient is sensible of gaining some strength. Gradually all these symptoms cease, and some individuals appear to undergo a perfect cure; but in general they are not so fortunate, for during the subsequent part of their lives, exposure to the night air, an easterly wind, or a humid atmosphere, occasions a renewed attack; and with many, the same effect is produced by eating indigestible food, or by neglecting the bowels. Now and then, therefore, they become indisposed; the voice becomes hoarse; the cough short and croupy, with more or less oppression in breathing, attended sometimes by febrile symptoms. In the chronic form of the disease, the expectoration takes place in a much shorter time from the commencement of the indisposition than in the acute; sometimes in a few hours: it is viscid at first, but soon becomes

copious, and the patient is relieved by the discharge. One attack leads to another, till at last the individual is always affected with some degree of dyspnœa--he is almost constantly coughing and spitting, and is unable to lie in the horizontal posture; he feels great difficulty in mounting a stair—and is said, in short, to have an habitual asthma.

I have stated that Morgagni seems to have been well acquainted with the phenomena of chronic bronchitis. We are told, for instance, by Morgagni, that Valsalva examined the body of the Bishop of Imola, who was supposed to have died of phthisis, having had considerable expectoration before his death; but he did not find tubercles, or any other disease, in the structure of the lungs.

In the acute and chronic forms of bronchitis, cases now and then present themselves, in which the expectoration is very small in quantity, so as sometimes scarcely to be perceived, when the disease has been denominated *Dry Catarrh* and *Dry Asthma.*

Stethoscopic signs of acute and chronic bronchitis.—Percussion affords little information in any of the forms of bronchitis; but auscultation enables us to determine the stage and extent of the disease, even before the symptoms are completely formed. In the first stage of inflammation of the mucous membrane of the bronchi, it becomes somewhat swollen, probably from the increased quantity of blood in its vessels, and its surface dry; upon applying the ear to the chest, either with or without the cylinder, instead of hearing the natural soft murmur of respiration, a louder sound strikes the ear; sometimes like a snore, at other times sibilous, or resembling what may be called a somewhat harsh, brazen sound. It is more sonorous and flatter, according to Laennec, in proportion as the mucous membrane is swollen, and its surface dry; and he states—"When so strong as to resemble the prolonged scrape of the bow on a large violoncello string, or the note of the wood-pigeon, there are usually redness and swelling at the bifurcation of some of the principal bronchia."*

As the disease advances, it has been stated that wheezing takes place, which is produced by the passage of air through the diseased secretion in the bronchial tubes; this is called the *mucous râle* or rattle, which in many cases is so loud, as not only to be heard on entering the room, but to be felt by placing the hand upon the chest, which experiences a vibration during each inspiration and expiration. In some cases, we may find the respiration suspended in a portion of the lung for an hour or two, which becomes restored after a severe fit of coughing. In this case, percussion may be of some assistance to us. These occasional interruptions to respiration are owing to a plug of tenacious mucus or lymph closing up the entrance of a tube; or it may be completely filled with viscid matter.

In chronic bronchitis, attended with expectoration, we have in some cases the same mucous rattle over the whole thorax. When there is no expectoration, then we hear pretty loud snoring, which is denominated the *dry sonorous rattle;* occasionally it resembles the cooing of a wood-pigeon; and sometimes at the very top of the inspiration, a sound is heard like the chirping of a bird.

* Forbes's Translation, p. 67.

Occasionally, a prolonged hissing sound is perceived, flat or sharp, of greater or less intensity, called the dry *sibilous rattle*, which has a resemblance, also, to the chirping of birds. And sometimes a sound is heard, which Laennec has aptly compared to that which is "emitted by suddenly separating two portions of smoothed oil stone, or by the action of a small valve." In truth, it is what may be denominated a clicking sound. Laennec states, that these sibilous sounds are probably owing to minute portions of very viscid mucus, obstructing more or less completely the small bronchial ramifications, or to a local contraction of the small tubes, from thickening of their inner membrane.

Appearances on dissection, and pathological remarks. — On opening the thorax, we generally find that the lungs do not collapse from the pressure of the atmosphere, if the individual have died from suffocation in consequence of the engorgement of the bronchi with matter. In some cases, in which the cough has been severe, the surface of the lungs looks white, as if coated with a layer of coagulable lymph; but on examining this appearance more closely, it is found to depend on an effusion of air beneath the pleura, forming that peculiar condition termed "*emphysema.*" On opening the trachea, it will sometimes be found filled with matter; but, in general, it is merely coated with thick, viscid mucus, which, when wiped off, shows some degree of redness, increasing towards the bifurcation. The bronchial tubes are found more or less filled with matter, which is sometimes like mucus or pus; occasionally it has a mixed appearance, which is appropriately denominated muco-purulent; sometimes it is tinged with blood, and looks reddish. This secretion is found occasionally even in the air-cells, distending them, giving a uniform granular appearance to the whole of the part affected; and there can be no doubt that this is one way in which tubercular formations take place in the lungs. Upon washing away the puriform matter, the mucous membrane itself will be sometimes found intensely red; at others, of a dark red, like lees of wine; the discoloration increases in the course of the ramifications. The texture of the membrane is observed to be thickened, more especially in chronic inflammation. Ulcerations are frequently seen at the great bifurcation, rarely lower down. The pulmonary substance will be found more or less gorged with blood, and sometimes œdematous. These are the ordinary appearances observed in bronchitis; the following are to be regarded as accidental. False membrane is sometimes found in the trachea, the same as in croup; the lungs are seen in different stages of inflammation, from active sanguineous engorgement to complete disorganization; pleuritic effusions are also sometimes found, and enlargement of the bronchial glands. In the brain we frequently see marks of impeded circulation, sometimes inflammation. In the abdomen, the liver is sometimes found gorged or altered in structure, and the mucous membrane of the stomach and bowels shows various degrees of vascularity, and even ulceration. These appearances in the liver and bowels, are, in all probability, owing to long-continued impeded circulation through the lungs, and a diseased condition of the blood.

In chronic bronchitis, we sometimes find considerable dilatation of the larger tubes, which is, perhaps, chiefly brought about by long-continued distension—a remarkable case of which once occurred to me. In this instance, I declared that there was a cavern in the superior lobe of the right lung, which, upon dissection, turned out not to be the case, but there was an immense dilatation of the bronchial tube; thus mistaking bronchophony for pectoriloquy. Another case occurred to Dr. Alison, in which the dilatation was great, and the tubes affected numerous. A portion of the lungs is in my museum, and a delineation is given by Mr. Spittal, in an excellent work on auscultation, to which I can with confidence recommend my readers. I have likewise two preparations, exhibiting numerous portions of false membrane, like the ramifications of an artery into very minute branches, which were formed in the bronchial tubes of a boy who died of chronic bronchitis.

In making *post-mortem* examinations, with a view of discovering the nature and seat of bronchitis, these accidental morbid alterations of structure should be kept in mind, along with the symptoms and progress of the case; because, although they may form the most prominent appearances on dissection, and are no doubt in many instances the cause of death, yet they are only to be regarded as the effects of the original disease. Nay, sometimes an individual labouring under acute or chronic bronchitis, may have expectorated freely, immediately before death, when we shall find little or no effusion in the bronchial tubes, and sometimes very little redness. It is proper to state also, that notwithstanding the attention which has been paid, of late years, to the pathology of the lungs, there is still some ambiguity connected with this subject, evinced by the fact, that dividing the pneumogastric nerves in animals produces dyspnœa, change of voice, and effusion into the air-passages.

Of all the symptoms, wheezing is the one which may be said to be peculiar to bronchitis; cough and dyspnœa, it has already been shown, are common to all diseased conditions of the lungs, and not of the lungs only, but of other organs. Some assert that the wheezing is owing to spasm, but this is not the case, for we find that it is greatest before expectoration takes place, the patient afterwards being pretty free from it till a fresh secretion collects in the air-pas-pages. Dyspnœa has also by some been attributed to spasm. Reisseissen thinks he has ascertained the existence of circular fibres in the ramifications of the bronchi, commencing at the point where the cartilaginous circles terminate. Laennec supposes that he has also proved the existence of these fibres upon branches of the bronchi, of less than a line in diameter; and therefore concludes, that spasmodic contraction of these fibres occasionally produces dyspnœa. I am far from admitting this structure in the present state of our knowledge; but even if it were so, it is of little consequence, when there is an increased quantity of the mucus in the tubes themselves, offering a sufficient mechanical cause for the phenomenon itself, and for the exacerbations and remissions, which are so frequently observed in all the forms of bronchitis. Whatever consequence may be attributed to such a structure, in accounting for the symptoms in some cases of

asthma, it is of little practical importance in acute or chronic bronchial inflammation.

It has been already shown how the brain becomes affected during the course of bronchitis, when severe pain in the forehead is often remarked. Some suppose this is owing to inflammation of the membrane lining the frontal sinuses; but this is not the case, for if it were, this symptom would be most severe when patients are affected with what is called "a cold in the head;" besides which, it is a different kind of pain. That which proceeds from the irritated state of the membrane in the frontal sinuses is pungent, producing a flow of tears, exactly as when we smell volatile salts. The lividity of the face and lips, and mucous membrane of the mouth, is owing to the want of the usual changes which take place on the blood in the lungs.

Treatment of acute bronchitis.—This depends exactly upon the period of the disease, the extent of the morbid action, the state of the cough, the expectoration, and the previous health of the patient. Bleeding is certainly not necessary in every case of bronchitis which comes before us, particularly in one that is slight, and confined to a small part of the lung; but if the whole lung be affected, and more especially, when both organs are implicated, bleeding is to be had recourse to early and decidedly. It is a very doubtful remedy when the second stage is far advanced, and highly injurious in the last. I know no disease more under management by any remedy, than bronchitis is by bleeding, if performed in the first stage, or during the first part of the second; and there is no case in which the stethoscope is more useful, for without it, this disease may advance through the first stage before it is detected by the ordinary means of investigation. Many assert that bronchial inflammation will run through a certain course in spite of every remedy; and so it will, if the inflammatory stage is nearly over before discovered, or if bleeding be not used in a decided manner. Although late bleedings are to be especially condemned in this disease, yet cases do occur, where the lungs become suddenly congested with blood, in which a well-timed venesection is of signal service.

In the first stage of bronchitis, when both lungs are extensively affected, one bleeding will in general suffice, and we need not be afraid to carry it nearly to syncope, as long as the air-passages are free from mucus; but after it has collected in considerable quantity, and I speak more particularly with respect to double bronchitis, sudden death may be the consequence, by robbing the patient of that strength which is required in coughing to produce expulsion. In bronchitis, we can scarcely ever determine the necessity or the propriety of bleeding by the ordinary signs, because, in some cases, the disease may be very extensive without violent symptoms; in others, it may be very slight, and the symptoms very severe, owing, perhaps, to a disordered state of the stomach and bowels, or to some other perhaps slight cause; and it is of great consequence to know when to desist from further depletion.

Cullen, in the 381st paragraph, states, that "in case the fever, catarrhal and pneumonic symptoms, are immediately considerable, a

blood-letting will certainly be proper and necessary; but where these symptoms are moderate, a blood-letting will hardly be requisite; and, when *an effusion is to be feared*, the repetition of blood-letting may prove extremely hurtful." Which statement sufficiently proves that he must have practised with great uncertainty. We are to decline bleeding, not because we *are afraid of producing effusion*, but when we know that it already exists in considerable quantity in both lungs.

Leeching or cupping is very seldom serviceable in this disease;* but in children who are too young to be bled in the arm, leeches are to be applied; and we have sometimes great difficulty in determining the number—suffice it to say that it is better to apply few when in doubt upon the subject, and to repeat the operation in a short time. If consulted early, we can make a near approach to the effects produced by general bleeding, by applying a considerable number of leeches at one time, and stopping the discharge soon, so as not to allow the body to be slowly drained of blood; but even in children, it is far better to draw blood from a vein, when it is practicable. I speak from the result of considerable experience.

Next in point of importance to blood-letting, in pulmonary inflammation, stands antimony, as a contra-stimulant; this was well known, and constantly acted upon by Cullen, Fordyce and others, in the last century, and it surprises me greatly to hear this practice attributed to Italian and French physicians. Digitalis is of little use, unless given in considerably larger doses than are generally recommended; but it is a dangerous remedy when the air-passages are much loaded. Colchicum has been highly recommended in this disease by a friend, who states that its effect on the pulse and the other symptoms are sometimes quite remarkable. Emetics are very serviceable in the first stage; and are absolutely necessary in the last, in order to clear the air-passages when the cough fails to do so; and are more particularly serviceable in childhood and infancy.

Purgatives were at one time thought highly injurious in all inflammatory affections of the lungs, but upon erroneous pathological views.

Expectorants and diaphoretics are more injurious than beneficial, except, perhaps, in chronic affections; and I have often had to regret the loss of much valuable time by trusting to their action.

Opiates are, perhaps, more frequently injudiciously administered in inflammatory affections of the lungs, than in any other class of diseases. They are sometimes exceedingly serviceable, but in the great proportion of cases they are injurious, and in some instances are the cause of death. These observations apply more particularly to the disease under consideration. Nothing can be more detrimental than opiates, in the last part of the second, and during the whole of the third stage of bronchitis, when the patient's life depends upon the continuation of the cough and the expectoration; many an individual has perished in consequence of a three hours' sleep.

[* Experience has led the physicians of the United States to the converse of this opinion; after general bleeding, local bleeding, especially by cups, is justly esteemed one of our most efficient resources in bronchitis.]

But opiates are sometimes useful, in the first stage, after the violence of the disease has been reduced by the lancet; they subdue irritation, the continuance of which would, perhaps, lead to a relapse. In the last stage also, they are occasionally serviceable when there is little or no secretion in the air-passages, and when there is considerable irritation and a violent cough, which, if not mitigated, keep the patient from sleep, and wear him out.

Contra-irritation is another powerful remedy in pulmonary inflammations; but experienced practitioners agree in condemning the too early application of blisters, which, in truth, ought to be employed oftener as a measure of safety than of necessity. In acute cases, we cannot wait for the contra-irritation produced by antimonial ointment; a blister should, therefore, be applied.

Attention, during the whole period of the disease, should be paid to the temperature of the extremities; and a warm bath has sometimes excellent effects in removing irritation and promoting the comfort of the patient.

The regimen should be strictly antiphlogistic; but stimulants are occasionally very serviceable in the last stage. The patient is sometimes so weak and languid that he cannot make any voluntary efforts to cough, upon which, perhaps, his life depends. In such a case, a stimulant, frequently repeated, occasionally snatches an individual from the grave. It is difficult, however, to account for the stimulating treatment practised by Laennec, who, in recommending the use of the spirituous preparations, such as warm wine, burnt brandy, and punch, says—"This plan is unquestionably eminently successful in a vast number of cases. By it we frequently observe a cold which seemed to threaten great severity, cured all at once in the course of a single night"—(page 70.) But he observes, in the subsequent page, that this plan is most successful in the very onset of catarrh; and that it is much less so after the supervention of the loose expectoration. Whether this be owing to difference of climate or constitution, it is difficult to determine; but that the disease of which I have been treating, demands very different means on this side of the channel, I need not waste time to prove.

In the treatment of acute and sub-acute pulmonary inflammations, it is necessary to keep the patient quiet in bed—every exertion must be avoided; the exercise of the voice is also injurious; and during recovery, it is essential to attend to the diet and clothing; the bowels are still to be regulated; and bitters are sometimes serviceable. In severe cases, I hold it to be of advantage to persevere for several weeks in supporting an eruption on the surface of the chest by tartrate of antimonial ointment, or croton oil, or the frequent application of mustard plasters, or stimulating embrocations. Change of air, however serviceable it may be in some chronic cases, is often very detrimental in those now under consideration; unless it be from the smoky air of London to the country, and even then it is always doubtful whether the patient may be benefited or injured by the change.

Treatment of chronic bronchitis.—In the treatment of this form of the disease, we must ever keep in view, that patients are in dan-

ger of sudden attacks of acute inflammation and vascular accumulations, which may terminate fatally; or the substance of the lungs may become affected, by the diseased action spreading by contiguity; lastly, œdema of the lungs may take place, which is not an uncommon consequence of this affection.

General bleeding is rarely necessary, except in the following circumstances, viz.: the occurrence of acute inflammation, sudden congestion of the lungs, or dropsy depending on bronchitis. Contra-stimulants are almost as rarely necessary as general bleeding. The frequent exhibition of emetics cannot be too highly extolled; they appear to be most serviceable at night, immediately before the usual hour of rest, and in the morning, particularly after a tolerably long sleep: their *modus operandi* has been already explained. Constant attention to the bowels is of the greatest utility, and the occasional use of the warm bath is serviceable when the skin is dry and harsh. Expectorants appear to be somewhat serviceable, and the best is squills. But I have seen expectorants used for a considerable time without any benefit, till after the application of a blister, or the use of the inhaler, when the discharge has become free and easy. Of all the remedies hitherto recommended for the cure of chronic bronchitis, the best is long-continued contra-irritation by a succession of blisters, and particularly by the application of antimonial ointment, or croton oil. [When the disease is confined to one lung, and especially to a part only of one lung, the most effectual counter-irritant is an issue formed by the paste of caustic potash and soap.]

The balsams have been strongly recommended for their peculiar efficacy in inflammation of the mucous membrane, more especially that of the lungs. Dr. Armstrong has spoken very favourably of them in his work on Scarlatina, &c.; but I have no doubt, subsequent experience modified his opinions upon this subject. I have tried the copaiva in many cases in practice, without being able to discover its efficacy. Tar-vapour has been recommended as a sovereign remedy in phthisis, and there can be no doubt it has been beneficial; but the cases in which service may be expected, are those of uncomplicated chronic bronchitis. [Much of the disappointment which has arisen from the use of tar-vapour, has been owing to its imperfect preparation. The following method, which I have derived from Sir Alexander Crichton, is the best that has come to my knowledge. Add an ounce of common potash to every pound of tar, in order that the latter may be deprived of its pyroligneous acid. The two ingredients being well mixed, should be first boiled together for fifteen minutes in the open air, in order to disengage any impurities, and then be kept at a very gentle simmer in the room of the patient. This is readily effected by placing the ingredients in an iron vessel, and applying a spirit lamp. In this way not only a chamber, but an entire house, is speedily pervaded with a most agreeable vapour, which, even though it may at first excite some cough, has, in many cases, the happiest effect.

Frankincense and common rosin are often burned in the apartments of bronchitic patients for the same purpose as tar; but the empyreumatic smoke which they throw off is sometimes an ob-

jection to their use; yet they sometimes act promptly in alleviating the irritation. The vapour of chlorine, so much lauded by some practitioners, has uniformly aggravated the cases in which I have tried it.]

Good effects have frequently been produced by the *tinctura lyttæ*, but exhibited in doses two or three times greater than those commonly used.

[The preparations of iodine should not be overlooked. In dry catarrh, whether of the acute or chronic variety, they act most happily in exciting the mucous secretion; but they cannot be safely interposed until the active inflammatory symptoms are subdued. In a future part of this work, when treating of *phthisis*, we propose to examine more minutely into the use of iodine in pulmonary affections, and therefore defer their consideration for the present.

My experience in the use of the balsams differs much from that of the author; for I have, on many occasions, been satisfied of their utility. The balsam of copaiba is, perhaps, the best; and to counteract its disagreeable taste, it should be given in pill. The syrup of tolu, though a weak preparation, appears also to act favourably in common with the other balsams, in allaying irritation of the mucous membrane, and may be advantageously used to suspend and assist other expectorant medicines.*

The several preparations of lobelia have also a decided virtue of the same kind. It is best given in tincture with tolu and laudanum; but its use requires caution on account of its tendency to produce excessive vomiting.

Every practitioner must have remarked, that, although the most irritating and intractable symptom of bronchitis is a dry cough, which we seek to relieve by inducing expectoration, yet there are other cases in which the secretion of mucus is in excess, filling the bronchial tubes and requiring continual debilitating efforts for its rejection. To meet this contingency, various plans have been devised, and particularly the alterative course with iodine, and resinous inhalation. But Dr. Henderson, of Edinburgh, has recommendedfor this purpose a preparation of the acetate of lead, which, in his hands, has been entirely successful. He directs one or two grains with some extract of hyoscyamus, and a grain of squills, three times a day. Dry coughs are well known to terminate in expectoration, which is a most favourable result, and one which tends to cure; but in the present instance, our remarks apply solely to excessive mucous or muco-purulent expectoration of some continuance, in which the inflammatory or febrile symptoms have in great measure or entirely disappeared.]

If change of air be had recourse to, a warm situation should be chosen, with a dry sandy soil; patients should avoid exposing themselves at night, or during cold damp weather, particularly in this country when the wind blows from the east. Warm clothing is highly necessary; but it is important that medical men should prevent the patient from being too much loaded; and the best way to accom-

[* Vide Appendix, Prescriptions, Nos. 21, 23, 24.]

plish this is, by recommending a leathern jacket and drawers, and to forbid a great coat, particularly if he be allowed to take walking exercise. I must refer the reader to Dr. Forbes's translation of Laennec's work for much valuable information on the subject of bronchial disease, and to the notes of the accomplished and experienced translator also, who has conferred a great boon upon British practitioners.

LARYNGITIS. INFLAMMATION OF THE LARYNX.

This disease has a very close analogy to croup; which, indeed, seldom exists without extending to the membrane lining the larynx; but as the inflammation is sometimes entirely confined to the latter organ, it is necessary to give a separate description of each disease.

Inflammation of the larynx is a common cause of death in small-pox and scarlatina, and it sometimes follows measles. When this disease occurs in the acute form, it is known by a painful sense of constriction in the throat, which is increased by pressing the larynx; speaking aggravates the pain, as does swallowing; the voice is hoarse; the breathing soon becomes laborious and shrill during the act of inspiration; there are considerable heat of skin, thirst, rapid pulse, and great anxiety. On looking into the throat, the fauces frequently look swollen and turgid, and of a dark red colour, or coated with lymph; but this affection of the throat is not peculiar to laryngitis, as the inflammation may be entirely confined to the larynx. In some cases, the epiglottis is involved, which renders the motion of the tongue painful. The patient is constantly hawking in order to clear the air-passages, and occasionally spits up a small quantity of thick tenacious phlegm. As the disease advances, the face becomes swollen and turgid; it has frequently a livid appearance, and life is quickly destroyed by suffocation. Convulsions occasionally precede death. This disease sometimes runs its course in from thirty-six to forty-eight hours.

A chronic form of inflammation of the larynx, although described by some as being of more common occurrence than the acute, is, I apprehend, less frequently met with: the mistake having arisen from its being confounded with the disease described by Bayle, under the name of *œdema glottidis*. [Yet the latter condition is almost invariably a consequence of inflammation, which, extending from the mucous membrane, involves the cellular coat. Effusion then takes place, forming one of the most suffering and intractable forms of laryngeal disease.] That chronic inflammation, however, does take place, we have very good proof, from the ulcerations which are found in the larynx, and also round the glottis, which even destroys portions of the cartilages. In the chronic disease, particularly when attended with ulceration, there is pain ascribed to the part affected, great difficulty and pain in swallowing, hoarse voice and dyspnœa, with violent fits of coughing; the patient passes distressing feverish nights, and expectorates a scanty, sometimes sanious-looking matter, which has occasionally an offensive odour. This form of the disease sometimes accompanies phthisis pulmonalis; whether it does so

or not, the patient becomes emaciated, and dies with the usual symptoms of hectic fever.

On dissection, in the acute disease, the mucous membrane is found vascular, thickened, and rough from minute ulcerations, or it is covered with a thick exudation of lymph.

[In other instances the ulcers are large, dark-coloured, and even in a state of sphacelus. I have observed that when the patient's voice has been reduced to a whisper, the vocal ligaments have been generally more or less involved in the ulceration.

Chronic inflammation and ulceration are more frequent in the *trachea* than in the *larynx*, producing a fearful destruction of parts. I have seen the tracheal cartilages eaten through by ulceration; and cases are recorded in which the purulent matter has formed pouch-like abscesses in the neck.

In these cases the erosion, of course, perforates all the coats of the larynx; whence the occurrence of fistula at the anterior angle of the thyroid cartilage.

The disease called, in the nosological systems, *laryngeal phthisis*, is a chronic inflammation and ulceration of the mucous membrane of this part, and by long continuance produces nearly all the exterior symptoms of tubercular consumption. It is most generally, however, one of the complications or sequelæ of the latter disease; yet, though generally a consequence, it is sometimes also a cause; the larynx being the primary seat of the irritation, which is subsequently propagated to the lungs themselves.

If any disease calls for active treatment, it is acute laryngitis. The extreme distress of the patient demands immediate interposition, without which we have also to dread the several chronic conditions which become more or less intractable,—ulceration, aphonia, œdema, &c. In strong constitutions and with an active pulse, bleeding is our principal dependence; and if relief be not speedily obtained, free leeching should be resorted to without delay. Free doses of calomel tend to relax and unlock, as it were, the dry and tumid mucous membrane; but there are cases in which this should be preceded by emetics, among which tartrate of antimony is to be preferred, because its action is more prolonged. There is also great advantage, after leeching, (and in the place of it, if leeches cannot be had,) in fomentations to the trachea and neck by means of hot cloths frequently renewed; and these should be followed by warm flax seed poultices. Hot pediluvia, long continued, are highly serviceable; and a general warm bath is yet better. After the acute symptoms are mitigated, blisters become available. They may be applied to the back of the neck, or to the trachea itself, taking care to place them on its lateral surface. The most efficient mode is to make the application to one side only, allow vesication to become complete, dress the blister with simple ointment, and let it heal up. Then make a like application to the opposite side of the larynx; and by this mode a constant drain and counter-irritation may be kept up without much inconvenience.

Inhalation sometimes gives great relief in laryngitis. I have found few things to answer better than the fumes from hot water,

poured on hops or chamomile flowers; and the simple vapour of hot water itself tends to relax the inflamed membrane, and conduces to expectoration.

Some other remedies, together with the operation called tracheotomy, will be considered in the next chapter, on Croup]

The treatment of chronic inflammation consists in close confinement to one apartment, strict attention to diet and the bowels, *and silence on the part of the patient.* Frequent, almost daily application of leeches to the proper region, and a repetition of blisters to the back of the neck; tar, and other vapours, have been strongly recommended. When ulceration exists in the larynx, the case may be considered almost hopeless. Still it is our duty to do something for the patient. In this case the application of caustic has been recommended, and, it is said, often practised; but it is to be doubted whether a stick of caustic could be forced into the larynx without producing sudden death. Mons. Joubert, of Paris, has been very successful in curing ulcerations in the throat, and they say, in the larynx likewise, by the application of a saturated solution of oxymuriate of mercury in pure nitro-muriatic acid.

TRACHEITIS. CYNANCHE TRACHEALIS. CROUP.

This disease is of frequent occurrence among children residing in damp, bleak situations, particularly on the sea-coast. It consists of an inflammation of the lining membrane of the trachea, and is often connected with bronchitis and laryngitis, the one running into the other, so much so, that they frequently cannot be distinguished. It is scarcely a hundred years since this disease was first recognized, but the first good description was given by the late Dr. Home. It is rather curious that croup is a disease almost peculiar to infancy and childhood, while inflammation of the larynx and bronchial tubes occurs at all ages. Although there are some instances of croup affecting adults,* yet it is rare to see it after 12 years of age. One attack predisposes to another; but as age advances, this susceptibility goes off. It is more frequently met with on the sea-coast than in inland districts, and in the neighbourhood of wet, marshy lands than in dry situations: thus it appears to be more frequent in Leith than in Edinburgh, notwithstanding the high and exposed situation of the latter.

Dr. James Hamilton, jun., has stated, but perhaps inadvertently, that croup is a common disease in certain parts of Edinburgh. Above three thousand people were attended annually by my pupils for several years, and out of more than eighteen thousand patients we have not had above twelve cases of croup; but I have frequently been asked to attend dissections of children who were supposed to have died of croup, which proved, on examination, to be bronchitis.

* It would appear that General Washington, the liberator of America, and Josephine Bonaparte, both died of this affection. The last fact is stated by Bretonneau, (at page 65,) on the authority of Béclard, who discovered the disease when employed in embalming the body.

Croup has been divided into three species, viz.: the acute, chronic, and spasmodic. Under this last head, I shall take an opportunity of noticing the affection already mentioned, as first described by Bayle in the year 1819.

Phenomena.—It usually commences, like a catarrh, the symptoms being more or less severe, with some degree of fever, preceded by chilliness; the voice soon becomes hoarse; febrile symptoms increase; and in a day or two, the breathing is more and more impeded, particularly during inspiration; at last, the respiration becomes stridulous, and the voice shrill; a harsh, dry cough exists from the beginning, and when there is any expectoration, it has more or less of a muco-purulent appearance; sometimes small masses of lymph are discharged, which occasionally resemble portions of false membrane. As the disease advances, the expression of countenance becomes more anxious; the lips and cheeks have a swollen, livid appearance, alternating, perhaps, with a deadly paleness. The pulse is frequent and small, and occasionally intermits. There are prostration of strength, and restlessness; although the surface of the body be, generally speaking, hot, the extremities are frequently cold; at last, the body is covered with a cold, clammy sweat, and the child dies of suffocation. On looking into the throat, the fauces are sometimes found inflamed and swollen; but this is not a necessary part of the disease; it merely shows that the inflammation is extensive. Many cases of croup, however, which I have seen, appear to have been produced by the extension of inflammation from the throat into the air-passages. This was the case in the disease described by M. Bretonneau, and to which he gave the name of Diphtherite.* The course of the disease is various; sometimes children are cut off early from asphyxia, but in general it lasts from two to four days. In chronic affections of the trachea, the symptoms are less violent and urgent, but having, upon the whole, pretty much the same character, viz.: dyspnœa, shrill voice, and stridulous breathing. This is probably the affection that Dr. Warren has called "bronchial polypus," and which he has described in the 1st volume of the Transactions of the College of Physicians.

Causes.—There can be no doubt that cold and moisture produce the disease, and that sometimes, from peculiar circumstances, a great many cases have occurred in the same district. The most remarkable epidemic appears to have been that which took place at Tours some years ago, and which is described by M. Bretonneau, during which one hundred and fifty individuals died. It affected adults as well as children, and was particularly severe in a French legion, quartered in the district. This author supposes diphtherite to be contagious; but whether contagious or epidemic, it is impossible to determine. It sometimes succeeds to bronchitis, and also to severe inflammation of the fauces.

Appearances on dissection.—On opening the trachea, false membrane is found lining the organ in various states; sometimes it is soft and diffluent; sometimes partial; at others extending beyond the

* Traité de la Diphtherite, par P. Bretonneau, 1826.

bifurcation. Sometimes it is found of very considerable thickness and firmness, of a tubular form, corresponding exactly with the canal which it covers, and extending an inch or two into the bronchi; on some occasions, the first divisions of the tubes are as completely lined as the trachea. Frequently the larynx is similarly affected, but I have never seen a complete tube in this situation. [These membranes, according to Andral, present no trace of organization, notwithstanding that some authors insist that they have traced blood-vessels passing between the false membrane and the subjacent mucous coat. These filaments, however, are merely prolongations of the false membrane itself, extending into the follicles; neither should we be deceived, adds M. Andral, by the red spots which are sometimes scattered over the surface of the membrane, as they almost invariably result from an oozing of blood from the mucous coat of the trachea. Still there can be no reason why these false membranes may not become organized; but this change requires a longer continuance of disease than generally happens in the acute form of croup.]

On some occasions, bronchitis coexists in one lung, or in both, which must always be kept in view, when considering the probability of affording relief by the operation of bronchotomy. I have seen the lungs inflamed in various degrees, and almost always considerable portions are in a state of engorgement, owing, perhaps, to the mechanical impediment to respiration.

In M. Bretonneau's numerous dissections, false membrane was found extending from the tonsils down to the air-passages, and sometimes even into the œsophagus.

Pathological remarks.—Since the publication of Dr. Cheyne's beautiful illustrations of croup, no doubt has existed that the false membrane is the product of severe inflammatory action of the mucous surface.

A great deal too much has been attributed to spasm in this disease. Cullen, for instance, assigns more danger to spasmodic action than to the exudation of lymph. In the 327th paragraph, he says, "*The peculiar and troublesome circumstance of the disease, seems to consist in a spasm of the muscles of the glottis, which, by inducing a suffocation, prevents the common consequences of inflammation;*" and again, in the 329th, "*When the disease ends fatally, it is by a suffocation, seemingly, as we have said, depending upon a spasm affecting the glottis; but sometimes, probably, depending upon a quantity of matter filling the bronchiæ.*" At the same time, he attributed the febrile symptoms to a corresponding spasm on the surface; in fact, he was fond of riding his spasmodic hobby, and being unacquainted with pathological investigations, his great mind was frequently turned out of the proper path of inquiry.

Spasm may certainly exist in this disease; but there is sufficient to account for the symptoms without having recourse to spasm as a cause. We have at first slight difficulty of breathing, from the increased vascularity and distension of the vessels of the mucous membrane producing swelling, and consequently some diminution in the calibre of the air-tube; subsequently, from a greater or less degree of congestion of the lungs; and lastly, from the exudation.

Death is sometimes produced by asphyxia early in the disease, by congestion of the lungs, and by the inflammation being peculiarly severe at the rima of the glottis, occasioning such a degree of swelling as to prevent inspiration; and children often die during the act of crowing.

*Treatment.**—This is a disease of all others which requires promptness of decision, and activity in practice; for if the false membrane be allowed to form, not above one case in a hundred can be saved. The worst cases are those in which a sore throat has been neglected, and the inflammation has spread into the windpipe; or those in which patients have laboured under bronchitic symptoms for a week, or perhaps more, before the disease has affected the trachea and larynx, in which circumstances, a recovery is rather to be considered as an escape than as an event to be expected. Very opposite opinions exist respecting the treatment; some trust, perhaps too much, to bleeding and blistering, to the neglect of other means; and there are others who assert that bleeding is injurious. I shall first state the practice which I have found to be successful, and afterwards that which has been recommended by others.

If consulted early, there can be no doubt of the propriety, nay, the necessity of drawing blood; if, by opening a vein, so much the better, because we can thereby make an instantaneous impression upon the disease, and upon the system, by diminishing the quantity of blood, altering the determination, and unloading the lungs. However young the child, if above eighteen months or two years old, I would recommend this practice from experience; but only when the child has been previously healthy, and we are satisfied that there is no considerable effusion into the ramifications of the bronchi, and that the false membrane is not already formed in the trachea; otherwise death will frequently be the consequence. This happened in the case related in the 18th observation of Bretonneau's work; the patient was bled on the sixth day of a severe disease, and died the same night. Among other appearances found in the dissection of this case, were the following:—"The false membrane lined the larynx, the trachea, and extended deeply into the air-passages, even to the fourth subdivision of the bronchi of the right side, and the last ramifications on the left." [The late Dr. Dewees had great experience in croup at a time when, from the exclusive use of wood fires, and the consequent variable temperature of our houses, the disease was much more common than it now is. It was his uniform practice, in the first stage of croup, to inflame the parts over the throat by spirits of turpentine, hartshorn, or mustard. If the first application did not subdue the *hoarseness*, it was repeated as soon as the rubefacient effect subsided; for he carefully avoided carrying these rubefacients to the extent of blistering the skin.† These remedies, conjoined with an emetic, and resorted to at the *onset* of the disease, and followed by a free dose of calomel, will be effectual in the great majority of cases, as my own experience can testify.]

Leeches are to be applied in numbers corresponding to the age,

* The same observations are equally applicable to inflammation of the larynx.

[† On the Diseases of Children, p. 467.]

strength of constitution of the patient, and period of the disease; and should be placed along the course of the windpipe, or top of the sternum; they should be repeated according to circumstances. But it can be of no use to draw blood even in this manner, if a sufficient number of leeches be not used, and reapplied at sufficiently short intervals, or if not employed till the false membrane be already formed. In the case which forms Bretonneau's 17th observation, it will be found that a child of twenty-seven months old, was seized on the 4th December with a slight cold, and altered tone of voice. During the 5th and 6th it became worse, and on the 7th we are told that *three leeches* were applied to the neck, and a little ipecacuanha was prescribed, which was continued on the 8th and 9th without the leeches; the child died on the 12th. It is no wonder, then, that this author should condemn depletion, this being the way in which it was employed.

If general blood-letting be used, one operation ought to be sufficient, and we must subsequently trust to the application of leeches.

Emetics are to be administered, more especially at the beginning of the disease, and when it is complicated with bronchitic effusion. In the commencement, the best emetics are the antimonial, prepared by dissolving two grains of the tartrate of antimony in two ounces of water, a teaspoonful of which is to be given every five or ten minutes, till the full effect be produced. In many cases it is difficult to produce vomiting, but by giving the antimony, we ensure its contra-stimulant effects, whether vomiting be produced or not. [One of the best emetics and expectorants is the compound syrup of squills, (Coxe's hive syrup;) but Dr. Dewees was partial to a combination of calomel and tartarized antimony, which has been found of great service. His formula directs two grains of the antimony and twelve of calomel, to be divided into eight powders, one of which is to be administered at intervals of twenty minutes or half an hour. If the emetic effect should be severe, give the medicine at longer intervals, remembering that the preceding prescription is adapted to a child two years of age; for it is important to observe, that while emesis continues, or even extreme nausea, we are not warranted in continuing the emetic medicines. This combination of cathartic and emetic substances is particularly adapted to these cases of croup, in which blood-letting is hazardous or inadmissible.] Brisk purgatives are also necessary, until the bowels are freely opened. During the whole course of the disease, the warm bath used occasionally will be found serviceable. The effect of blisters is often very decisive in the first stage, after bleeding and leeching have diminished the violence of the disease; but it is needless to torture children after the false membrane is formed. Children can rarely be made to inhale hot vapour; if they can, it will be found very serviceable.

We are informed by Dr. Mason Good, that two physicians of St. Petersburgh, Drs. Harden and Miller, had ventured upon cold affusion *after every other remedy had failed*, and the practice was attended with success; but no one who understands the pathology of this disease, and has seen the appearances on dissection, will believe that the false membrane could be removed by such means.

I have a very high opinion of the action of calomel in this disease, *if employed early*, and not trusted to entirely, to the neglect of general and local bleeding. The more rapidly the system is affected the better; and it should be given in doses of two, three, and four grains, so that from two to three scruples are taken during the first twenty-four hours. If the calomel produce hypercatharsis, it is to be discontinued, and mercurial ointment rubbed in on various parts of the body. The mercurial treatment should not, however, be too long persisted in; if it have any effect, it should be seen within the first thirty or thirty-six hours. It is impossible to say in what manner the calomel acts.* Dr. Mason Good says, "it not only acts by exciting a salutary revulsion or contra-action, but breaks down the thicker parts of the blood from which the membranous secretion is principally furnished!"—Page 427. Dr. James Hamilton, jun., was once a mercurial champion of the highest order; he used calomel in very large quantities; but he has now changed his opinion, and considers it in the light of a poison, in almost every other disease but syphilis. Is there an individual in the British empire, with an ordinary share of common sense, who, having cured forty-six out of fifty cases of such a dreadful disease as croup, by means of the action of calomel, which Dr. Hamilton alleges he has done,† would not feel justified in recommending others to follow the same treatment? But this useful remedy has since been cast in the back-ground, and he has had the extreme folly to state, "that the action of the mercury tends, by exciting inflammation and effusion, to produce thickening of various membranes, particularly of the pleura."‡

Bronchotomy has been frequently recommended in croup, and occasionally successfully practised. There are cases in which it ought to be performed, because there is a possible chance of success; and there are others in which such a step will only tend to bring surgery into disgrace. If the disease be confined to the larynx and upper part of the trachea, we ought not to hesitate when suffocation is threatened; but if the membrane extend into the bronchial tubes, or be complicated with extensive bronchitic inflammation and effusion into both lungs, it will be improper. It appears to me that bronchotomy should be had recourse to in the three following circumstances only:—In inflammation of the larynx, threatening suffocation;—when foreign bodies have accidentally found their way into the larynx; and in the peculiar affection of the epiglottis, larynx, and rima glottidis, which was first minutely described by Bayle.

When performing this operation in a case of croup, it should be always kept in view, that, if the disease be far advanced, the false membrane has a tubular form; in fact, it has taken the shape of the canal, from the surface of which it is very easily separated; so that when the incision is made through the cartilages, the membrane may collapse from the pressure of the atmosphere, and produce instant

[* I suppose it to act by exciting copious secretion in the mucous glands and cryptæ, which are so abundantly distributed throughout the lining membrane of the respiratory tubes.]

† "On the Use and Abuse of Mercury," &c. p. 206.

‡ Idem, p. 219.

death. Before quitting this subject, I may mention that Bretonneau, in the epidemic which he described, trusted at last entirely to the action of mercury, and the local application to the inflamed tonsils, of pure muriatic acid; and he assures us that the practice was attended with great success. With regard to calomel, he says, at page 94, that its good effects were perceived in a few hours after the administration of the first doses. But after a careful perusal of the work, and the result of the practice, I see no reason to alter the opinions already expressed.

Chronic inflammation of the trachea requires the frequent application of leeches and blisters; inhaling the vapour of warm water or tar, together with an occasional emetic; the steady use of laxatives; warm clothing, and farinaceous diet.

The disease described by Bayle, and to which several allusions have been made, is an œdematous affection of the larynx, glottis, and epiglottis. I conceive, however, that it is often owing to the swelling produced in the first stage of acute inflammation of the mucous membrane also, when it is swollen and dry; and also to chronic inflammation, which is not attended by œdema. It is sometimes produced by sudden congestion of the vessels of the mucous membrane, which had previously been in a state of irritation, as I shall attempt to show, when treating of the pathology of hooping-cough.

It appears to me, that this is the disease which sometimes goes by the name of *spasmodic croup*. And the same pathology likewise serves to account for the phenomena of the affection which is commonly known by the appellation of *crowing disease*.

It is probable, that this is the true pathology of the disease described long ago by Miller, and afterwards noticed by Parr and others, under the denomination of spasmodic asthma of children.

It is supposed that croup is a disease consisting of a combination of inflammation and spasm; but that spasmodic croup consists entirely of spasm. Occasionally, children die after giving a single crow, and I had once an opportunity of seeing a man 40 years of age die in a few hours from the first attack. Upon minute inquiry, it will be found, however, that individuals, cut off in this sudden manner, have for some days or weeks laboured under what is called a common cold.

I am inclined to believe that this disease may be produced by cerebral irritation, causing a morbid action in the nerves that supply the muscles of the throat, and which, by producing a convulsive spasm, occasions the contraction of the larynx, so as to produce the following phenomena.

Symptoms of spasmodic croup.—Children are generally seized in the evening, or during night, with a sense of coldness over the whole surface, and laborious breathing. During inspiration, a long shrill sound is produced, alternately with coughing, and occasionally weeping, when the voice is observed to be hoarse and croaking. There is a sense of constriction in the throat, an expresson of great anxiety in the countenance, with lividity of the cheeks and lips.

These phenomena are produced by the application of cold, and even by cold feet; they frequently occur during dentition. The bowels

are almost always found to be in a neglected state. The disease is rarely fatal.

On dissection, the lungs will be found in general loaded with dark-coloured blood, so much so, as to have lost a great deal of their natural colour and buoyancy. At one time, I was disposed to regard this condition of the lungs as the disease, till a fatal case occurred, at the dissection of which I had the able assistance of Mr. Syme, who displayed the state of the mucous membrane of the larynx in the most satisfactory manner, and drew my attention to the memoir written by Bayle. The following is a history of the case.

Edward Currie, ætat. 40, a labourer.—Up to the period of the great fires in Edinburgh, which took place in November, 1824, he had always been a healthy, stout man. During his attendance in working the engines, and carrying water, he was exposed to cold and wet, and was subsequently affected with what he called a severe cold and sore throat, attended by occasional headaches; but having a large family, and being of industrious habits, he continued to work at his daily labour. On the 2d of January following, he became worse, and was unable to go out, but sat at the fireside almost the whole of the day, complaining of chilliness, sore throat, and tightness about his chest. After passing a restless night, he sent to my dispensary for assistance on Monday. At 5 o'clock in the evening, he had severe rigors with difficulty of breathing, and at half past six, was visited by one of my pupils, Mr. Marshall, (now of the 87th regiment,) whose name is associated with many other interesting cases, and from whom I received the following report:—"On seeing him, I believed he had caught a cold: he complained of sore throat, and evinced some uneasiness in swallowing, but there was no appearance of inflammation of the fauces, nor pain on pressing the wind-pipe. The rigors were still severe, the pulse strong, beating about 70 in the minute, and there was a sense of constriction in the chest. He was bled to the amount of 18 oz., during which the rigors ceased, but afterwards returned."

Mr. Marshall thought his patient in no danger, and that the symptoms would soon give way to the remedies prescribed; but in about an hour after he took his leave, the dyspnœa became much worse, attended with severe rigors. Mr. Davidson, a respectable surgeon in the neighbourhood, was immediately sent for, who found the man in such a dangerous state, that he wished me to be present before any further step was taken; but soon the symptoms became so much more urgent that he could wait no longer, and he opened a vein in the arm; the blood was flowing on my arrival. About 18 oz. were abstracted with very little or no relief: although a large orifice was made, the blood did not flow in a stream, and it was very dark-coloured and thick. It coagulated very imperfectly, yielded no serum, and had every appearance of what is commonly called "dissolved putrid blood." The state of the respiration sometimes resembled that which is heard in croup, after the formation of the false membrane; at others, that of hooping-cough, during the paroxysm; indeed, the similarity was so great, that I heard a number of women discussing the point. It was ascertained that he experienced

the greatest difficulty in breathing during the act of *inspiration*, when he made the shrill crowing noise. There was cough. He spoke distinctly after the bleeding, which he could not do before, but it was in a low voice, and the exercise seemed to cost him a considerable effort; he said "I feel rather better." His face was pale and anxious, and I was told that it had been so for several hours; pulse rapid and feeble. Upon being subsequently asked if he had any pain, and where it was situated, he replied by placing his hand upon the thorax, and nodding. During the momentary absence of Mr. Davidson and myself, in an adjoining department, the patient felt a desire to make water, and actually got out of bed unassisted, and lifted the chamber-pot. Upon our return, he was cautioned to lie down, and on no account to make such an exertion again; but he persisted, declaring he felt somewhat better, and in a moment afterwards he was dead.

The body was opened thirty-six hours after death. The following were the appearances observed. Right lung attached throughout its whole extent, by old adhesions to the pleura costalis; left lung free. The lungs and trachea were then carefully dissected out, including the root of the tongue, and minutely examined. The lungs were of a very dark colour, heavy, and gorged everywhere with dark-coloured blood; although there was no hepatization, yet two-thirds of these organs, when cut in small pieces, sank in water, a little below the surface; this was proved not to depend on alteration of structure, for by washing they were restored to their natural colour and buoyancy. The mucous membrane everywhere in the larynx, trachea, and bronchial tubes, was of a dark red colour, and coated with reddish mucus; but the bronchial tubes were not gorged with it, as seen in the lungs of those who die of bronchitis; the larynx was found so much ossified, that, after being slit open, it could not be separated to any extent; the mucous membrane at this part was found so much swollen, as to leave the smallest possible passage for the transmission of air at the superior, but particularly the inferior aperture; the epiglottis was much swollen, erect, stiff, and of a red colour.

Treatment of spasmodic croup.—This affection in children frequently terminates after copious perspiration, so that nurses have been led to put them as soon as possible into a hot bath, which is in general efficacious, and it is the first thing to be done. An emetic ought also to be given, and if these means fail, a vein should be opened, and a moderate quantity of blood abstracted, or leeches applied about the larynx. This is the case of all others for bronchotomy, and I confess, that it is probable the life of Currie might have been saved, if the operation had been had recourse to. M. Thuilier has recommended compression, from time to time, of the œdematous epiglottis, which cannot be easily effected; and if it could, little service would follow, as it is the condition of the membrane at the rima of the glottis, which occasions the danger. Bayle proposed the introduction of a sound into the trachea, failing which, bronchotomy. Lisfranc suggested that incisions should be made into the œdematous parts, to facilitate the discharge.

FALSE CROUP, OR CROWING DISEASE.*

The *crowing disease* usually commences with teething. The infant is observed to make a shrill sound during inspiration, when there is an unusual paleness of the face, or flushing. It occasionally appears terrified, clings to the nurse, and the eyes are suffused with tears. There may be one such attack during the day, or the infant may be constantly affected. After cutting a pair of teeth, there may be no appearance of the affection till the next set occasions irritation of the gums. The crowing disease is sometimes connected with inflammation of the mucous membrane of the air-passages, with cynanche tonsillaris, and with febrile complaints; these are dangerous complications. At other times, we can distinctly trace cerebral disorder. This is likewise a dangerous complication, and there is no doubt that it is aggravated by disorder of the stomach and bowels. Experience has convinced me, that, for the most part, the children affected in this manner have large heads, and are plethoric.

Treatment.—If there be plethora and febrile action, leeches should be applied to the throat, in such numbers, and repeated, as the urgency of the case may require. The bowels should be freely acted upon by any laxative, but it is sometimes necessary, from the morbid appearance and odour of the evacuations, to have recourse to a mercurial preparation. The gums should, if necessary, be freely divided, and the warm bath used morning and evening. [As the sudden access of the paroxysm calls for immediate relief, a hot, saline pediluvium and a simple emetic of ipecacuanha should be at once resorted to. If the child's bowels are confined, these measures may be preceded by an injection of assafœtida. When a general bath can be obtained in time, it is to be preferred to the pediluvium; and either should be followed by a dose of calomel and opium.]

It is of importance to attend to the diet, to reduce plethora, and never to load the stomach. A solution of antimony should be used occasionally, either as a contra-stimulant, an emetic, or diaphoretic, in doses corresponding to the object we may have in view. The infant should be well clothed, and never taken out of doors, in a cold or damp day. When the head feels hot, or when there are marks of cerebral disorder, the head may be shaved and kept cool; the bowels are to be more freely acted upon; frequent doses of calomel may be prescribed for a few days, and croton oil or antimonial ointment, applied to the head, to produce irritation and pimples on the surface of the scalp. This last-mentioned part of the treatment is very important, and must be persevered in, producing crops of pustules occasionally, for a considerable period of time. Change of air is said to have worked wonders in this complaint. I have seen it beneficial when the child was removed from a cold bleak situation to a milder and more sheltered spot; but I have more frequently observed change of air hurtful.

[* Syn.—Laryngismus stridulus.—Asthma infantum.]

PERTUSSIS. HOOPING-COUGH. CHIN-COUGH.

This disease is also known by the appellations chin-cough, kink-cough, &c, and it is probable that it is not a disease of such recent origin as has hitherto been imagined. Gardien very sensibly states, that if it has not been described in France until the year 1814, it is because it has always been confounded with other species of cough. Indeed, some pretend that it was known to Hippocrates, while others assert that it was imported in more recent times from the east. It is not of much consequence how this matter really stands, because the most perfect knowledge as to its true origin would not enable us to treat the disease more successfully. Hooping-cough is a disease of childhood, although I have seen many instances in adult age. Heberden says that he has seen it in a woman of threescore and ten, and in a man eighty years of age. It may be said to occur once on y in a lifetime, but several cases have fallen under my notice of secondary attacks. Dr. Rosenstein states, in his work on the diseases of children, &c., that in Sweden, in the course of sixteen years, from 1749, forty-three thousand three hundred and ninety-three children died of the hooping-cough, which gives an average of 2712 per annum; but in the year 1755, five thousand eight hundred and thirty-two children died of this distemper. In general the annual mortality amounted to from seventeen hundred to two thousand in that kingdom. According to Dr. Watt, the deaths from hooping-cough in Glasgow, have been pretty nearly 5½ per cent. of the whole deaths in that city: the greatest number in any one year took place in 1809, when they amounted to 11¼ per cent.; and he concludes that next to the small-pox formerly, and measles now, chin-cough is the most fatal disease to which children are liable. He gives a table, which appears to prove that in young children there is more danger than in those further advanced in life; which does not altogether accord with my experience.*

Phenomena.—In the first stage of hooping-cough, the disease is almost always confounded with a common slight catarrh: the duration of this stage varies very much; in general, however, it extends from ten to twenty days. There is a dry cough, occasional sense of constriction in the chest, and a feeling of weight in the head. The eyes are sometimes a little swollen and red, with frequent sneezing, and involuntary tears; in many cases, there is little or no fever except during the night; the bowels are generally out of order. We sometimes suspect the disease to be hooping-cough, because it is epidemic at the time, or in consequence of the convulsive appearance of the paroxysm of coughing. At last, however, the cough assumes a peculiar character; when this takes place, the disease is said to be in the second stage. It is characterized by an inspiration which is long and sonorous, producing a peculiar shrill noise, which is termed, in common language, the hoop or kink, to which succeeds an expira-

* It affords me great pleasure to refer the reader to Dr. Watt's work on Hooping-cough, as the best which has ever been published; and to that of the late Dr. Marcus, of Bamberg, who died the day after he sent his preface to the press.

tion, which is broken by frequent fits of coughing. No one who has seen the disease when fully formed, can mistake it. When the cough commences, in slight cases, the features become a little swollen, the face red, the eyes suffused with tears; the cough, which is frequently interrupted by a long inspiration, is hoarse; the paroxysm ceasing with an expectoration more or less copious, frequently assisted by the act of vomiting, which discharges the contents of the stomach. As soon as this is accomplished, children are commonly able to return to their usual amusements, and appear to suffer little or nothing, until towards the period of the next paroxysm. The appetite is in general good. The expectoration is at first slight, scanty, and viscid; but if the disease goes on in a favourable manner, the discharge becomes more copious, and less tenacious. Young children scarcely ever spit out the expectoration, unless during the act of vomiting: it is generally swallowed as soon as discharged from the air-passages.

The patient is in general warned of the approach of the paroxysm, by a greater or less degree of chilliness on the surface, and a tickling in the throat, immediately succeeded by a sense of tightness both in the larynx and chest, and a dread of suffocation, which induces him to fly to his nurse, or to lay hold of any thing within reach, for support during the fit. Others seem to derive relief from laying all-fours on the ground, and when the discharge has taken place, they jump up and run about.

In more severe cases, the sense of suffocation is dreadful; the respiration is much more impeded; the cough more intense and protracted; the features more swollen, and of a livid colour; the eyes seem ready to start out of their sockets; the eyelids are much swollen, and the cheeks, perhaps, bathed in tears; till at last expectoration takes place, when the children pant for breath, and are unable to return to their play for a considerable time. The skin is above the natural temperature, particularly at night; complaint is made of headache; the appetite is bad, the bowels are much disordered, the tongue loaded, and flatulent distension aggravates the patient's sufferings.

The straining which takes place during the paroxysm is sometimes so severe as to produce the involuntary discharge of fæces and urine. It is no uncommon thing for a small blood-vessel to give way in the conjunctiva, producing ecchymosis; hæmoptysis occasionally occurs, but this is rare in comparison to epistaxis, which is very frequent, and, when it takes place in plethoric children, is considered a very fortunate occurrence.

In the worst forms of the disease, fever is constantly present, and the breathing is always more or less impeded, which shows that some mischief is going on internally. Fits of temporary asphyxia are frequent; they are very often mistaken for convulsions, and by them children are sometimes instantly cut off. Indeed, children have been known to die suddenly during a paroxysm, asphyxiated, whose cases were previously slight, and not attended with fever. In some instances, convulsions occur and carry off the patient.

Many of the severe cases met with in practice, are those in which

this disease is engrafted, as it were, on bronchitis; or succeeds to small-pox or measles.

Causes.—Hooping-cough is rarely sporadic; it generally prevails as an epidemic. Some assert that it is unquestionably contagious, while others allege that it is not so. Some suppose that it is a disease produced by a miasm of a specific nature. Any discussion on these points is quite unnecessary.

Appearances on dissection.—I have had fifty opportunities of examining the bodies of those who died of this disease.* In one severe epidemic, we had upwards of two hundred cases at the dispensary, out of which there were thirty-two deaths. The appearances found on dissection were very uniform, according to the period of the disease at which death took place. I have seen two dissections of children who died asphyxiated, during the paroxysm, and in these the lungs were found to be gorged with blood; the whole lung, when put into water, showing far less buoyancy than natural, and large portions, when separated, were found to sink to the bottom of the vessel. But it was proved that this increase of gravity was not owing to alteration in the texture of the organ, which resumed the natural colour, appearance and buoyancy, when deprived of the blood by washing. The right side of the heart and the large vessels near it were distended with dark blood. The mucous membrane of the air-passages everywhere presented a dark red appearance, seemingly thickened, the tubes containing more or less mucus tinged with blood. The brain was not examined.

In ordinary cases, when death takes place during the second, third, or fourth week, the following is a sketch of the appearances. In the head, marks of vascularity and of venous turgescence, and sometimes also effusion of serum between the membranes, and in the ventricles; but these were far from being invariable appearances. In some few cases, there was great vascularity, and some effusion at the base of the brain, more particularly at the origin of the nerves, but not to a greater extent than has been frequently remarked in bronchitis, and other diseases in which there was no tendency to spasmodic cough, or to spasm of any kind. In one case, which was accompanied by violent and intractable convulsions, with considerable rigidity of the superior extremities, the substance of the brain had a rosy tint; on making sections, large drops of blood quickly exuded from numerous points on the cut surfaces. On exposing the lateral ventricles, the left *corpus striatum* and *thalamus* were observed to be enlarged, particularly the former; in so much, that on measuring the depth of the brain on each side, it was discovered to be nearly half an inch deeper on the diseased side than the other; when cut, it was found to be rather harder than the corresponding parts on the opposite side. The child had previously enjoyed a good state of health, and even after death did not appear much emaciated.

* It may be mentioned as a remarkable fact, evincing the improved state of society, and the advantages of education, in removing prejudices and destroying superstition, that, in Edinburgh, we are rarely prevented from examining a body after death, if sufficient attention has been paid by a medical man during the course of the illness—except by the poor Irish population, who seem to have a more superstitious regard for their dead on this side of the channel than in their own country.

Traces of disease were invariably found in the thorax. On some rare occasions, the lungs were somewhat collapsed; but in general they completely filled their respective cavities. In a few instances the pleura costalis was covered with lymph like an unctuous secretion. Once or twice the lungs adhered to the walls of the chest, by an intermediate deposition of soft coagulating lymph. The anterior surface of the lungs, in almost all cases, presented spots of a whitish appearance, as if coated over with lymph; but this was found, upon closer examination, to depend on emphysema, air being effused beneath the pleura, from the rupture or enlargement of the air cells; considerable portions were observed gorged with blood. Sometimes the substance of the lungs was in a state of œdema; and occasionally portions were observed inflamed.

In persons who were not cut off till the eighth or tenth week, tubercles in various states were frequently observed; sometimes vesicular or crude, large and solitary, sometimes softened, and partly discharged by expectoration. On one or two occasions, I have seen one lung infiltrated with a soft caseous matter. The bronchial glands are found enlarged, if the patient do not die before the third or fourth week.

The mucous membrane, throughout the air-passages, has always displayed more or less vascularity, which increased towards the ramifications, and the tubes were found filled with matter which had more or less resemblance to pus. In the trachea and larynx, this secretion is observed, but I have never seen them filled with it like the bronchial tubes. Sometimes flakes of coagulable lymph are observed, and ulcerations about the glottis, in the larynx and trachea, but more particularly at the great bifurcation.

In the abdomen, sometimes every structure appears to be in a healthy state; at others, the liver is found gorged with blood, sometimes whiter, at others redder than natural. The mucous membrane of the stomach and bowels has shown various red patches, and I have seen ulcerations in the colon, and enlargement of the mesenteric glands.

The late Mr. Alcock, a scientific general practitioner in London, in one of the numbers of the Medical Intelligencer, states, that he "has repeatedly ascertained, by dissections of patients who have died of hooping-cough, that the larynx invariably exhibited signs of inflammation, often to so great an extent, as by its swelling to close mechanically the glottis; often the exudation of coagulable lymph near the larynx, the mucous membrane of the trachea and bronchiæ much increased in vascularity, and the cavities of the latter filled with fluid, more or less mixed with air, the appearance of the fluid varying from thin mucus to perfectly formed pus." This extract was presented to me by a friend one day after my lecture upon this subject, and I have never been able to procure the number of the periodical which contains the whole of the paper. I have thought it right, however, to give the extract, and to express the high respect I entertain for Mr. Alcock, from the accounts which have reached me, at different times, of his zeal and indefatigable exertions for the improvement of pathology.

These *post-mortem* appearances correspond with the dissections recorded in Dr. Watt's treatise.

Pathology.—Until lately, the most uncertain opinions prevailed respecting the nature and seat of this disease. Some supposed it to be a nervous affection, and of a true spasmodic character. Chambon and others assert that it is a true catarrh of the stomach. Some represent it to be a pure inflammation of the mucous membrane of the larynx, trachea, and bronchial tubes, to their termination in the air-cells. While there are others, like Gardien, who think that the disease is partly situated in the lungs, but that the essence of it consists of a spasmodic affection of the glottis and diaphragm. In consulting the works of Willis, published in the year 1670, it will be seen that nothing was then known of the nature and seat of hooping-cough, and from the general want of success in treating it, this branch of practice fell into the hands of old women and quacks. According to the Brunonians, it is a disease of true debility. Some, indeed, conjoin it with typhus; while others allege that it depends on inflammatory action in the brain. Rosenstein places the seat of hooping-cough in the nerves of the chest, and Hufeland agrees with him in that opinion. Autenreith declares he found the pneumogastric nerves inflamed. Breschet seems to support this opinion, but although this state of parts may have occurred on some occasions, it is denied as a more common cause by other authorities. Guersent has stated, that he opened a number of bodies with a view to determine the fact, but he did not find the pneumogastric nerves diseased. No pathological information can be derived from Cullen's works, or even from Dr. Thomson's recent edition of them, respecting this, or any other disease; but according to his nosological arrangement, it is evident he thought it to be of a nervous and spasmodic nature. Dr. Gregory, it would appear, gave up the investigation of the nature and seat of the disease in despair, for he used to make the following statement in his lectures:—"I do not attempt the proximate cause, though I may mention I have no faith in the theory that was advanced some years ago, that the disease depended on the stomach; it is more probable that it is seated in the lungs." Yet he considered it to be of a spasmodic nature.

The oldest opinion which can be traced, approaching to the true pathology of this interesting disease, is that which was advanced by the celebrated French writer Astruc, who states, (at page 142 of his Treatise on all the Diseases of Children,) that "this disease principally consists in inflammation of the superior part of the larynx and pharynx, and more particularly of the latter, which is sometimes ulcerated with the constriction of the glottis, as dissection proves."

It appears to me, that investigators have been bewildered in endeavouring to discover the first link in the chain of diseased action, and by the character of the cough, with regard to which, it should be recollected that a very slight degree of irritation in the larynx, and even about the glottis, will produce most violent convulsive fits of coughing. Dr. Watt says, that the cough is exactly what may be produced by any very violent irritation applied to the same parts, "of which, (says he,) I had a very striking proof some time ago.

Two children had differed about their play; the one, who supposed himself ill used, to be revenged on the other, took a handful of saw-dust, and endeavoured to thrust it into his mouth. He succeeded in his attempt. The other, crying and struggling for relief, allowed a quantity of dust to be drawn into the windpipe. This gave great uneasiness, and after a short time excited violent convulsive fits of coughing, which exactly resembled those of the chin-cough. Even the hoop was very distinctly formed. At first he spat up nothing, afterwards thick mucus; at last, the irritating cause being removed by the expectoration, the other symptoms disappeared. This was a very striking example of chin-cough being brought on artificially." I have sometimes seen the same effects in both old and young, from articles of food, and particularly small portions of sweet-meats, going the wrong way, as it is termed, *i. e.*, dropping into the larynx, or adhering somewhere about the margins of the glottis or epiglottis. I was once present at the dissection of a shoemaker, who died from extensive inflammation of the throat and windpipe, and who had, during the whole of his illness, of four days' standing, violent convulsive fits of coughing, with a complete hoop. On examining the throat and air-passages, extensive inflammation was discovered, and a small piece of a hog's bristle was found sticking in the margin of the glottis.

My opinion of the nature and seat of the hooping-cough is as follows:—There is something peculiar in the disease, since almost no individual escapes contracting it once in his lifetime. I have no doubt that the nervous system is involved in the affection—very seriously involved; but in the present state of our ignorance of the structure and functions of that system, the doctrine of spasm must be very cautiously received into the medical evidence of the case, more particularly as all the phenomena can be satisfactorily explained without its aid. The essence of the disease consists in irritation and inflammation of the mucous membranes of the body, but more particularly of the air-passages. This is proved by the pectoral or catarrhal symptoms, which are to be observed from the very first onset of the disease; by the increased secretion; and by the result of dissections. Some say the disease cannot be a consequence of inflammation, because there is no febrile excitement in the pulse in slight cases, and no increased heat of surface; but it is a fatal error to suppose that inflammation cannot exist without fever. In the majority of cases of hooping-cough, the inflammation, although extensive, is only *slightly sub-acute*, and there is consequently no heat of skin—no increased velocity of the pulse—no thirst; but when the inflammation runs a little higher, then we generally have these constitutional symptoms. It will be observed, on perusing the description of this disease given by every author, that it begins with the common symptoms of catarrh, from which it cannot, during the first stage, be distinguished.

The disease, when formed, comes on in paroxysms. I shall not stop to inquire whether these paroxysms are occasioned by a peculiar affection of the nervous system or not. The paroxysm commences with a sense of coldness on the surface, making an irregular

determination of blood, that takes place towards the lungs, which, perhaps, never will be satisfactorily explained. These organs become gorged with blood, and the air is consequently prevented from obtaining a free passage through the ramifications of the bronchi and air-cells; some degree of dyspnœa is produced, with tightness in the chest, and a sense of suffocation. All the powers of the constitution are brought into play to remove this congestion; violent coughing is excited—all the voluntary muscles are called into excessive action, and a universal muscular commotion is produced, which tends to force the blood on in its circulation—a copious secretion takes place from the mucous membrane, probably throughout the whole extent of the air-passages; and the fit ceases when the mucus is discharged, which is sometimes promoted by the act of vomiting. Towards the close of the paroxysm, a determination of blood takes place to the skin, frequently producing copious perspiration, which is probably assisted, if not entirely produced, by the violent muscular commotion into which the body is thrown. This is also, perhaps, another way by which the congestion of the lungs is removed.

It is generally believed that the hoop is produced by spasm. It is not my business to attempt to disprove this assertion; but I have already shown that the hoop has been produced by extraneous bodies, which have found their way into the larynx, or have been lodged about the glottis. It has also been shown, that in pure inflammation of the mucous membrane of the larynx, before and after the effusion of coagulable lymph, the same sound has been heard; and also when the calibre of the larynx at the *rima glottidis* has been diminished by mere swelling of the mucous membrane, as well as by effusion, forming the disease which Bayle has described under the name of *œdema glottidis.* In all these cases, there is the long sonorous or shrill inspiration. Cullen says, (in the 1404th paragraph,) that "the peculiar sound is produced by air rushing through the glottis with increased velocity." It is admitted that this is occasioned by the diminution of the canal through which the air has to pass, and the only question to decide is the *cause* of this diminution. Cullen and others assert that it is owing to the spasmodic contraction of the muscles of the throat, which are connected with the larynx; while I presume, that it is generally owing to the other causes:—the fact is capable of explanation in both ways, but the decision will influence the treatment. In hooping-cough, we have decided evidence of congestion and inflammation of the air-passages; the larynx, the parts in the neighbourhood, principally suffer, and at the commencement of the paroxysm, when blood is accumulated in the lungs, the mucous membrane, I apprehend, becomes more swollen, and the space at the rima of the glottis is diminished, so as to be almost closed. It is admitted that the difficulty which the air experiences in traversing this part, produces the phenomenon of the hoop, and increases the tendency to asphyxia and convulsions. The distension of the vessels is probably relieved by increased secretion and determination of blood to the surface.

Sometimes the lungs are not properly relieved from a state of engorgement, which, if life be not immediately destroyed, terminates

in inflammation of the substance of the lungs, or the formation of tubercles.

The brain is frequently affected, not, in all probability, from any primary diseased action in that organ, as some have supposed, but from the obstructed circulation in the lungs, and the overloaded state of the right side of the heart, preventing the free return of blood from the head. The brain, as well as every other part of the body, must likewise suffer from what may be termed the chemical condition of the blood itself, owing to the want of those natural changes which take place in the lungs, which are prevented partly by the congested state of these organs—partly by the want of a sufficient supply of air during each paroxysm—and partly by the diseased condition of the mucous membrane.

Treatment.—Dr. Ferriar, in his Medical Histories and Reflections, (vol. iii. p. 215,) says, that "hooping-cough has been too much trusted to the management of nurses, and has been empirically treated, even by those physicians who have applied themselves to the particular consideration of the complaint." Dr. Gregory, in his lectures upon this subject, with that frankness and candour which marked his career, used to make the following statement:—"I think it proper for me to warn you, in the first place, that we have no cure for it." Cullen divided this disease into two stages; the first continues, perhaps, for three weeks; during this period, he imagines the contagion to be present, and operating on the animal frame. The second stage embraces the whole remainder of the disease, should it last for twelve months. Dr. Mason Good says, that he believes the hypothesis to be correct: "throughout the first stage, (says he,) our attention should be directed to whatever will moderate the influence of the contagious stimulus, retard the return of convulsive paroxysms, and mitigate their violence."

"Bleeding, (says Mason Good,) in severe cases, will be found necessary for this purpose; but it should be avoided, except in severe cases, as spasmodic affections are often rather increased than diminished by the use of the lancet; and it will, in general, be found better to employ blisters as a substitute." This paragraph contains almost the best proof I could bring forward, that bleeding, even in the present age, is frequently recommended and practised upon unsound principles. If bleeding be employed, it is for the prevention or cure for inflammatory, and not spasmodic action; but it is only in *severe cases*, according to Mason Good, that bleeding is to be used, "as spasmodic affections are often rather increased than diminished by the use of the lancet." Now, it appears to me, that if the lancet tends to increase a slight spasmodic complaint, it will surely aggravate a severe one in a still greater degree.

Bleeding is not necessary, in a great majority of cases, nay, it might prove injurious in some, by interfering with the efforts of the constitution; but when the patient has fever, difficulty of breathing between the paroxysms, a near approach to asphyxia, or convulsions during the paroxysm, or if he complain of a constant sense of stricture in his chest, or severe headache, I would recommend blood-letting, by opening a vein, if the patient be robust, and about two

years of age; and if the air-tubes are not filled with mucus, I have frequently seen the best effects from opening the jugular on such occasions. It is impossible to say what quantity should be taken; it ought to be sufficient to make an impression upon the disease, or upon the system. I once saw a boy six years old, labouring under hooping-cough, who was in great danger, from the congested state of his lungs and brain. I requested the gentleman who was in immediate attendance, to open a vein, and to allow the blood to flow till relief was obtained. At my next visit, I found that 15 ounces had been abstracted. He bore the bleeding well, and his condition was very much improved. Next day, however, violent enteritic symptoms took place, which were not subdued till after the application, in all, of twenty leeches. This boy made a remarkably rapid recovery.—It must not be understood that I would recommend the same quantity of blood to be taken from every child of that age: the case is mentioned to show that a considerable quantity may be abstracted without necessarily producing any bad consequences, and its power in controlling the disease.

A similar practice must be pursued if the patient be lethargic, which, in such cases, marks oppression of the brain, and frequently precedes convulsions. Sydenham speaks strongly in favour of venesection in hooping-cough.* The following statement will be found: "By this practice of venesection and repeated purges, and by this only, is conquered the convulsive or hooping-cough; an obstinate disorder which scarcely any other method will subdue."

We must depend upon leeches in young children, as well as in older patients, in advanced stages of the disease. The number of leeches to be regulated according to the circumstances noticed when treating of bronchitis.

To show the advantage of leeching, even at the eleventh hour, I beg to refer the reader to the three cases mentioned at p. 3, Willan's Diseases of London.

It should be mentioned, that hooping-cough is a disease in which auscultation should be employed; by this means, we may determine whether inflammatory action be going on in the lungs—whether it be general or partial—and whether the bronchial tubes be loaded with matter: if they are loaded, we should be deterred from bleeding, for reasons so much insisted on when treating of bronchitis.

After I was convinced of the morbid state of the larynx and *rima glottidis* producing the hoop, or kink, as it is sometimes termed, it naturally occurred to me that leeches, applied over the part affected, would be attended with the best effects, in cases where the paroxysms were severe, and threatening asphyxia. The theory may be wrong, but I can speak confidently of the success of the practice. I had an opportunity of trying it in twelve cases, in three of which the hoop never returned, although the children were previously threatened with asphyxia; all the others were relieved in the most striking manner; and had it been necessary, from the re-occurrence of urgent symptoms, to apply them again, or had a great number been put on

* Swan's edit. p., 321.

at first, I feel persuaded the hoop would have been destroyed in the whole. The immediate relief of this symptom, which occurred in the case of a lady, when threatened with suffocation, I shall never forget. Five children in one family were under my care, with hooping-cough: two of them had considerable dyspnœa between the paroxysms, with a tendency to asyphxia during each attack, and were exceedingly ill; blood was taken from the jugulars with extraordinary relief; a third had leeches frequently applied. These three recovered speedily. The other two had the disease so favourably at first, as not to require any treatment, except keeping the bowels open, and an occasional emetic, yet they were the most troublesome cases out of the five, and were double the length of time indisposed.

A solution of the tartrate of antimony will be found useful, if the diseased action in the lungs shows any tendency to increase. In such circumstances, tincture of digitalis is often of great service, in considerable doses. It is often beneficial to employ antimony and digitalis alternately. Emetics have been much overrated in hooping-cough. One or two may be of use when the disease is forming; and they may be exhibited now and then, in the latter stages, when the expectoration is not easy, and when we know, by auscultation, that the bronchial tubes are overloaded with mucus. I have found an antimonial emetic the best, when there is any febrile disturbance; but should the emetic be wanted merely to unload the tubes, and particularly if the patient be weak, perhaps the sulphate of zinc will be found preferable, as it commonly leaves no sickness or depression.

Gentle purgatives are to be used for the purpose of keeping the bowels easy; great mischief is often done by the constant exhibition of drastic medicines for weeks together. Many practitioners seem to forget that the long continuance of powerful medicines will certainly produce great disorder of the bowels, and consequently, foul evacuations.

The antiphlogistic regimen and confinement to one apartment, during the first part of the disease at least, are essential circumstances in the treatment. An occasional opiate, and a warm bath, will be found of service as auxiliary remedies.

Blisters are necessary in very acute cases; but except in such instances, the contra-irritation produced by the tartar emetic ointment will be found most efficacious. This plan was first recommended by Autenreith.

It has frequently occurred to me to observe, during epidemics of hooping-cough, that those affected were sometimes attacked with measles, scarlatina, and even small-pox, the cases being much aggravated during the eruptive fever; but subsequently, upon the appearance of the eruption, the phenomenon of the hoop, which gives the character to hooping-cough, became very much moderated—in two or three cases it entirely ceased, but it generally returned when the eruption declined; an instance of which is related in Dr. Ferriar's excellent work already quoted: "Miss ——, aged one year and a half, had the hooping-cough in a slight degree for some weeks. When it seemed to be leaving her, she was seized with the measles, and

there was an appearance of a very large crop of the eruption. Her cough was not very troublesome, and no longer resembled the hooping-cough. On the third day she was seized with an extreme degree of dyspnœa, and a short harassing cough, and the eruption almost entirely disappeared. The pulse became innumerable. Leeches were applied to the extremities, blisters were applied to different parts of the body, and every method was used to renew the eruption, but without success. The cough increased, but the dyspnœa began to relax, and at length, to my great satisfaction, the type of the hooping-cough was renewed, and my patient recovered, by time, and change of air. Not one spot of the eruption of measles ran its usual course." Dr. Watt notices the same fact, and it now appears strange that so obvious a circumstance had been overlooked, as it is evident that the irritation was removed from the windpipe by the cutaneous eruption.

The application of the ointment occasions an artificial eruption exceedingly like small-pox. Autenreith considered it a certain specific, when a copious crop was produced on the epigastric region; and he distinctly assures us, that the use of the ointment for twelve days produces a cure;* but the result of my practice does not authorize me to make the same statement; therefore I am persuaded Autenreith could not have met with such severe cases as I have occasionally happened to treat, particularly in the epidemic which existed in Edinburgh about four years ago. His theory of its action, however, perfectly coincides with mine, that " when the irritation is well established, it acted by directing the blood to the surface from the air-passages." It may be shortly stated, that I have seen it very serviceable in this disease, so much so, that I always have recourse to it; and it is a far more beneficial method of producing irritation in subacute and chronic inflammations, than that by blisters, because it is more permanent. The proportion of tartar-emetic in the ointment, is a drachm to the ounce. The antimony may also be applied, by sprinkling it on the surface of a pitch or warm plaster.

Several curious circumstances have attracted my notice, with reference to the external application of this remedy. In five or six cases, when it has been rubbed over the epigastric region, violent vomiting has been produced, which was proved to be owing to the antimony, by leaving off the ointment, and returning to it several times. When applied to the chest, the eruption sometimes appears on the genitals and groins; when this was first observed, I thought it had been produced by negligence, but I have since seen the same circumstance, in cases where every care was taken to prevent any accidental application to these parts.

When the internal disease is severe, it is in general difficult to establish the cutaneous irritation by the application of the ointment. I have remarked, in three cases, when indiscriminately applied over both sides of the thorax, that the eruption did not appear on that side in which the diseased action was most violent, while there was a copious crop on the other; and in one of the cases, the line of demarcation was exactly in the mesial plane.

* I have reason to believe that Autenreith has changed his opinion, upon more enlarged experience of the remedy.

Dr. Cullen, from the hypothetical notion that the disease continued during the second stage, merely by the power of habit, recommended antispasmodics or tonics; he therefore advised opiates and Peruvian bark. Dr. Hufeland likewise recommended belladonna, considering the disease to be of a true spasmodic nature; he gave it in doses of a quarter of a grain morning and evening, to children between three and six years of age. Ext. conii was formerly in great repute. As tonics, small doses of zinc, arsenic, and nitrate of silver have been employed. In Russia, the berries of the spurge laurel are said to be specific; they are employed, it would appear, as stimulants and antispasmodics. The sulphate of alumen has been highly extolled. But it would be no slight task to give a list of the remedies which have been strongly recommended. There is a popular feeling in favour of garlic, applied externally in the form of ointment or tincture, and the internal use of a solution of cochineal. Camphor is supposed by the vulgar to be an antidote.

During recovery, it is of the greatest consequence to attend to the clothing, diet, and exercise of the patient; I have frequently traced relapses to cold feet, and to indigestible food. Laxatives are necessary, and the cold bath is in great estimation with some practitioners; of which last, I cannot give an opinion: but I have seen the greatest advantages in this disease, and many other cases of chronic bronchial affections, from sponging the body with water, or vinegar and water, two or three times a day. Change of air is extolled by some individuals, but is often productive of great mischief, by occasioning a return of the disease. It is an important fact, that during the late epidemic, which was the most severe I have ever witnessed, all the children that were moved for change of air had the disease the longest. The children of two families, who had it in the very slightest form, were taken to the country when nearly cured; most of them had relapses, not only upon going away, but also on returning. The cause of relapse, in such cases, is easily explained; the patient may be moved from a warm situation to a damp, cold one; or he may be put into a damp bed; or a change of weather may take place when on his journey. It is a common practice to send hooping-cough children to tan-yards for a considerable part of the day; but really, the pathological notions upon which this practice is founded, need no refutation.

CHAPTER III.

PNEUMONIA.

This disease has received various denominations, as peripneumonia and pneumonitis; and consists of an inflammation of the parenchyma of the lungs. The term pleuro-pneumonia, is employed to express the coexistence of inflammation of the pleura and lungs.

[Pneumonia is most frequent in cold and changeable weather, especially at the breaking up of winter. It has been ascertained by the observations of Dr. Clermont Lerubard, that this disease has a preference, in the proportion of three to one, for the right lung, which he endeavours to explain by the greater size and transverse direction of the corresponding branch of the pulmonary artery. With respect to the ages most liable to pneumonia, the same author draws the following interesting conclusions, viz. Adults are less subject to it than infants: in the former it is most common between the fifty-fifth and eighty-fifth years, and between the twenty-third and twenty-seventh years. The juvenile periods in which it most prevails, are: 1. The first or second year. 2. The thirteenth year. 3. Within a month after birth. Laennec found pneumonia, for the most part, to commence in the inferior lobes of the lungs; and this observation has been confirmed by Andral, who, in 80 cases, found the disease to attack the inferior lobe 47 times, the superior lobe 30, and the whole lung at the same time, 11.]

Phenomena.—Like other acute diseases, pneumonia commences with shivering, followed by a hot stage, which is, in general, pretty violent, unless in congestive inflammation, when coldness predominates. There is more or less dyspnœa, and the number of respirations considerably exceed twenty in a minute, which may be taken as about the natural standard. The breathing is in some cases very laborious, but we must be careful, as Andral properly remarks, not to allow ourselves to be led astray by the account which patients give respecting this point, for often, when the respiration is short and hurried, they will assure us that they do not feel the least impediment. Pain is not a well-marked symptom in inflammation of the substance of the lungs; the patient complains rather of a tightness in the thorax; and when pain exists, it is, in general, dull instead of sharp. The cough is short, perpetual, and does not come on by fits;

it is dry at the commencement, and continues very distressing and obstinate. The expectoration is scanty, viscid, and discoloured, from an admixture of blood; sometimes it is bright, like red currant jelly, but in general, it is rusty-looking, resembling brick dust intimately mixed with viscid mucus; it is so tenacious as to adhere firmly to the sides of the vessel into which the patient spits. [This kind of expectoration is *characteristic* of pneumonia.] It is very important to attend to the colour of the expectoration, because it assists us in determining, not only the nature of the disease, but also its extent and severity. The expectoration is sometimes, though rarely, fetid. A gangrenous odour is perceived when the disease terminates in gangrene.

The pulse is variable in many respects, and practitioners should be very wary in depending upon it, in the confident manner so generally followed, and more particularly in pneumonia, which I have known to go on rapidly to a fatal termination, the pulse never exceeding the natural standard. Sometimes, when the inflammation is most intense, it is observed to be extremely small. Morgagni noticed the uncertainty of the pulse in pneumonia long ago. Many suppose that recovery is rare, when the pulse beats more than 130. Andral makes this remark, and I have no doubt, from the milk-and-water practice which is too frequently adopted by French practitioners, in inflammations of important organs, that they may find it so. I often perceive the pulse to rise both in frequency and force after bleeding, when the disease is fast subsiding; in many irritable constitutions it increases in frequency, in consequence of considerable depletion even when the disease is declining.

With respect to the heat of skin, I have similar remarks to make; for although in many cases it may be hot and dry, yet in others it is below the natural standard.

The tongue soon, in the course of this disease, becomes parched and dark-coloured; a dry glossy tongue is always a bad symptom.

It has been too frequently stated in books and in lectures, that the face usually becomes livid and discoloured in pneumonia—this is an error, being more a symptom of bronchitis than of inflammation of the substance of the lungs.

Delirium occasionally takes place, but it is far from being a general symptom; when it occurs early, it denotes danger. [Metastasis of the inflammation from the lungs to the brain, is no unusual occurrence, the secondary affection thus becoming more dangerous than the primary one. Some of the worst cases of phrenitis I have ever seen have been of this kind. When the brain becomes affected the pulmonary symptoms are commonly much relieved, and in some instances entirely.] Mental aberration often occurs, however, after acute diseases in the chest and abdomen have been subdued, particularly by extensive bleeding. It in general soon yields to the use of opiates and stimulants prudently administered.

Much misconception exists respecting position in affections of the chest. It is pretty generally believed that patients prefer to lie on the affected side. This is very much the case in pleuritis, empyema,

and in single bronchitis; but in pneumonia, patients are generally found on the back, particularly in severe cases.

In the very severe forms of pneumonia, in which a large portion of the lung is inflamed, together with extensive effusion into the air-passages; or in cases complicated with considerable local congestions; or in those which terminate in gangrene of the lungs—the powers of life quickly give way, attended by symptoms which are generally denominated typhoid. In truth, this form of the disease has obtained the name of *pneumonia typhoides*. There is, undoubtedly, such a form of pneumonia, but I object to the adjunct *typhoides*, as expressing erroneous ideas of the pathological condition of the body. This form of pneumonia was very prevalent during the war, among troops stationed in exposed situations along the coast, and in large garrisons, where the night-duty was severe. The soldiers were often seized with the disease when exposed as sentinels;—instead of walking about, they frequently stand shivering in their sentry-boxes, the surface continues long chilled, and, with a view to fortify themselves, and produce warmth, they are in the habit of drinking ardent spirits in considerable quantity. In the strongest subjects, I have seen the disease, in such circumstances, run its course to a fatal termination in from forty-eight to sixty hours.

Remissions of this complaint sometimes take place, and it is too much the custom, at such times, either to omit the necessary remedies, or to be too solicitous about supporting the strength.

Stethoscopic signs.—The only certain test of the presence of pneumonia, is that derived from auscultation; and, in considering this part of the subject, the disease must be divided into stages. In the first stage, or that of invasion, the crepitous râle is heard distinctly; it resembles the noise which is produced by sprinkling finely powdered salt on the fire, or rubbing a lock of hair gently between the finger and thumb near the ear. This râle exists also in œdema of the lungs and pulmonary apoplexy, but these are distinguished from pneumonia by other symptoms. In this stage, the sound produced by percussion does not differ from that of health. When complete solidification has taken place, neither the crepitous râle nor the respiratory murmur is heard; but, in the sound part of the lungs, the respiration will be perceived louder than natural;—this is called by Laennec "puerile respiration." Laennec says, that bronchophonism exists in certain cases, particularly if the inflammation be seated near the roots of the lungs, or in the upper lobes, in which places the bronchial tubes are the largest. In this second stage, percussion elicits a dull sound over the affected parts, unless the inflammation be confined to a small central space in the substance of the lungs. In the third stage, when the infiltration of pus-like matter begins to take place in the pulmonary tissue, the mucous râle is perceived to a greater or less degree, which Laennec supposes to be produced by the introduction of the fluid into the bronchial tubes;—when a large portion becomes softened, he calls it an abscess, and says that a very strong mucous or cavernous râle is perceived over its site, with pectoriloquism.

When resolution takes place before the disease has run into solidification, the crepitous râle becomes daily less perceptible, while the natural sound of respiration increases, and becomes gradually more distinct; at length it is heard without the least crepitous sound. But if solidification have taken place, the cure is invariably accompanied by the return of the crepitous râle, and then, as that declines, the respiratory murmur becomes more and more distinct.

I have thought it right not to be too minute in this description, by avoiding the varieties and combinations of these sounds, in the belief that they tend to puzzle the beginner. He may afterwards improve himself, and compare his observations with Laennec's statements; besides which, every professional man ought to possess Dr. Forbes's translation, which contains much additional matter. But it is my duty to express my fears, that few will ever arrive at that degree of perfection which Laennec possessed in the detection of all the varieties which he has described.

I have seen several cases within these few years, in which pneumonia existed in one lung, and severe bronchitis in the other; nay, they may exist in the same lung, which will of course mask the crepitous râle.

Inflammation attacks the right lung more frequently than the left; it rarely affects both lungs simultaneously; the inferior lobe is much more frequently the seat of inflammation than other parts of the lung.

Appearances on dissection.—On examining the lungs, or any portion of them, in the *first stage* of inflammation, they will be found red from the quantity of blood contained in the vessels of the part, and increased in weight. [This state is called *congestion*, or active hyperæmia of the lungs. Whether the blood is confined to the blood-vessels, or is extravasated into the air cells themselves, is a question among pathologists; but it seems probable that the cells are for the most part only compressed and not invaded, because they still crepitate (though in a diminished degree) under the finger. That the effusion, however, sometimes reaches the cells, and even the bronchi is unquestionable.* It is generally of a deep red or pink-colour. This much, observes M. Andral, is certain, that hepatization is produced by a sanguineous congestion of the membranous parietes of the bronchia and air-cells, the effect of which is to diminish or obliterate their cavities. This morbid condition may pervade an entire lung, or it may affect certain lobules only, and these separated by sound structure. This variety is called *lobular hepatization.* In common with most observers, it has occurred to me to see a portion of hepa-

[* "While congestion only is present," observes M. Martinet, "we recognize it by *crepitation*, which seems to be merely the diminutive, as it were, of the *mucous râle;* and if it is quite certain that the latter is seated in the bronchia, we can scarcely hesitate to admit that a mixture of air-fluid in the *smallest bronchi*, gives rise to crepitation: but the air-cells are merely the ultimate terminations of the bronchi, expanded into a cul-de-sac. These cells, then, are the seat of the crepitation in the first stage of pneumonia. If this reasoning be correct, it follows that *this disease consists essentially in an inflammation of the air-cells whose lining membrane* secretes a fluid at first mucous, then muco-sanguinolent (or the colour of iron-rust) and finally purulent." —Martinet, *Pathologie.*]

tized lung, on being divided with a knife, dotted with numberless little whitish grains, which may readily be mistaken for tubercles; but these bodies are merely lymph which has been deposited in the vesicles, and minute bronchia during the progress of inflammation.]

In the second stage, that of solidification, to which Andral applies the term *softening*, and Laennec *hepatization*, the diseased part will be readily broken down between the finger and thumb, which cannot be effected in the sound state, and the lung has lost entirely the crepitous feel; and if put into water, it sinks at once to the bottom of the vessel. In the third stage, the lung is very heavy, and when cut into, is found to contain a great quantity of reddish or grayish fluid, which oozes from every point.

[This fluid is genuine liquid pus, which pours out at every incision of the scalpel. The pulmonary structure is soft and granulated, and has a peculiar pale yellow colour, often mixed with red, giving the incised surface a mottled appearance. This condition of the lung is called by the various names of *suppuration*, *yellow hepatization*, and *purulent infiltration*. But if complete restoration of the lung does not succeed to the preceding morbid conditions, a fourth change takes place, which unlike the others, is not susceptible of resolution. This is called *induration:* it is characterized by a gray colour, more or less dark, though sometimes of a light ashy tint: it presents a dense dry consistence, often with a somewhat reticulated appearance derived from the remains of air-cells. When incised, it yields a sound not unlike that obtained by cutting a sponge with a knife.]

The formation of an abscess in the lungs is a rare circumstance. I have seen one, or at most two instances of it. Laennec says he has seen it only five or six times. The granular appearance of an inflamed lung is best seen by tearing it: it seems to be agreed, by the best pathologists, that this is produced by the accretion of matter in the minute air-cells. The appearance of an abscess in the lungs is sometimes occasioned by an effusion of lymph, which takes place on the pleura, between the lobes; adhesions form round the circumference of the effusion, and when a section of the organ is made, upon a superficial view it is hastily concluded to be an abscess.

A tubercular excavation is also frequently mistaken for an abscess: the history of the case, the appearance of the rest of the lung and that of the parietes, will put the inquirer right. The parietes of a cavern are solid, generally hard, lined with a false membrane, and there are probably portions of broken down tubercle. The large air-tubes contain a secretion, commonly of a gray or reddish colour.

In cases of pneumonia, when the substance of the lungs near the surface has been the seat of disease, numerous ecchymotic patches are observed, and the contiguous pleura almost always suffers. Hence we frequently see false membrane, effusions of various degrees of consistence, and adhesions, which, if recent, will be easily separated, but if ancient, will be found firm, and sometimes, when partial, much elongated.

It has been already mentioned, that inflammation of the substance of the lungs sometimes terminates in gangrene, but it is the least fre-

quent termination. Cases are recorded, where the whole lung was found in this state; there are some in which one lobe only was affected, and in others it is still more partial. Dr. Bright has given several cases, accompanied by plates of the gangrenous appearances, in his excellent "Report of Medical Cases."

[Gangrene of the lung is recognized by its extreme fetor. Sometimes the sphacelus is gradually blended with the surrounding parts, the transition being marked by different grades of inflammation. In parts it becomes pultaceous or deliquescent, and a sanious fluid follows every incision of the knife. In other instances there is an isolated gangrenous eschar, which becomes rapidly decomposed, and in favourable cases, makes its way into the bronchial tubes and is thrown off by expectoration. Recoveries from gangrene of this circumscribed and limited character, are not unfrequent. In some instances it affects the breath of the patient so as not to be mistaken, and considerable portions of the sphacelated structure are sometimes expectorated.]

When the lungs have suffered from chronic inflammation, they, in the language of Andral, will be found in the hardened state. When cut into, the knife gives a sensation as if it were dividing cartilage. In this hardened condition, the substance of the lungs sometimes looks gray, at others red; when it is of a gray colour, it frequently has the variegated appearance of granite.

Treatment.—The lancet is to be used freely, and may be employed later, with less injury to the patient than in bronchitis; but we must be guided very much by the stethoscopic signs, by which much blood and strength may occasionally be saved to the patient. I trust no arguments need be used to prevent British practitioners from following the examples of the French, who bleed frequently, but in small quantities at a time; indeed, Laennec states that he rarely repeats venesection, except in the cases of patients affected with diseases of the heart, or threatened with apoplexy, or some other internal congestion; and when he does bleed, he directs from eight to sixteen ounces to be taken from the arm, and even boasts of curing pneumonia without blood-letting. (Page 250.)

Even on this side of the Channel, bleeding is not always followed as it ought to be practised. Dr. Mason Good, (at p. 436, vol. ii.,) in treating of pneumonia, says, "In this case the bleeding should be prompt and copious, at least to eighteen or twenty ounces, and repeated twelve hours after if necessary." I object strongly to this recommendation, both as to the quantity of blood to be drawn, and the long interval between the bleedings; but the reader is referred to my observations on that subject in another part of the work.

Late in the disease, bleeding must be used in small quantity, and with the greatest caution. The great use of auscultation in treating pneumonia, is, that in general, not only is the practitioner accurately informed with regard to the extent of the disease, but he is told if the sanative process have commenced; when bleeding is, to say the least of it, a doubtful remedy, and, in many cases, may do harm, by interfering with the powers of the constitution. Nevertheless, I am

persuaded, from experience in treating the disease, and from examinations after death, that much more mischief is done by bleeding too little than by bleeding too much; but I am not an advocate for the heroic practice of taking seventy or eighty ounces of blood at one operation—the largest bleeding I can boast of was fifty-six ounces. In general, if the operation be properly performed, thirty or thirty-five ounces will suffice, but the patient should be seen again in the course of two or three hours.*

I have the history of a case before me, in which one hundred and ninety-two ounces were taken from one individual; but I am persuaded, that if he had lost two-thirds less, it would have been better for him. Several months afterwards he was weak and miserable, and it appeared very doubtful that he ever could regain his health. On one occasion, early in life, I very nearly lost a patient, from whom I had taken, at different times, in the course of four days, one hundred and twenty ounces of blood, but who recovered after the exhibition of stimulants. Within the last fifteen years, I have seen several cases where considerable injury had been inflicted by very large bleedings, the medical attendants having allowed themselves to be misdirected by the continuance of dyspnœa, which increased after each abstraction of blood. It was evident that this was owing to a want of sufficient blood in the system. In one instance, the patient was on the brink of the grave, with a pale sunk countenance, and cold extremities: the strongest stimulants were administered, along with large opiates. All these cases eventually recovered.

Antimony is of essential use in the treatment of pneumonia; but I would reverse the rule laid down by Laennec, and state that it is to be used as an auxiliary remedy only. Cullen, (in the 371st paragraph,) in alluding to antimony, says, that he has found it useful to exhibit nauseating doses, and in a somewhat advanced stage of the disease, that such doses proved the best means of promoting expectoration. The Italian physicians, and particularly Rasori, first exhibited the emetic tartar in very considerable quantity, as a cure for inflammatory diseases. Rasori, it would appear, gives twelve grains during the first day, and as much during the night; if the disease be already much advanced, he gives forty or sixty grains during the twenty-four hours, and goes on increasing the dose, till it amounts to several drachms. For much interesting information on this subject, the reader is referred to a long note by Dr. Forbes, in his translation of Laennec, p. 263.

Laennec, who adopted the Italian practice in France, immediately after a small bleeding, gave one grain of tartar-emetic in three ounces and a half of fluid, which he repeated every second hour for six times. He then omitted the medicine for seven or eight hours, if the symptoms were not urgent; but if the oppression became great, with affection of the brain, or if both lungs or one whole lung were attacked, he continued the medicine uninterruptedly, until an amendment took place, indicated by the stethoscopic signs. "Sometimes, even, par-

[* In some parts of the United States this will be considered a very free use of the lancet. See addenda at the end of this chapter.]

ticularly when most of the above-mentioned unfavourable symptoms are combined, I increase the dose (says he) of the tartar-emetic to a grain and a half, two grains, or even two grains and a half, without increasing the quantity of the vehicle. Many patients bear the medicine without being either vomited or purged." (Translation, p. 251.) Indeed, it is an extraordinary fact, that the more severe the disease the less visible effect has antimony on the patient. This observation applies not only to pneumonia, but to bronchitis, in which very large doses do not produce nausea or vomiting, and which it is very difficult to bring about by any means. My experience in the use of antimony, and the result of the experiments which are published in the Lancet, (vol. ii, p. 536,) lead me to conclude, that vomiting is more speedily produced by a small dose dissolved in a large quantity of water, than by a large dose of the drug mixed with a little sugar; but in the latter case the nausea is more severe, and of longer continuance than in the former. Laennec states that its most constant effect is the rapid resolution of inflammation, and sometimes the equally speedy absorption of the inflammatory effusion. The latter effect is proved in the case of Pemberton, the subject of my second experiment, who was affected with "induration and enlargement of the testicle, which was of a scirrhous hardness." His first dose of the medicine was twelve grains, in half an ounce of water, taken upon an empty stomach: vomiting was not produced for fifty-five minutes. On the following day, the report states that the enlargement of the testicle was found to be diminished about one-third. In some days afterwards, he again took twelve grains in an ounce of the decoction of bark: vomiting did not take place till the expiration of an hour. Again he took, some time after, twenty grains in a little sugar, and suffered much less pain and nausea from this quantity than during the preceding experiments. On the following day, the report states, that "the enlargement of the testicle continues to decrease;" in a short time it was found to be considerably reduced, and was soon quite cured. This man had been many months on the sick-list; the disease had previously resisted all the usual remedies, and the question of extirpation was agitated.

I have no faith in digitalis, in the ordinary doses, at least during the acute inflammatory stage. Blisters will be found useful, under the same restrictions as described in bronchitis. I have seen the best effects from opiates, during the decline of the disease, in allaying irritability and violence of the cough, as well as by producing sleep. Formerly great objections were entertained against the employment of purgative medicines in this disease; but these are now happily removed. It is certainly necessary to keep the bowels open; for which purpose I generally give a smart dose of physic immediately after the first bleeding, and some hours before the exhibition of the tartrate of antimony, and assist its operations by means of injections. Subsequently, if the antimony do not operate upon the bowels, evacuations should be produced daily by injections, as medicine taken by the mouth will not be retained by the stomach.

The regimen, it is almost unnecessary to remark, should be strictly antiphlogistic; and with a view to prevent vomiting during the anti-

monial treatment, as little liquid as possible should be allowed. During recovery from all acute diseases of the chest, visitors should be excluded, as talking, even in an under tone, is injurious to the patient.

[The treatment of pneumonia in the United States is, for the most part, of a less depletory character than that advised in this chapter. Although with us the disease is violently inflammatory, the experience of both public and private practice is in favour of a more moderate use of the lancet than that here recommended. From fourteen to twenty ounces of blood may be at first taken, and it is often necessary to repeat the venesection in a few hours; but in very many cases, if the general bleeding be followed at once by free cupping over the affected part of the chest, and if a large blister be applied as soon thereafter as the condition of the patient will allow, the disease will yield without difficulty. Such has been the fact even in our Philadelphia Hospital, where pneumonia is very prevalent in the winter and spring, and occurs in miserably broken constitutions. Mercurial purgatives, with antimonials, in small doses, in mucilaginous drinks, and the occasional addition of opiates, are the principal adjuvant remedies.

M. Louis has expressed his conviction that the value of venesection has been overrated in pneumonia, and that blisters are useless in most acute diseases of the chest. He sums up the result of his observations as follows:

"1. That blood-letting has a happy effect on the progress of pneumonitis; that it shortens its duration; that this effect, however, is much less than has been commonly believed; but that patients bled during the first four days recover, other things being equal, four or five days sooner than those bled at a later period.

"2. That pneumonitis is never arrested at once by blood-letting; at least, not on the first days of the disease. If an opposite opinion is maintained, it is because this disease has been confounded with another, or because, in some rare cases, the symptoms rapidly diminish after the first blood-letting. But then the local symptoms, crepitation, &c., for the most part, continue to be developed not the less for this evacuation.

"3. That *vesication* has no evident influence upon the progress of pneumonitis; and that it may be dispensed with in the treatment of pleurisy and pericarditis, occurring in healthy subjects."*

However curious these results are, they have not been derived from a sufficient number of cases to warrant their adoption; and it may be remarked that M. Louis's objections to blisters in acute pulmonary affections, will apply equally well to their use in all acute diseases. My own experience, though not susceptible of the same numerical analysis as his, has led me to very opposite conclusions; and I still regard vesication as one of the most important adjuvants in the treatment of acute diseases of the chest.

Pneumonia of children.—The *lobular* form of pneumonia is characteristic of infancy and early childhood, anterior to the period

[* Researches on the Effects of Blood-letting, &c., by P. Ch. A. Louis, with preface and appendix, by James Jackson, M. D. Boston, 1836.]

of second dentition. "The peculiar anatomical character of the disorder," observes Dr. Gerhard, "is that the inflammation is diffused through several scattered points, which are attacked at the same time, or nearly at the same time. These points are single lobules, or parts of lobules, divided by the cellular tissue. The tissue is first congested, and afterwards inflammation sets in, and as the disease extends from point to point, it passes along the posterior portion of the lung, according to the ordinary laws of pneumonia, but, as it were, in a scattering way, attacking several lobules at the same time."* The treatment of the pneumonia of children must, of course, be the same, in general principles, as that of adults; but it is important, in addition, to change the position of the patient frequently, in order to prevent the blood from gravitating to the posterior or depending portions of the chest. We thus obviate one of the causes of congestion and consequent hepatization.]

[* Notes to Tweedie's Library of Practical Medicine, ii. p. 352.]

CHAPTER IV.

PLEURITIS.—PLEURISY.

Phenomena.—As in other acute diseases, pleuritis is generally ushered in by a cold stage of greater or less severity. The patient complains of fixed pain in the side, over which he can place his finger, which is described as a stitch, catching and interrupting his breathing every now and then, particularly when he fills his lungs beyond a certain extent. The pain is sometimes so severe, that the patient, in describing it, says it is like a stab with a sharp instrument. In pleuritis, the breathing is difficult and anxious; but it is short, and not so heavy and oppressed, in the first instance, at least, as in inflammation of the other tissues. There is also cough, which aggravates the pain very much: the expectoration is thin and watery, very different from that in pneumonia and bronchitis. The pulse, generally speaking, is quicker and harder, and the heat of the skin is more intense than in pneumonia and bronchitis; but inflammation of the pleura, the most intense and extensive, may take place, and terminate fatally, without being detected by these symptoms. At present, I may remark, with regard to the heat of skin, that it is greatest over the thorax in pleuritis, and very often I have felt it much increased over the seat of the disease, at which point external pressure is much complained of. The tongue, however much furred it may be, soon becomes dry. The urine is scanty and high-coloured. The functions of the brain are also sometimes disturbed.

[When both the pleuræ are simultaneously affected, the disease is called by the French pathologists a *double pleurisy*, which, according to the extended observations of M. Louis, is a very rare disease, especially in persons not affected with tubercle]

There is a painful affection, commonly ascribed to the intercostal muscles, termed *pleurodynia*, which gives rise to all the symptoms above described, and it is often impossible to determine the one disease from the other except by auscultation and percussion. A symptomatical physician may now and then guess right, but it is only to be considered as a guess. Three such cases occurred to me within a very short space of each other, one only of which proved to be pleurisy, although, from the slightness of the symptoms, and the character of the patient, who was always complaining of trifles, I least expected to find it. Dr. Ferriar, (at p. 86 of his 2d vol.,) states the case of a boy, who died from extensive inflammatory action of the pleura, and effusion into the pericardium, who, nevertheless, had

"no cough, no difficulty of breathing, nor pain in his breast, and I could not find, (says Dr. Ferriar,) from the most careful inquiry, that he had ever made such complaints. There was great paleness over the whole skin. He was torpid; without delirium, or the symptoms of oppression common in typhus." In his observations upon this case, he states, "In this case, an active inflammation through the whole extent of the pleura, producing exudation and adhesions, was not indicated by any symptom during the continuance of the complaint."

Stethoscopic signs.—In pleurisy, these signs are of less importance, in directing the treatment, than in pneumonia and bronchitis, because there is no particular sound elicited by the stethoscope, in pleurisy, till the inflammation has produced effusion. But great advantage is, nevertheless, obtained from the negative proof afforded by auscultation, which will inform us if either of these two diseases exists. Independently of this, however, the stethoscope is of use in pleuritis, by informing us when effusion really exists, which, it is admitted, cannot be done by the ordinary signs.

In the early stage of pleuritis, the respiratory murmur is less distinct, but not otherwise changed, over the site of the diseased part. When effusion takes place, the sound in the lower part of the chest becomes dull, and when the patient is desired to speak, his voice is heard through the stethoscope, at the diseased part, small, sharp, and very tremulous, to which Laennec has given the name *egophony.** When the effusion is very extensive, and in considerable quantity, the sound elicited by percussion is very dull, and respiration is not heard, unless at points where old adhesions exist, which prevent the lungs from being compressed and forced away from the ribs. On examining the naked chest, when there is great effusion, that side of the thorax is perceived to be the largest; the ribs are found more distant from each other, and more fixed during respiration, than on the healthy side. Egophony exists in hydrothorax also; but this is of little consequence, as the general history of the case, and local symptoms, must always be appealed to, and weighed as necessary parts of the evidence in each case.

It must be recollected that pneumonia and pleuritis frequently coexist; but neither is that circumstance of much consequence, being both inflammatory diseases, and requiring the same general remedies.

Appearances on dissection.—The pleura, when inflamed in the first stage, shows a great number of red points, which are sometimes produced by slight ecchymosis in the cellular membrane, beneath the pleura; red vessels are also frequently observed, and the spaces between the vessels, and between the punctæ, appear natural. The pleura is rarely found thickened, although it may appear to be in

[* This sound is distinguished also by its nasal and cracking resonance, not unlike the bleating of a goat. "When most strongly marked, it is distinctly metallic, jarring and muffled; is synchronous with the articulation of each word, or follows it immediately like a shrill echo of natural resonance. It conveys the idea of a *distant* origin, and does not appear to traverse the stethoscope, but rather to flutter tremulously about the applied end."—Walshe, Physical Diagnosis, p. 72.]

that state, the deception arising from the disposition of coagulable lymph, the removal of which shows the pleura without alteration of structure. It has frequently occurred to me, in chronic pleuritis, to be able to separate what appeared to be two and even three layers of new membrane. There is often found extensive effusion of a serous fluid, like whey, exactly similar to that seen in the abdomen in peritonitis. [Effusion does not necessarily follow inflammation of the pleura; but there is sufficient evidence that when it does occur, it is often simultaneous with the inflammation itself. This fact was first pointed out by Laennec, and has since been confirmed by all pathologists. It is not unusual to find a large quantity of water in the chest after active pleurisy has continued but three or four hours.] Sometimes we find the lungs attached to the pleura lining the general cavity, by an intermediate deposition of lymph; when recent, the parts are easily separated, and there is the best evidence for believing that the new matter becomes organized. Occasionally (particularly in chronic pleuritis), we find both the pleura pulmonalis and costalis inflamed, and much thickened by the deposition of lymph, with or without an effusion of serum mixed with lymph, which resembles thick pus; masses of lymph, weighing half an ounce or more, are sometimes found in the bottom of the cavity. If there be no old adhesions, and the effusion be large, the lung, greatly compressed, will be found lying close to the spine, perhaps without any alteration of structure. Mortification is one of the rarest results of inflammation of the pleura. Ulceration is also an unusual termination, but I have seen two instances of this lesion; the ulcerations were extensive, and affected not only the pleura pulmonalis, but the pleura costalis, as well as that part which forms the mediastinum. In one case, of which I have a very beautiful representation, six large ulcerated spots were observed upon the anterior surface of the right lung, one of which was two inches in length, and above an inch in breadth, occupying almost a regular oblong space, while the rest approached to the circular form. There were eight or nine ulcerations on corresponding parts of the pleura costalis, of an oval shape—one very large; there was also one above two inches in length on the mediastinum. The pleura was very vascular, and the margin of each ulceration was red, thickened and somewhat indurated; no trace of the pleura could be perceived on the ulcerated surfaces, except here and there a small ragged portion was met with. The ulcers were covered with a puriform matter. The lung was somewhat compressed, and, on making incisions through the ulcerated parts, its substance was found to be red and hard; a state of the organ which extended to no great depth, in some places not greater than a line, and nowhere more than about the third of an inch; the rest of it being engorged. In this case, which I did not see till within a few hours of the fatal termination, no suspicion was entertained of the true nature of the affection; the treatment was conducted by two physicians, for whose talents and practical experience I entertain great respect; but it may be mentioned, that neither of them used the stethoscope. At first it was supposed there was some pulmonary affection, for which the lancet was used; but very soon the vital

powers began to sink, when the disease was denominated typhus fever, and treated accordingly.

A case of pneumonia, complicated with pleuritis, presented itself to me since the publication of the last edition, which threw some light upon this very unusual termination of inflammation of the pleura. The case was very severe; the subject of it, a soldier on furlough; the cause, exposure and drinking ardent spirits to great excess. When he fell under my care, the disease was of ten days' duration, and he was sent by his friends to the Royal Ordnance Hospital, that he might enjoy the comforts of such an establishment.

On dissection, both lungs were found universally solidified, and the pleura inflamed. There were numerous and extensive ecchymotic spots on the surface of the lungs, as well as on the pleura costalis, and there were large masses of lymph effused here and there. There were likewise several puriform collections between the pleural surfaces. On laying these freely open, pure pus was found in two or three places; in others, a small quantity of fluid or coagulated blood, mixed with pus .In these places there were loss of substance, and an appearance of ulceration, which would have been more complete had the patient lived a few days.

[When the secretion of coagulable lymph is accompanied with an effusion of red blood, it constitutes the *hæmorrhagic pleurisy* of Laennec.

This is a troublesome complication; because, as Dr. Williams observes, the colouring matter in no way contributes to the formation of texture, and must be absorbed before perfect organization of false membranes can be effected; and to this cause he mainly attributes those fibrous or fibro-cartilaginous structures of the pleura, which will be noticed at the end of this chapter, which are slow in formation, and unyielding in texture.*]

Treatment.—Little need be said respecting the treatment of pleurisy, farther than that bleeding is to be had recourse to repeatedly and copiously. Leeches applied over the seat of the pain are often of very singular benefit; in some cases no other means of detracting blood will be required. Antimony may be employed, together with laxatives and an occasional opiate. The antiphlogistic regimen is absolutely required, and blisters are often useful.

When called to a case of pleurisy, a careful investigation should be made to ascertain whether the disease may not have advanced already to its extreme termination. If so, bleeding may do much mischief, and we shall be obliged to place our hopes of safety on some of the other means recommended in inflammatory diseases, more particularly on blisters, digitalis, antimony, opium and calomel.

In pleurodynia, a warm bath, and a dose of Dover's powder, will in general, be sufficient to mitigate the violence of the pain; a bandage, placed tightly round the thorax, is serviceable, by preventing the motion of the ribs. A good practical man, however, will always be found to act on the safe side; and when in doubt, he makes it a rule to give the patient the benefit of that doubt, by employing the means required in the more severe disease.

[* Physical Signs of Diseases of the Lungs and Pleura, p. 132.]

Dr. Rush, in considering the probability of a connection between a morbid excitement at the neck of the bladder, and the safety of more vital parts of the body, states, that "the idea of this connection was first suggested to me four and twenty years ago, by the late Dr. James Leiper, of Maryland, who informed me he had sometimes cured the most dangerous cases of pleurisy, after the usual remedies had failed, by exciting a strangury, by means of the tincture of Spanish flies mixed with camphorated spirit of wine."*

I have only further to state, that relapses, in all inflammatory complaints of the chest, are generally to be attributed to improper exposure, imprudence in diet, and to the too early exertion of the voice; therefore it is always safer to continue the restrictions, and particularly the antiphlogistic regimen, a day or two longer, than to allow liberties to be taken a single day too soon. The practitioner finds himself often foiled on these points, by the imprudence of patients and attendants; in such circumstances, it is an excellent plan to keep the patient slightly under the influence of antimony, which will prevent the generality of people from feeling much inclination to eat, speak, or sit up.

CHRONIC PLEURITIS.

According to Laennec, there are three kinds of chronic pleurisy:—1*st*. That which is chronic from its origin; 2*d*. Acute pleurisy becoming chronic; 3*d*. Pleurisy complicated with certain organic productions on the surface of the pleura. I shall follow a different plan in this work, and first describe the chronic pleurisy, which terminates in empyema, and afterwards that which terminates in permanent contraction of the chest.

Empyema.—This term implies the existence of matter in the chest, the effect of chronic pleurisy, or the bursting of a pulmonary vomica into the cavity of the pleura; of this last affection I shall speak, after treating of phthisis. Whether the empyema be produced by a pleurisy which was chronic from the first, or considered as the termination of the acute form of the disease, the effect is the same—there being generally dyspnœa, the breathing being easier in the erect posture; dry tickling cough; hectic fever; enlargement of one side of the thorax when compared with the other; the intercostal spaces being increased; the patient cannot lie except on the diseased side: sometimes fluctuation may be felt. This form of the disease appears to have been well known to Hippocrates, although he confounded it with pneumothorax.†

Stethoscopic signs.—Percussion gives a dull sound, and the respiratory murmur is not heard, except in the region of the spine, which will be puerile on the other side; but here we must recollect that the effusion may be double, although this is a rare circumstance.

* Medical Inq. and Observ. vol. iv. p. 25.

† An excellent paper on Empyema, &c., by Dr. Duncan, jun., in the 93d No. of the Edin. Med. and Surg. Journal.

Treatment.—When effusion is discovered, the sooner the chest is tapped the better, as remarkable recoveries have taken place, showing that there is still some hope. There is, however, some difference of opinion respecting the propriety of drawing off the matter all at once, or by degrees. Although my experience on this subject is very limited, yet I am induced to believe that the more quickly the matter is removed the better. A most interesting case, successfully treated by Dr. Pitcairn, of Edinburgh, is recorded in the 2d vol. Edin. Med. Chir. Transactions, p. 229. During the recovery, we should be on our guard to prevent, by means of regimen, a renewal of the inflammation. Instances are upon record, in which the matter found its way out of the chest through the parietes, and also through the bronchial tubes.

The other kind of chronic pleurisy to which I wish to allude, is that which leads to permanent contraction of the chest. The deformity is readily perceived on looking at the naked chest; the affected side is found to be narrower than the other, and the length is equally diminished in consequence of the ribs being drawn closer to each other. The muscles are also much smaller, which adds to the disproportion of the chest. [It will mostly also be observed, that in proportion as the ribs are retracted in front, the corresponding scapula projects beyond its fellow.] The patient leans to the affected side; in many cases so much so, as to make him appear as if he had an affection of the spine: this happened in Dr. Pitcairn's case above quoted.

Laennec states that it was long before he had an opportunity of ascertaining to what cause the contraction of the thorax was owing, which he at last discovered to depend on fibro-cartilaginous adhesions between the pluera pulmonalis and costalis. He nevertheless thinks that a degree of contraction is produced by the common cellular adhesions when very extensive; for he states, that in every case wherein he found one lung adhering throughout, by means of a pretty copious cellular tissue, he has always thought that side of the chest narrower than the other. I have seen several cases of contraction of the chest from this cause; one where the contraction was in the left side, and evidently connected with some affection of the heart and pericardium. Some years ago, when accidentally at Chichester, Dr. Forbes, the accomplished translator of Laennec's work, was kind enough to take me to visit a patient who was affected in this manner, and in whom the contraction succeeded, if I remember rightly, to a severe attack of acute pleurisy.*

[Contraction of the chest also occurs independent of adhesions. Thus, when pleurisy has been attended by copious effusion, the fluid presses the lung upwards, and more or less impedes its functions. If, after this condition has lasted a considerable time, absorption takes place rapidly, the lung does not expand with sufficient celerity to fill the threatened vacuum, but the ribs, on the contrary, collapse upon the lung. The consequent deformity is often obliterated during the growth of children, but is for the most part irretrievable in adults.

* Hydrothorax will be treated of in the chapter on Dropsy, in the 2d vol.

The lesions usually met with in chronic pleurisy, besides those already described, consist chiefly of *adhesions*, which assume a variety of forms, viz:

1. Thread-like cords and flattened bands, passing from one surface of the pleura to the other, diaphanous, and sometimes more than two inches in length. Their characters closely resemble those of cellular tissue.

2. In some rare instances these cords attain a great thickness, and still more rarely enclose adipose matter.

3. There is a false membrane of fibro-cartilaginous structure, resulting from long-continued irritation of the pleuræ; it is formed between the latter by successive deposits of lymph, and even attains an inch in thickness. Its colour is white or grayish, with a tinge of yellow. This substance sometimes assumes the spheroidal form on the free surface of the pleura, and may be mistaken for tubercles.]

[PNEUMOTHORAX.]

[This name is given to a collection of air in the cavity of the pleura, and may arise from various causes.

1*st*. It may be a simple secretion of air into the thoracic cavity, precisely analogous to what takes place in the abdomen, constituting tympanitis. 2*d*. It may result from chronic serous effusion; for the lung, having been long compressed, does not expand again, and the water, on being absorbed, is replaced by air. 3*d*. The common cause of pneumothorax is a perforation of the pleura, permitting the direct escape of air into the cavity of the thorax. Sometimes both air and water are present at the same time; a complication which is termed *hydro-pneumothorax*.

In these conditions, the sound on percussion is greatly increased in clearness and duration, and is essentially tympanitic; while the stethoscope detects the respiration, weak in proportion to the compression of the lung, and sometimes wholly absent. The *vocal* resonance is rarely suppressed altogether in pneumothorax; but it is often greatly diminished. In hydro-pneumothorax we find the signs of pleuritic effusion and of pneumothorax; the former at the lower, the latter at the upper part of the affected side.*

The treatment of these morbid conditions will be inferred from what has already been said of the different forms of pleurisy; but simple pneumothorax may exist for years without any obvious distress to the patient, and without being available to remedial agents.]

[* Walshe.—Physical Diagnosis of Diseases of the Lungs, p. 150.]

CHAPTER V.

HÆMOPTYSIS.

This term signifies a discharge of blood from the air-passages, which occurs principally under three forms:—1*st*. A general exhalation from the mucous surface of the bronchial tubes. 2*d*. From apoplexy of the lungs. 3*d*. From an erosion of a blood-vessel in a tubercular excavation in the lungs, and which falls to be considered with phthisis pulmonalis. [To these may be added a fourth form, which takes place from the granulations of abscesses.]

The first variety is the most common, and is not generally attended with much danger. It frequently attacks women at the monthly periods, when the menstrual discharge is more scanty than usual, or is entirely suppressed; girls are often so affected at the age of puberty, immediately before the catamenia should appear; but the male sex are not exempt from it. I have seen it appear in men, upon the sudden drying of an old sore, or the disappearance of a long-standing eruption; it sometimes succeeds to mental affliction. The discharge is generally preceded by some constitutional disturbance; the bowels are found out of order; the tongue foul; the patient has passed somewhat restless nights, with more or less fever, and feels most comfortable in the half-erect posture. At last there is cough, which is often constant and distressing, with more or less dyspnœa, particularly when moving about. The pulse varies much, according to the age and constitution of the patient, and the period of the disease; but generally it is quick and bounding. I have commonly seen this form of the disease creep on insidiously; but at the same time it must be confessed that a bloody expectoration sometimes takes place suddenly, immediately after the occurrence of cough and dyspnœa. The expectoration has a peculiar appearance; it resembles red currant jelly—sometimes not so much tinged, but like a mixture containing different proportions of apple-jelly with red currant; it is sometimes copious, but in general the quantity discharged is moderate. Sometimes, however, the expectoration is of a mixed kind, small masses of coagulated blood being observed. Occasionally, indeed, the discharge is quite bloody, but moderate in quantity, and very frothy; but in some cases, pure blood in large quantities is discharged. On all occasions, it is much increased by every exertion, either of the body or the voice. According to Laennec, the chest is perfectly sonorous. On applying the ear, the crepitous râle

is not heard as in pulmonary apoplexy; but there exists a mucous râle, which is more or less extensive, according to the quantity of blood effused into the air-passages.

Appearances on dissection. — I have never been present at a dissection of a person who died of this form of the complaint; but Laennec states, that, "on examining subjects who have died of bronchial hæmorrhage, or while labouring under it, more or less of coagulated or fluid blood is found in the bronchia. On the surface of the coagula, we sometimes observe fibrinous concretions in the form of polypi. The mucous membrane is commonly a little softened, and impregnated or tinged with blood through its whole depth."*

Treatment of the first variety.—This is, in general, very simple. Blood-letting is not necessary, unless the patient be plethoric, or there are marks of an irregular determination of blood, which we wish to remove, when one bleeding will, in general, suffice. The leading points to be attended to are the following:—Perfect rest, silence, abstinence from every stimulant; a very small quantity of food is to be taken at a time. The patient should be placed, if possible, in a large, cool apartment, with light clothing; and a pretty smart action kept up on the bowels, by means of frequently repeated laxatives. If, however, the discharge still continues, with a strong pulse, small doses of the tartrate of antimony are to be used, to produce some degree of nausea; but the most potent remedy with which I am acquainted, is the acetate of lead, which I commonly prescribe in such cases, in doses of two, three or four grains every third or fourth hour; but I never use it till the plethora is considerably reduced. A great many other astringents have been employed, as sulphuric acid, alum, kino, the bark of the pomegranate, and the ratany root.

[To these may be added the popular remedy of common salt. Another extemporaneous resource is the oil of turpentine, of which 10 or 20 drops may be given in a wineglass of sweetened water, and repeated every 20 minutes until relief is obtained. The muriated tincture of iron will also be found sometimes efficacious.]

The second variety, or that which proceeds from pulmonary apoplexy, is marked by a greater degree of hæmorrhage, which is sometimes so violent as to resist all medical treatment. The pathology of this variety of hæmoptysis, was, as Dr. Forbes remarks, entirely unknown before the publication of the first edition of Laennec's work, although some obscure notices had been given by others before that period.

Symptoms.—This disease is, in general, preceded by symptoms common to hæmorrhages from any other parts of the body; such as chilliness—cold extremities, followed by flushes of heat and redness of the cheeks, headache, quick and extremely hard pulse—palpitation of the heart, præcordial oppression. The discharge from the lungs is attended with dyspnœa—suffocating feeling in the chest, sometimes, according to Laennec, with great pain—oppression at

* Forbes's Translation, p. 128.

the præcordia—sense of rawness of the throat, and a saltish taste in the mouth. The expectoration consists of bright and frothy, or black and clotted blood, sometimes intermixed with saliva or a little mucus.

The pulse is frequent and full, with a feeling of vibration; the heat of skin is not considerable; sometimes I have seen profuse perspiration. The spitting of blood is copious, and returns by fits, with cough, oppression, anxiety, intense redness or extreme paleness of the face and coldness of the extremities. When the hæmorrhage is very great, says Laennec, "it comes on sometimes with a very moderate degree of cough, and is accompanied by a convulsive elevation of the diaphragm, like that which takes place in vomiting." This accounts for the expression, "*vomiting of blood*," which is used by most persons who have suffered in this way. He thinks that part of the discharge very often comes from the stomach, and that hæmatemesis frequently coexists with hæmoptysis. Laennec has known ten pounds of blood lost in this manner in forty-eight hours, by a young man who died under the hæmorrhage. In other cases he has seen about thirty pounds lost in a period of fifteen days; but, in general, the discharge does not exceed 12 or 15 ounces in twenty-four hours, and in some cases, not three or four.

Percussion, in general, gives no information. Auscultation, however, furnishes us with the two principal signs of pulmonary apoplexy—the want of the sound of respiration over a circumscribed space, which may be more or less extensive, and a crepitous râle round this space.

Appearances on dissection.—Having had comparatively but few opportunities of observing these appearances, I shall take the liberty of copying Laennec's account. "Some part of the pulmonary system has undergone great changes, being indurated to a degree equal to the most complete hepatization. The induration, however, is very different from the inflammatory affection of the lungs distinguished by this term. It is always partial, and scarcely ever occupies a considerable portion of the lungs; its more ordinary extent being from one to four cubic inches. It is almost always very exactly circumscribed, the induration being as considerable at the very point of termination as in the centre. The pulmonary tissue around is quite sound and crepitous, and has no appearance whatever of that progressive induration found in the peripneumatic affection. The substance of the lung is, indeed, often very pale round the hæmoptysical induration; sometimes, however, it is rose-coloured, or even red, as if tinged with fresh blood; but, even in this case, the circumscription of the indurated part is equally distinct. The indurated portion is of a very dark red, exactly like that of a clot of venous blood. When cut into, the surface of the incisions is granulated, as in a hepatized lung; but in their other characters, these two kinds of pulmonic induration are entirely different. In the second degree of hepatization, along with the red colour of the inflamed pulmonary tissue, we can perceive distinctly the dark pulmonary spots, the blood-vessels, and the fine cellular intersections; all of which together give to this morbid state the aspect of certain kinds of granite, as has been

already observed. In the induration of hæmoptysis, on the contrary, the diseased part appears quite homogeneous, being altogether black, or of a very deep brown, and disclosing nothing of the natural texture of the part, except the bronchial tubes and the larger blood-vessels. The latter have even lost their natural colour, and are stained with blood. The veins of the affected part, and also those adjoining, are sometimes filled with a firmly coagulated and half-dry blood. On scraping the incised surfaces of these parts, we can detach a small portion of very dark, half-congealed blood, but in a much less proportion than we can press out the bloody serum from a hepatized lung. The granulations on the incised surfaces have also appeared to me larger than in cases of hepatization. Sometimes the centre of those indurated masses is soft, and filled with a clot of pure blood.

"This morbid affection is evidently produced by an effusion of blood into the parenchyma of the lungs, in other words, into the cells. From its exact resemblance to the effusion that takes place in the brain in apoplexy, I have thought the name pulmonary apoplexy very applicable to it. Some examples have occurred of sudden death from hæmoptysis, wherein the substance of the lungs was found lacerated, and containing clots of blood. Corvisart mentions one extraordinary case of this kind, in which the extravasation had lacerated the lung, and filled the cavity of the pleura. The hæmoptysical engorgement above described, is only a lesser degree of the same affection, in which the effused blood (still in some degree under the influence of vital action), coagulates, in the air-cells, in such a manner as to form an intimate union with the pulmonary tissue, very different from what would be produced by the mere physical coagulation of the blood. We sometimes find two or three similar indurations in the same lung, and frequently both lungs are affected at the same time. They take place most commonly in the central parts of the lower lobe, or towards the middle and posterior part of the lungs: it is consequently on the back and inferior part of the chest that we ought to search for them with the stethoscope.

"This affection is as easily distinguishable from the congestions that take place after death, as from the alterations produced by the peripneumony. The sanguineous congestions of the dead body consist of an accumulation of blood intermixed with serum, often spumous, which flows plentifully on an incision of the part, and tinges the lungs of a livid or vinous colour. Being the mere consequence of gravitation, the engorgement is found most considerable in the most depending parts of the lungs, and gradually lessens towards the superior parts. Where most engorged, the part still retains some crepitation, and the incised surfaces are never granulated, even when the congestion is so great as to destroy the spongy character of the lung. By washing, we can, in every case, remove all the red, and restore the lung to that sort of flaccidity which it possesses when compressed by a pleuritic effusion. The engorgement of hæmoptysis, on the contrary, is accurately circumscribed, very dense dark-red or brown, granulated, and almost dry when incised, and grows pale by washing, but without losing any part of its consistence. Whatever may be the severity of this disease, resolution seems to take

place with considerable facility, since we find a great many cases of recovery after severe hæmoptysis. I have not had many opportunities of tracing the progress of this resolution by morbid dissection; but in the small number of cases which I have met with, it has appeared that the indurated parts passed successively from dark red to brown and pale red; and that, in proportion as the colour faded, the parts lost their granular texture and their density. I do not think that this obstruction is followed, at least constantly, by œdema, as is the case with the obstruction of peripneumony. When the resolution is complete, it leaves no trace of disease in the pulmonary substance, since I have never been able to find any vestige of the induration in subjects who have been affected with severe hæmorrhage at a period of some years—or only some months—anterior to their death."*

Treatment of the second variety.—The treatment depends very much upon the condition of the lungs, the age and constitution of the patient, and upon the quantity of the blood already lost. The plan of bleeding, in every case of bloody discharge from the lungs, is very bad; because it is bleeding for a name, without pathological considerations. In this variety, however, copious venesection is to be employed early, and carried to such an extent as will render a repetition generally unnecessary. It is employed to reduce plethora, and to moderate the action of the heart and arteries—to change the determination of blood quickly—and, on some occasions, it is to be carried the length of inducing syncope. It requires considerable experience to act properly on such occasions; for sometimes, in very stout plethoric people, we ought to take away a large quantity of blood, say to the extent of three or four pounds; and to prevent syncope from taking place before we obtain sufficient quantity, the operation should be performed when the patient is in the recumbent posture. When we wish to induce syncope, or to alter the tide of the circulation as quickly as possible, and at a small expense of blood, a large orifice should be made, or a vein in each arm opened at the same time, and the patient kept in the erect posture. It is curious to observe, that Laennec recommends bleeding in large quantities, even to syncope, in this complaint, and pursues quite an opposite course in pneumonia. With regard to bleeding in this disease, he uses the following language:—"But the extreme danger which attends the hæmoptysical induration, and possibility of its resolution, ought to make us boldly use copious venesection from the onset of the disease. One blood-letting of twenty or twenty-four ounces on the first or second day, will have more effect in checking the hæmorrhage, than several pounds taken away in the course of a fortnight. It is even beneficial, in general, to induce partial syncope by means of the first bleeding. In cases of this kind, the fear of exhausting the patient's strength is without grounds, since we know that the most copious venesection falls short of the loss of blood sustained from pulmonary hæmorrhage in young and robust subjects, even in the course of a few minutes; while the debilitating effect of the hæmor-

* Forbes's Translation, p. 184.

rhage is infinitely greater than the loss of blood produced by the lancet."

After great losses of blood, whether by the lancet or otherwise, the state of the circulation must be carefully watched;—much more carefully, the larger the quantity lost; and we must take care not to lose the vantage-ground, by subsequent imprudence on the part of the practitioner, or on that of the patient. For this purpose, perfect rest, quietness, and complete silence, are to be enjoined; cool air is to be freely admitted; but I have seen great injury done by keeping the temperature of the body too low, for too long a period, which promotes the tendency to internal congestions. One bleeding ought, in general, to suffice, provided it be carried far enough. The circulation is afterwards to be controlled by nauseating doses of antimony, the rigid employment of the antiphlogistic regimen, and the exhibition of laxatives. But if the patient have lost too much blood before we are called, or should the hæmorrhage continue after copious bleeding, then we must trust to the effects of the acetate of lead, in considerable doses, which I have seen useful in suppressing hæmorrhages which were afterwards proved by dissection to have proceeded even from a ruptured blood-vessel in the lungs.

Drawing blood by leeches is scarcely ever admissible, unless to mitigate some local pain in the chest, which, however, is better effected by a blister.

If the patient be thirsty, acidulated drinks may be allowed.

Some have recommended ice to be piled upon the chest in such cases, which surely must be a dangerous practice.

[Yet the temporary application of ice to sensitive parts, especially to the genitals, will check hæmoptysis when all other means have failed. This plan, in plethoric persons, is scarcely admissible until active general remedies have been premised; but it is adapted to delicate constitutions, and especially where the bleeding has frequently recurred.]

Hæmoptysis sometimes takes place in consequence of aneurism of the aorta, of which I have seen three cases, all of which proved fatal; the blood found its way into the bronchial tubes by absorption and ulceration of that part of the lung which came in contact with the aneurismal sac, and which, in fact, formed at least a part of the sac itself. In two of these instances, the parts were strengthened, and life preserved for a considerable time, by the usual deposition of coagulated blood, found in aneurisms, till at last the fatal hæmoptysis occurred, and the patients died in a few minutes. In the third case, a deposition of coagulable lymph had, perhaps, for a long time prevented the eruption of blood, which, at last, however, took place, but was soon suppressed by moderating the force of the circulation by bleeding; but it returned repeatedly, and at last carried off the patient almost in a moment. On dissection, a considerable portion of the lung was found injured, but the loss was partly repaired by a thick and dense layer of coagulable lymph, the upper part of which was found detached, at which point the blood had passed into the bronchial tubes.

I have seen hæmoptysis take place, probably from hypertrophy of

the heart; and I once witnessed a dissection, where complete apoplexy of the whole of one lung had taken place, the other having been, for years, as far as we could judge from the history of the case, in the most perfect state of hepatization from chronic inflammation. The patient complained occasionally of attacks of asthma, and experienced much embarrassment in going up hill or ascending a stair. He died in a moment, after discharging a mouthful or two of blood. A drawing, showing the external appearance of both lungs, and their internal structure, is in my museum.

CHAPTER VI.

PHTHISIS PULMONALIS.

Phenomena.—If a person be frequently apt to take cold from slight causes—if his lungs be easily irritated at all times, so as to produce coughing—is of spare habit and ill-formed thorax—and if many of his predecessors have died of phthisis, considerable apprehensions ought to be entertained for his safety. Care and good management may, however, be useful in meliorating symptoms and warding off danger.

If an individual have laboured under bronchitis, peripneumony, or pleurisy beyond the ordinary period, in spite of the usual means employed early, tubercles may be suspected to exist already, or their formation may be dreaded; and if any predisposition have been shown, the result of the case will be still more doubtful. If he continue coughing, losing flesh, and looking pale, the pulse becoming more and more frequent, with increasing dyspnœa, and expectoration of a copious mucus, almost colourless and semi-transparent, the chances are much against him; particularly, if the sound elicited by percussion be dull—if the respiratory murmur be not heard at all, or only indistinctly, the patient may be almost declared to have confirmed phthisis. If the skin become discoloured, with diminution of flesh—if shooting pains be felt in the breast and back, between the clavicle and scapula—if there be frequent cold shivering—if the nails are turned in, the pulse still inrceasing, with viscid perspirations—if the expectoration be cream-coloured, looking granular, adhering firmly to the vessel, or if it should look bloody, or like milk and water, with a cheesy-looking matter floating on it, a still worse opinion of the case may be formed. If, however, he be troubled with hæmoptysis now and then—if the expectoration continue for some time—if his hair look mangy, with increasing dyspnœa and weakness—and if the sound in the upper part of the chest, instead of being dull as before, become clear—if a gurgling noise be heard on applying the ear to the chest, or if, when the person speaks, the sound of the voice appear very clear through the stethoscope—the person may, without any doubt, be pronounced to be affected with pulmonary consumption.

Sometimes the first and most important symptom throughout the affection is hæmoptysis. I have seen some cases where diarrhœa came on with the cough, and continued throughout the rest of the

patient's life; in general, however, it exists for the last six weeks or two months only. I have rarely seen a person live beyond twelve weeks after the first appearance of diarrhœa, accompanied by griping pains in the bowels. Sometimes the bowel-complaint alternates with violent perspirations, but occasionally they coexist. Sometimes an individual has no pain from the beginning; at others, the pain is occasionally very acute, not only in the bowels, but in the thorax. Occasionally there is little cough, and little or no expectoration, the mildness of the symptoms causing great uncertainty in forming a diagnosis; and truth compels me to acknowledge, that auscultation and percussion cannot always remove the mystery which hangs over the case; but as soon as the tubercles soften, and become discharged through openings into the bronchial tubes, then the stethoscope will commonly be of use.

According to Louis, who has written the best treatise upon this subject which has yet appeared, hæmoptysis occurred in two-thirds of his phthisical cases, and on many occasions it took place before the expectoration and the cough. He has been led to conclude, that a profuse hæmoptysis renders the existence of tubercles in the lungs very probable. This symptom showed itself more frequently in women than men, in the proportion of three to two.

It is frequently difficult to say whether the pain in the chest be owing to an affection of the muscles, or the formation of tubercles in the lungs; in the latter stages there can be no doubt that it is produced by pleuritic inflammation in the course of the formation of adhesions, which are almost constantly found when a cavern is situated near the surface of the lung.

Diarrhœa showed itself in all Louis's cases; and when I state the appearances on dissection, it will be seen that this symptom is produced by irritation and ulceration of the bowels. Sometimes the appetite is not at all impaired, even when diarrhœa prevails; at other times the appetite is bad and fastidious, with frequent attacks of nausea, and sometimes vomiting. Occasionally there is pain in the right hypochondriac region. The tongue presents various appearances; sometimes, in the first part of the disease, it is perfectly clean and moist; at others loaded, exceedingly rough and cracked, with considerable redness at the edges; and in the last stage, when there are extensive ulcerations in the bowels, it has the same appearance as that already described in dysentery, viz., as if skinned, perfectly raw, red and glazed. The lining membrane of the mouth and tongue is sometimes covered with aphthous ulceration, which aggravates the patient's suffering very considerably. Occasionally the epiglottis, pharynx, and œsophagus are similarly affected, producing great thirst, and difficulty in swallowing fluids as well as solids.

[*Stethoscopic signs.*—When tubercles are of the miliary form, and equally distributed through the lungs, they may exist by thousands without conveying any unequivocal signs of their presence. We may suspect them from collateral circumstances, we may feel confident that they do exist, but, judging from auscultation alone, we might be left in uncertainty. If, however, the tubercular secretion is partial, or is more developed in one part than in another, the signs on

percussion and auscultation assume a determinate character, and are therefore invaluable. The resonance on percussion, for example, is diminished in clearness as well as duration, with sometimes a dull or flat sound which has been compared to that derived from striking a piece of wood. If the clavicle "when struck about its middle, yields a dull sound, or duller on one side than on the other, it is exceedingly probable that the lung is in that part affected with phthisical degeneration. Great care must be taken to strike both clavicles at the same point; for the natural resonance is always less according to the distance of the point struck from the sternum. When the disease is extensive, the dulness of percussionary resonance extends to the infra-clavian region; and there is sometimes such an accumulation of tubercles about the root of the lungs, as to cause a dull sound on percussion between the scapulæ."*

Under these circumstances the respiratory murmur, as heard by the stethoscope, becomes weak, and in some points almost suppressed, while in the adjacent parts it may be preternaturally loud. The *expiratory* murmur is particularly marked both in duration and intensity, together with some degree of the flowing sound and of bronchophony.† But in forming our conclusions from these phenomena we are judiciously reminded by Dr. Williams to observe whether there is any obvious difference between the two sides of the chest.

In the stage of induration of the pulmonary tissue, a new means of diagnosis has been pointed out by M. Louis, and is thus described by Dr. Gerhard. "It is the greater loudness of the *sound of the heart*, opposite to the tubercles, which serves as a better conducting medium than the cellular tissue of the lungs. If the tubercles are most numerous in the right lung, the pulsations are heard more distinctly there than at the corresponding part of the left; and then we infer, with great certainty, that the lungs are indurated. Should the tubercles be much more numerous in the left lung, then a careful examination is necessary to ascertain the limits of the sound of the heart, and the manner in which it ceases. If the left lung be much diseased, the sound is nearly as loud at its apex as at the præcordial region."‡

In a later stage of phthisis, or that in which the tubercles become enlarged and softened, the dulness on percussion becomes strongly and unequivocally marked, and the heart's sounds are now transmitted with unnatural clearness. The stethoscopic signs are numerous, blended and even confused; as the blowing, crepitant and *crackling* sounds, decided bronchophony, and short or checked respiration. To these appearances we may add an obvious depression or flattening of the chest beneath the clavicle, and impeded motion of the ribs as manifest to the eye. The preceding symptoms, considered in reference to those febrile, catarrhal and other characteristic evidences which are almost always more or less strongly marked, will enable

[* Williams.—Physical Signs of Diseases of the Lungs and Pleura, p. 166.]

[† Dr. Watson has aptly defined *bronchophony* to be a "sound like that of a person talking in a tube, and whose words, for that reason, are muffled and indistinct." —Practice of Physic, p. 472.]

[‡ Diagnosis of Diseases of the Chest, p. 108.]

the physician to announce a positive diagnosis long before cavities are formed by the elimination of tubercular matter.

When the latter condition, however, does take place, the physical signs assume at once a new and decided character, and seldom leave occasion for doubt or difficulty in the diagnosis. If the cavity or abscess is large, the resonance, on percussion, is as sonorous as in the healthy lung, sometimes more so; but it is uniformly hollow, and if the patient have his mouth open, the sound is not unlike that which is yielded by a cracked earthen vessel. In other instances, in which there is only a small cavity, or, indeed, many small abscesses, the dull sound of the indurated stage is still present, and even in increased degree from the yet further destruction of the vesicular tissue.

Auscultation, in this stage of phthisis, yields the following sounds: Cavernous and amphoric respiration, mingled and alternating with various rhonchi; gurgling or bubbling; pectoriloquy; metallic tinkling or echo; certain clicking sounds, and various modifications of the cough itself.* It is in the next place requisite to inquire briefly into the individual peculiarity of these morbid sounds.

1. The *cavernous* is a modification of the blowing respiration, in which the ear receives the impression of air passing into and out of an excavation of moderate size; these sounds, or murmurs, are *hollow*, blowing and strongly metallic.

2. The *amphoric respiration* is also of the blowing kind, and differs only from the simple cavernous variety in yielding the sound as if it were passing into a large, empty cavity, such, for example, as a pitcher.

3. The *gargouillement*, or gurgling rhonchus, is derived from the presence of pus or other fluid in the cavity of an abscess which communicates with the bronchia, so that the air passes in and out with a sound like that produced in water when we blow into it through a pipe-stem or other tube. "It may be considered as an exaggeration of the *mucous* rhonchus, and it so nearly resembles that produced in the trachea and large bronchial ramifications, that the symptom must be considered doubtful *when heard only near the sternum, or in the axilla, in the upper part of the interscapular regions*, as it may here be produced by the air-vessels." A little experience, however, enables the practitioner to distinguish between these two morbid conditions, and the diagnosis is really of great importance. When the cavity becomes emptied of its fluids, the cavernous rhonchus is changed for cavernous *respiration*, of which we have already spoken.

4. *Pectoriloquy.*—This phenomenon is marked by a peculiar resonance of the voice of the patient, which appears to pass through the stethoscope to the ear of the observer. In its most perfect state the sound is loud, distinct and somewhat metallic. These symptoms are a certain indication of cavities in the lungs, to which the sound of the voice is propagated through the bronchi, and thus to the stethoscope. Hence, as Dr. Williams observes, the most unequivocal pectoriloquy is produced from cavities of moderate size situated

* Walshe.—Physical Diagnosis, &c., p. 138.]

near the surface of the lungs, and fully communicating with a large bronchial tube.

5. *Metallic tinkling.*—When there is a cavity of some size communicating with the bronchia by a small opening, there is often a sharp ringing sound, like that produced by striking with a pin against the sides of a glass or metallic vessel; this is the *metallic tinkling;* and when the sound is prolonged and vibrating, the name of metallic echo has been given to it.

6. The Latin word *rhonchus*, and the French *râle*, and the English *rattle*, are synonymous, and apply to a class of unnatural sounds, produced by partial obstructions to the passage of the air through the bronchial tubes. Every one who is the least accustomed to auscultation, is familiar with various modifications of these *rhonchi*, which, besides being classed as *dry* and *humid*, are called, according to the attendant phenomena—*whistling*, *clicking*, *snoring*, *rubbing*, *cooing*, *crepitant*, *crackling*, *mucous*, *cavernous*, *&c. &c.*

We have not space, on the present occasion, to analyze these varied phenomena, or to enter into further explanations; but we feel confident that these few elementary remarks will enable the young practitioner to pursue his observations with advantage, and especially if he avails himself of the instructive explanations contained in any of the treatises on auscultation, to which we have referred.

Once for all, we call attention to the importance of examining pulmonary invalids in relation to *deformities of the chest*, which, in modern pathological language, are called *hetero-morphisms.* They almost invariably attend or follow pleuritis, pneumonia, phthisis, emphysema, &c. &c., and often so manifestly as to strike the eye of the observer the moment the chest is exposed to view. In other instances, they are best detected by standing behind the patient and looking down from the clavicles, when the scapulæ or ribs of one side or the other will be found projecting, or retracted, elevated or depressed, in a manner that at once conveys an important means of diagnosis. These malformations are also discovered, and their progress noticed by measuring with tapes or other contrivances; but this, although satisfactory for comparison, is seldom important in practice.]

Appearances on dissection.—Bayle divided phthisis into nearly as many species as there have been diseased appearances found in the lungs; but Laennec and Louis, on the other hand, think there is only one species of phthisis, the tubercular. The latter author states, that he has not examined the body of one subject, without finding as the principal lesion, tubercles or tubercular excavations, or the demi-transparent gray granulations; he joins Laennec, therefore, in stating, that the existence of tubercles in the lungs is the cause, and constitutes the proper character of phthisis.

Before describing the various morbid appearances found in subjects who have died of phthisis, I shall seize the opportunity of stating some particulars respecting those accidental formations which are called tubercular. They are bodies of a yellowish, dull, white colour, variable in consistence, which subsequently soften. When situated in the lungs, they are sometimes expectorated by the bronchi, giving

rise to excavations more or less extensive. They are always more numerous, larger, and more advanced in their development, towards the superior part of the lungs, than in the lower lobes. Out of one hundred and twenty-three dissections, Louis mentions having seen two exceptions only to this rule; for some years past I have seen one exception only, and in it the superior lobe was quite healthy. Thenard's analysis of tuberculous matter gives 98 parts of animal matter in the 100; the remaining two parts consist of phosphate and carbonate of lime, muriate of soda and oxide of iron. According to Laennec, tuberculous matter may be developed in the lungs under two forms—insulated bodies, and interstitial injection or infiltration. He divides the insulated bodies into four kinds—miliary, crude, granular and encysted; the second has three varieties—the irregular, the gray, and the yellow. Under any of these forms, the matter presents, in the early stage, a gray semi-transparent substance, which gradually becomes yellow, opaque and dense; it afterwards softens, and gradually becomes converted into a fluid, like thick cream or pus, which, being expelled through the bronchi, leaves cavities in the lungs which were formerly termed ulcers.

Miliary and crude tubercles.—This variety of tubercle is the most common. The size varies from a millet to a hemp seed, very irregular in shape, and as firm as cartilage. At first they are distinct, and afterwards become grouped together, and very often run into one another, so as to form one mass. A small yellowish opaque point appears near the centre of each tubercle, which gradually enlarges, till it involves the whole mass; it cuts like cheese, and constitutes the crude tubercle. Sometimes the miliary tubercles do not coalesce, but continue to the last distinct, and sometimes acquire considerable size. Sometimes distinct masses are seen, which are frequently the product of many tubercles united together.

Granular tubercles.—These are spherical shaped bodies, interspersed, perhaps, through a whole lung; they were first described by Bayle, and were considered by him to be distinct from tubercles. But Laennec and Louis assert that they are nothing more than the ordinary tubercle in its first stage; the former distinctly states, that the only difference between these granulations and the yellow tubercles, is that between green and ripe fruit; "besides, (says he, at page 275,) the miliary granulations are never met with, except in lungs in which there exist at the same time other tubercles of a larger size, and sufficiently advanced to render their character no longer matter of question." My observations oblige me to dissent from this statement. Within the last six years, I have seen a considerable number of instances, in which granular tubercles pervaded the whole of both lungs; they were all nearly about the same size; the surrounding pulmonary tissue was of a red colour. Several drawings, showing these appearances, are in my portfolio. In these cases, there was little cough, and very slight expectoration; and in one adult, the lungs weighed nine pounds and three quarters. Three cases were children; in two of which, tubercles were found on the arachnoid coat of the brain also; and in one, the membranes, on one of the hemispheres, were ulcerated in a great many points. This kind of

tubercular formation in the lungs has long engaged my attention, and I feel convinced they are the air-cells distended and enlarged by a diseased deposition, probably the consequence of inflammation of their inner membrane. A similar appearance may be produced by pouring a little quicksilver into the air-passages of a rabbit, if it be allowed to live for some days after the experiment. At one time, I felt disposed to believe, that bronchitis was the cause of almost all tubercular formations in the lungs; which opinion appeared to be so far confirmed by a well-known fact, that the majority of individuals who died of phthisis, attribute their illness to what they call a neglected cold; but I have been induced to abandon this opinion.

Encysted tubercles are rare. I have seen cases where one, two, or three encysted tubercles were found in the lungs, about the size of a filbert, inclosed in a cyst. Two of the cases died of hooping-cough, and another of the disease called tabes mesenterica. In all these cases, the surrounding substance seemed somewhat firmer and redder in colour than usual, but in other respects, there was no disease in the substance of the lungs. Laennec says they are rare, and Louis declares he has only seen one instance of this formation. On making a section of the tuberculous mass, it appears of a whitish colour, semi-transparent, and of a texture like hard cheese; but for a more minute account, I must refer to the works of the above authors.

With respect to the *tuberculous infiltration*, I have to observe, that it is commonly of a grayish-white colour, sometimes with a rose tint, and is found either surrounding tuberculous excavations; or existing in large masses, occupying the whole lobe of a lung, having no connection with the miliary tubercle; indeed, I have a preparation in which every part but the superior lobe is infiltrated with this matter, and I have an idea that this may be one of the occasional ultimate terminations of the granular tubercle. This opinion is somewhat supported by Laennec's description of the gray tuberculous infiltration.

According to Laennec, tubercles first show themselves in the summit of the upper lobe, more particularly on the right side; while Louis states, that they are more frequently met with in the left lung. My own experience corroborates Laennec's statement.

An important question is still undecided, and perhaps will remain so, as to the cause of this singular formation. Some insist that tubercles are the product of inflammation of a peculiar kind; while others, with as much confidence, allege that they have nothing whatever to do with inflammation, except inasmuch as they sometimes excite it by mechanical irritation. Many advocate the fluid origin of tubercles, and Dr. Baron maintains that they are primitively hydatids; and although he has supported his doctrines with much learning and ingenuity, yet I feel persuaded he has not convinced a single pathologist.

[Much observation and reflection devoted to this subject, have led me to adopt the following propositions; but for the full elucidation of several of these, the profession is mainly indebted to the celebrated Andral:

1. Tubercular matter is a secretion from the blood-vessels.

2. This secretion is a morbid condition of the albuminous halitus proper to the cellular tissue forming the parenchyma of organs.

3. Inflammation is not necessary to its development, but may be either a cause or consequence.

4. The cellular tissue which envelops and intersects tubercles, sooner or later takes on inflammation, and secretes pus; by which process the tubercular matter is eliminated, and an abscess is formed.

5. The morbid state immediately antecedent to the tubercular secretion, and which may be considered its exciting cause, is a sanguineous congestion analogous to that which precedes every secretory process.

Physiology teaches us that in the healthy living body there is a constant secretion, from the blood, of an albuminous halitus, which is deposited in every part of the system, and in no structure so abundantly as the cellular tissue. Whatever deranges this interstitial secretion tends to the production of preternatural substances: hence any irritation may act as an exciting cause; not that it necessarily increases the activity of the secretory process (which in health is very prolific) but because it perverts this important function.

Such appears to have been the opinion of the indefatigable Baumes, who, in his work read before the Medical Society of Paris, in 1783, holds the following language: "An organ that has become enfeebled, secretes its peculiar fluid in an imperfect manner; these fluids no longer possess the degree of vitality necessary to stimulate and support the solids; they become from day to day more unnatural, until at length they cease to have any analogy with healthy structure."*

Analysis has proved tubercular matter to consist almost entirely of albumen, showing its affinity, in this respect, to the healthy interstitial secretion, from which it mainly differs in certain physical characters.

The reason why the tubercular secretion is so much more common and abundant in the lungs than in other structures, is that the former are composed of a most delicate series of tissues, which are pre-eminently exposed to the many vicissitudes arising from atmospheric changes, inordinate physical exertions and direct mechanical irritation.

Tubercular disease is by many considered to be invariably a product of inflammation:† but although the latter often accompanies it, and always in its second stage, it appears to me by no means essential to its secretion, any more than to the deposit of osseous particles in the coats of an artery, or in the substance of a cartilage.

Tubercles are often found in great numbers in the lungs after death, without their having been even suspected during life; and if these tubercles have not passed into the crude state, the parenchyma around them is often found perfectly healthy, presenting, in fact, no trace of pneumonia. Could the pulmonary tissues maintain this integrity if each tubercle was a centre of inflammatory action? It appears to me that inflammation is much oftener a consequence than a cause of tubercles; the latter forming independently of it, and sub-

[* De la Phthisie, tome i. p. 135.]

[† "I have never seen tubercles of the lungs without a preceding inflammation. Those, even, which are found in children at birth, do not appear to me to be independent of this phenomenon."—*Broussais.* Examen des Doctrines Medicales.]

sequently inducing phlogosis like any other extraneous bodies. Thus it is that tubercles induce pneumonia; while, on the other hand, pneumonia is a cause of tubercles; for I conceive it to be inconsistent with analogy as well as with fact, to restrict this secretory process to an inflammatory state of the vessels, and *vice versâ*. This exclusive doctrine (to which I was at one time strongly biased), has given rise, among pathologists, to those conflicting views, which can only be reconciled by a concession like that here admitted, and which is founded on the known phenomena of diseased action.

The theory of the *lymphatic origin* of tubercles, which is now so generally received, is at least as old as Sylvius, (1761,) who supposed the lungs to contain an infinite number of minute conglobate glands, analogous to those of the mesentery. This opinion has been amplified with great ingenuity by M. Broussais, who attributes tubercular matter to an inflammation of the lymphatic glands and vessels consequent to inflammation of the sanguiferous capillaries; in fact, a *double inflammation*, beginning in one set of vessels and thence propagated to another.

Without entering into a discussion of this question, I will merely observe, that if tubercles originate solely in lymphatic glands and vessels, ought we not more frequently to meet with them where these structures are most abundantly distributed, as in the axilla and groin, the mesentery, neck, &c.? Yet it often happens that in persons who have died of phthisis, we see the bronchial, axillary, and inguinal glands greatly tumefied and diseased, without being at all tuberculous; while, on the other hand, we find the same hypertrophy and disease of the bronchial glands in those pulmonary affections in which tubercles have had no part.

This hypothesis presupposes the existence of innumerable minute glands in the lungs; but anatomy, even aided by the microscope, has never detected them: moreover, a true tubercle has not the anatomical characters of a gland, for it is closely attached to the surrounding parenchyma; whereas all glands, especially when enlarged by disease, possess their proper capsules, which enable them to be dissected out with facility.]

The body of a person who has fallen a victim to this very dreadful disease, is found greatly emaciated, sometimes to the last degree, and the chest looks contracted on itself, which may, however, be a deception produced by the general emaciation. Laennec thinks the contraction of the chest is real, and is to be attributed to two causes. 1*st*. To the existence of pleurisies, to which phthisical patients are extremely liable. 2*dly*. To the attempts made by nature to cure phthisis. On opening the thorax, the heart is sometimes observed to be small; Laennec says it is almost always remarkably so. The lungs are sometimes found adhering throughout their whole extent to the ribs, and the left lung is frequently attached to the pericardium, which is occasionally distended with serum. Sometimes one side of the thorax contains a puriform matter, with a considerable quantity of air, the result of a vomica bursting into the cavity, leaving a communication open with the bronchial tubes; when this is discovered, the person is said to be affected with pneumothorax, which may be

ascertained by the splashing noise which is heard, when the patient's body is shaken by the shoulders; the stethoscope communicates a peculiar sound, called the *metallic tinkling*. The powers of the constitution, however, employed to prevent this accident, are generally successful, by effusion of lymph, and the agglutination of parts. These adhesions are mostly found to affect the superior lobes, and sometimes are so dense, that it is impossible to separate them with the fingers, without tearing the lung itself.

On removing the lungs from the body, they are found to be much heavier than natural; one case I have already mentioned, in which they weighed nine pounds and three quarters. Notwithstanding the assertion of Laennec to the contrary, I have several times seen the marks of the ribs left upon the posterior and lateral parts of the lungs, when they were very heavy.* It was seen in two cases in which the lungs were extremely dense and large, the effect of long-protracted chronic peripneumony.

On making a longitudinal section of the lungs, which will usually be found "to cry under the knife," we sometimes find one excavation only, which may be full, none of the contents having yet found their way into the bronchial tubes; and when solitary, it is almost always in the superior lobe. In general, however, many cavities are found, containing more or less softened tuberculous matter, and the most striking difference will be observed in the progress of the tubercles in different situations, being commonly farthest advanced in the superior parts; occasionally they present the appearance of fresh crops. Sometimes the lung is found studded with miliary tubercles, affecting the pleura also, and most commonly some of the bronchial glands will be found enlarged and hard, sometimes melanotic. I have met with this condition of the lungs only twice or thrice; the subjects were children. I have seen several dissections in which the tubercles, called *granular* by Bayle, were found in immense numbers, dispersed with great regularity throughout the whole substance of the lungs, with intervening spaces of a red colour, having the appearance of the roe of a salmon.

Occasionally we find a chain of excavations extending throughout the whole lung, communicating with each other; the tubercles having become successively softened, and then discharged. In these excavations bands are seen stretching in every direction, like the fleshy columns in the ventricles of the heart, which seem to be composed of condensed pulmonary tissue, coated over with tuberculous matter, or, as it has occasionally appeared to me, coagulable lymph; these bands sometimes contain blood-vessels. Bayle makes the same remark, which is questioned, however, by Laennec, who states that he has "never even found a vessel of *any consequence* included within the substance of these bands;" but I have had several opportunities of demonstrating it to my class. Indeed, on one occasion, a large blood-vessel in one of these bands gave way, and the child quickly died. This is the case previously noticed and in which the blood found its way from the cavern by a fistulous opening into

[* I have also met with a solitary example of this kind.]

the œsophagus, as high up in the neck as to correspond to the inferior margin of the thyroid gland, and from thence passed into the stomach. It will be remarked that Laennec's expression is qualified, and I am ready to grant, that it is rare to find vessels of "*any consequence*" in these bands, because they must be compressed and diminished in size, in proportion to the condensation of the pulmonary tissue in which they are involved. Laennec supposes that the tubercles, during their increase, separate the blood-vessels, and press them to one side, which would no doubt hold good, if there were only one mass; but it is not a satisfactory explanation of the situation of the blood-vessels, when the lungs are completely studded with tubercles. On one occasion, I found a blood-vessel passing through a cavern, in one of the bands already described, which had become obliterated by a plug of coagulable lymph.

The ramifications of the bronchi seem to be obliterated; they are frequently found to open into a cavern, but I have never seen a trace of them in the tuberculous matter. In proportion as the tubercle becomes softened and discharged, the walls of the excavation are found more or less thickly covered with something like a membrane, which can be scraped off with the knife. According to Laennec, this membrane presents, in different parts of its surface, projecting points. Sometimes there is an appearance of two membranes, but occasionally the walls of the cavity are formed by the natural tissue of the lung itself, condensed, red, and charged with tuberculous matter. Sometimes the walls of the caverns appear to be lined by a membrane of fibro-cartilaginous consistence, occasionally filling up a small cavern entirely, presenting an appearance of cicatrization; in this way, it is supposed that phthisis is sometimes cured.

The mucous membrane of the bronchial tubes is generally red and thickened; that portion of it which lines the trachea and larynx is occasionally red, thickened, and pulpy, with ulcerations here and there. Ulcerations are sometimes seen as far down the tubes as the third and fourth division. Occasionally the epiglottis and larynx are also covered with numerous ulcerations, sometimes having the appearance of chancres.

The stomach occasionally presents diseased appearances, its mucous membrane being red, thickened and velvety, with dark streaks, as if seared with a red-hot iron. In other cases, a great portion of the mucous membrane is found entirely removed, generally from the splenic extremity, leaving the naked vessels exposed; the rest of the membrane being thickened, soft and reddish, with a great number of redder spots in the neighbourhood of the parts already destroyed, as if a pen full of red ink had been spattered over the surface. Sometimes large red vessels are seen arborescing in the mucous membrane, which displays appearances here and there as if portions had been removed by passing the nails roughly over the surface of the stomach. In one case, all the coats of the stomach, except the peritoneal, were destroyed over a space about the size of a shilling. In very few cases have I observed tubercles in the mucous membrane of the stomach; they are frequently seen in that of the intestines, particularly in the caput cæcum, ascending colon, and termina-

tion of the ileum: they are sometimes situated in the mucous coat, and at others in the sub-mucous tissue. It is precisely in the situation above described that ulcerations are most frequently found, occasionally involving the whole of the colon down to the sigmoid flexure, which is much thickened in its texure, in some cases feeling contracted and hard like a small rope. The state of the mucous membrane has been often described in this work; but I must here state, that I have never seen ulcerations undergoing the healing process in the disease now under consideration; nor the mucous surface in that dark, livid, fleshy, and thickened state, which it frequently shows in dysentery. The peritoneum is sometimes found inflamed, thickened, and covered with flakes of lymph, which may be traced to points of the intestines, at which the ulcerations have extended through the other tissues, till it attacked the peritoneum itself; occasionally, indeed, a small perforation is found, which has admitted the passage of feculent matter into the cavity of the abdomen. The peritoneal is frequently the seat of tubercles. They first appear, perhaps, in the miliary form, and afterwards become crude. I had lately an opportunity of seeing tubercles formed on the peritoneal surface of the stomach of a child, who died of chronic peritonitis, occasioned by ulceration of the bowels. They did not extend deeper than the sub-serous coat.

The mesenteric glands are always found enlarged and altered in structure in phthisis when the bowels are affected. The liver is sometimes found diseased, more frequently, perhaps, in women than in men; it is generally softened, enlarged, and of a whitish or yellowish colour, feeling greasy to the touch. This is the fatty liver; I have seen it so large as to fill the iliac region, the right lobe extending down to the brim of the pelvis. The spleen is sometimes found tuberculated both in its substance and its capsule. The omentum is occasionally diseased in phthisical subjects. It is found thickened; fatty, like the liver, and tuberculated.

The brain is found in various states; sometimes there is effusion between the arachnoid and pia mater, or into the ventricles, the effect, in all probability, of impeded circulation. Tubercles are also observed in various situations in the brain, and in different stages, either solitary in some part of the cerebral substance, or spread generally over the arachnoid membrane, where I have frequently seen them in the miliary form, as well as in a crude state.

It has never been satisfactorily explained why ulcerations should be found so frequently in the mucous membrane of the bowels, in phthisis. It may, perhaps, be partly attributed to the obstructed state of the circulation, producing considerable vascular distension in its vessels, which at last become inflamed and ulcerated. There may be also something in the diseased condition of the blood itself, which cannot be perfectly decarbonized. I have little doubt that the mucous surface of the bowels, in the ordinary state of the system, assists the lungs in depriving the blood of carbon. After the lungs have been impeded by the tubercular state of the pulmonary substance, perhaps the mucous surface of the bowels becomes more active, thereby causing inflammation and ulceration. There is no doubt

that ulcerations in the intestines are sometimes owing to the irritation of tubercles in that part, but this speaks for itself. For further particulars, relating to the morbid appearances found in this disease, the reader is referred to the work of M. Louis.

[*Causes.*—Consumption is a remarkable instance of hereditary disease: thus, when the parents have died of constitutional phthisis, the children are almost sure to suffer. This predisposition, or tuberculous diathesis, is not confined to any period of life, but is most apt to show itself between the ages of eighteen and thirty-five years. Some authors have endeavoured to identify it with the scrofulous habit, from which, however, it appears to be entirely distinct; scrofula is most active in the juvenile state, while phthisis is a disease of adult age. I have twice seen the scrofulous diathesis developed in the spine, even to deformity, and accompanied by chronic pulmonary disease, without exciting a tubercle in either lung. The physical characteristics of scrofula and phthisis are not the same; for two-thirds of the consumptive patients who have come under my care have had dark hair, dark or sallow complexions, and dark eyes. It seems, indeed, extremely difficult to detect the tuberculous constitution by any physical appearances of even general application; and still more difficult to identify it with the scrofulous diathesis.

If the predisposition to phthisis exists, various slight causes are sufficient to excite it into action. Thus bronchitis, pneumonia, hæmorrhages, the depressing passions and exhausting indulgences, bad diet, sedentary occupations, and a hundred other means by which the healthy functions of the system become perverted, may be adduced as *exciting causes.*]

Treatment.—Although Laennec states that phthisis is curable, still such a happy event is scarcely to be expected after the disease is formed. The only case which I conceive to be capable of a spontaneous cure, is that in which a solitary tubercle has existed, without any other disease of structure in the lungs. In examining the bodies of cholera subjects, we frequently observe puckered marks and cicatrices, with corresponding pulmonary indurations, sometimes to a considerable extent. These were evidently the situation of tuberculous degenerations, from which the individuals had quite recovered. Professor Lizars has, in his collection, a very valuable specimen of a lung entirely excavated, nothing being left but an empty sac. The history of the case is quite complete; the man recovered, and was able to exist and support himself by manual labour, and died ultimately of typhus fever, unconnected with any pulmonary complaint. Much may be done in warding off the disease for many years, and retarding its progress after it is formed, by care in the management in an individual—by attending to his diet, which should be nourishing and moderate—to his clothing, which should be warm and light—and to his exercise, which should never be carried the length of producing fatigue. Constipation should be avoided, and such an individual should remove to a steady climate if he can afford it. After the disease is somewhat advanced, a great deal of expense and trouble may be spared by keeping the patient at home, because, at this period, change of climate can do no good; on the contrary, I

have known it frequently to hasten the fatal termination, from fatigue and accidental exposure to cold during the journey.*

[When I meet with a case of incipient phthisis, when the disease is confined to one lung, and is circumscribed in extent, and the patient's general health not yet impaired, I pursue the following plan. I at once establish an issue of caustic potash over the diseased part, and keep it discharging by means of basilicon, savin, and mezereon, and by washing it with soap and water. The cough should be controlled through the day by demulcent and acidulated drinks; but at bed-time, if it continue troublesome, I direct as much anodyne as will secure the patient a night's rest. In this manner the cough will be chiefly confined to the early part of the day, when the patient is best able to bear it. If there be febricula, with a frequent pulse, I am partial to the use of digitalis, which sometimes has a most happy effect in reducing the wearing excitement of the blood-vessels. To this simple treatment I add the internal use of the preparations of iodine—the most powerful alterative, with the exception of mercury, with which we are acquainted.

As bronchitis is often the precursor and cause of consumption, and especially as it may coexist for a considerable period with tubercles, without any positive evidence that these are present, it is well to regard every cough with distrust, and treat it accordingly. How much more is this course necessary, when we know that tubercles are already formed, and forming in the lungs? Of all the counteracting agents for these bodies and for bronchitis, or catarrh, no one medicine has, in my hands, proved so efficacious as the preparations of iodine. Whether they be used in form of the iodides of potassa or iron, or of the former combined with pure iodine, the effect is generally prompt and salutary. We should give them freely; not less than two or three grains of either iodide, three or four times a day; while the combination with pure iodine, for reasons I cannot explain, must be administered more sparingly.†

I have resorted, also, with great advantage, to iodine *inhalation*. Sir Charles Scudamore was, if I mistake not, the first to propose a systematic plan for this purpose, or at least to combine conium with iodine, and his formula is as follows:

R.—Iodinii puri,
Iodidi potassii, āā gr. vj.
Aquæ destillatæ, ℥v. ℥vj.
Alcoholis, ℥j.
Fiat mistura.

"I always prefer," observes the author, "to add the *conium* at the time of mixing the iodine solution with the water; and it should be a saturated tincture, prepared with the genuine dried leaves. In the commencement of the treatment, I advise very small proportions of the iodine mixture; for example, only from half a drachm to a drachm for an inhaling of eight or ten minutes, to be repeated two or three times a day. Of the soothing tincture, (conium), I direct

* For much valuable information on this subject, I must refer my readers to Dr. James Clarke's excellent work on Pulmonary Consumption, &c. &c., 1835.

[† See Prescription, No. 35, Appendix.]

half a drachm, which I usually find sufficient; but it may be increased, if the cough be very troublesome. I soon augment the quantity of the iodine, and progressively from ℥j to ℥iv; but also then prolonging the time of inhaling, I divide the iodine dose, putting two-thirds at first, and the rest after the expiration of seven or eight minutes. During the process (of inhalation) the inhaler should be immersed in a jug containing water of rather a higher temperature than 120°."*

I have thought best to give the author's directions in his own words, because I think it probable that some, and perhaps all the difficulties complained of in this formula, have arisen from some inadvertence in its preparation. That great care is requisite will be obvious to any one; but of the efficacy of the plan, when fairly tried, there can be no question.

Dr. Pearson, of London, many years ago recommended an inhalation of ether, saturated with cicuta leaves; a drachm of the latter being kept in an ounce of the former, for about a week, at the end of which time, the vapour of one drachm of this tincture is to be inhaled thrice per diem. Having repeatedly tried this plan with advantage, it occurred to me to add the iodine to the cicuta and ether, in the following manner:

℞.—Iodinæ puræ, gr. iv.
Foliorum cicutæ, gr. viij.
Etheris sulphurici, ℥i.

These ingredients are to be mixed for forty-eight hours, or a week, at option.

I direct a teaspoonful of this ethereal tincture of *iodine and cicuta* to be poured into a wineglass, which is to be grasped in the warm hand, and the vapour to be inhaled as it rises. In ten or fifteen minutes the evaporation is complete; and in this short period, the inhalation is completed without the inconveniences which attend upon the more complicated process which has been described above.

Sometimes the ether causes cough. Every species of inhalation will *sometimes* do the same. To obviate it in the present formula, let the wineglass be held a few inches from the nostrils; and if the vapour causes some dizziness, (which, however, can only be temporary,) the patient may begin with half a drachm. I need hardly add, that this, and every other use of iodine is inadmissible, when active fever is present.

The patient's diet should be light but nutritious; he should use freely the farinaceous articles, and avoid every indigestible article of food. Conjoined with these means, I direct daily free exercise in the open air by walking, riding or driving, and by protracted journeys, when these can be resorted to without undue fatigue or exposure. As an interlude I am extremely partial to a change of climate, of which more will be said in the sequel. It is by a persistence in this plan of treatment, that I have now the satisfaction of seeing a considerable number of patients pursuing their daily avocations, and enjoying a good degree of general health, who, I am confident, never would have

[* London Medical Gazette, 1840.]

survived, for three months, the old practice of close confinement, low diet, antiphlogistics and mercurials. I do not pretend that in all such cases the tubercular disease is eradicated, or that the abscesses have cicatrized; but I know that the malady may sometimes be kept at bay, and rendered comparatively inert, until at length it ceases to molest the patient.

The obliteration of abscesses by cicatrices is a very common occurrence, but most unfortunately, these cavities are seldom single or isolated, but, on the contrary, succeed each other at uncertain intervals, and thus keep up an exhausting drain on the constitution.

But the existence of abscess does not prevent my pursuing the practice above mentioned, provided the general strength of the patient continues in a reasonable degree unimpaired. Abscesses may continue for years, occasioning no pain, and little inconvenience beyond debility, more or less cough, and occasional febricula. Such instances, however, are exceptions to a rule; for where suppuration has taken place we have little to hope for.]

Much may also be done to retard the advancement of the disease, to mitigate the patient's sufferings, and to smooth his passage into the vale of death by avoiding every cause which can hurry the circulation and respiration, and preventing exposure in bad or changeable weather. Phthisical patients suffer occasionally very severely from pains in the chest, produced by pleuritic inflammation, traces of which are almost always seen on dissection. Small bleedings, leeching and contra-irritation, should therefore be occasionally employed. Profuse perspirations are to be discouraged, as is also the exhibition of acids, which are so often given to prevent them.* The bowels are to be assiduously watched to prevent constipation, and the necessity of having recourse to strong purgatives, particularly when the disease is of long standing. When a laxative is necessary, it should be of the mildest description, and united, perhaps, with the extract of hyoscyamus. [This condition of the bowels may be, in a great measure, prevented by diet: thus, instead of bread made of wheat flour, the patient should be restricted to bran bread, conjoined with the free use of cream. Sound ripe fruits, and the dried fruits stewed, subserve the same purpose.] Whenever a patient has more than the usual number of stools, particularly if they are watery, dark-coloured and fetid, and when he begins to feel even slight uneasiness in the belly before going to stool, a few leeches should be applied to the abdomen, followed or not, according to circumstances, by the application of tartar-emetic ointment to produce irritation. It

* [I confess I cannot join in the author's objections to mineral acids. The nightly recurrence of profuse sweats is so debilitating, and at the same time so distressing to the patient, that a physician is sometimes compelled to resort to some measure that will afford relief, even though it be merely temporary. Thus I have many times seen eight or ten drops of elixir of vitriol, given in a little cold water or bitter infusion at bed-time, produce the happiest effects. A similar result may be obtained from a solution of alum in spirits, with which the limbs should be freely sponged. The infusion of sage may be taken internally for the same purpose. I use these means to check colliquative perspiration, on the same principle that I would check a hæmorrhage: either is exhausting to the patient; and where our curative means end, our palliative ones must begin. The same remarks will apply to the diarrhœa of phthisis.]

is wonderful, in many cases, to observe the good effects which follow the application of leeches in subduing the inflammation of the mucous membrane, thereby controlling the diarrhœa, and preventing the formation of ulcerations. Indeed, I have seen the best effects follow the application of leeches, even after a large extent of the mucous surface was ulcerated; but superficial irritation, produced sometimes by a mustard plaster, sometimes by hot spirits of turpentine, or by antimonial ointment, will be often found of essential service, when the patient is too weak to bear bleeding.

[The Moors of Africa, among whom consumption is common, have a practice of controlling diarrhœa by means of two grains and a half of alum, with an equal portion of sulphate of iron, given in a powder. Having mentioned this plan to Dr. Pitcher, of the United States army, he subsequently informed me, that he put it in practice on two soldiers who appeared to be dying with diarrhœa consequent to phthisis, and that both men were so greatly relieved, as to be able in a short time to resume their duties in the garrison. I mention these facts with the more satisfaction, because I believe patients are sometimes allowed to die of diarrhœa, from an impression that it is a mere sequel of the pulmonary affection, and therefore incurable. I am decidedly of opinion that we should combat the diarrhœa with every available means, both internal and external, to the last hour of life. It is now upwards of two years and a half since I had in charge a middle-aged man with an abscess in his left lung, which was soon followed by an exhausting diarrhœa; the latter was happily checked by strong opiate and astringent medicines, at the very time when the case appeared hopeless: the diarrhœa subsequently recurred twice, and was, in like manner, subdued, after which the patient's general health began to improve, and he is at the present time able to take daily exercise in the open air, although he still labours under his pulmonary disease, and is occasionally confined with relapses of various kinds.]

Peritonitis is sometimes occasioned by an extension of the ulceration to the peritoneum; therefore leeches and contra-irritation are sometimes advisable. An occasional opiate is also serviceable; and I have seen the best effects produced by the exhibition of one-twelfth of a grain of strychnine, when the bowel-complaint was very troublesome.

[*Change of climate.*—One of the most powerful means of eradicating or alleviating disease is change of climate. This remark is especially applicable to pulmonary affections. Phthisical patients are often improved by *mere changes*, even though it be from a clear atmosphere to one damp and unhealthy, from warm to cold, from cold to hot. Thus we send our consumptives to a southern climate, Florida or the West Indies, to escape the winter: while in the latter islands physicians frequently send their consumptives *beyond* the tropics, to England, Denmark, and the United States, to pass not only the summer but the winter also. It is in fact evident, that both extremes of temperature are sometimes salutary; and that great changes, by acting powerfully on the constitution, are capable of breaking

those chains of morbid action which constitute the most inveterate maladies to which man is subject.

In phthisis, however, a clear, dry atmosphere, of an equable temperature, is most adapted to the majority of patients, especially if the exercise of travelling is precluded. Travel itself is highly beneficial, nor is there any means more invigorating, provided it be not carried to excess and consequent exhaustion. The chief reason why so few people are benefited by the climate of Italy is to be attributed less to any fault of the climate itself, than to their own imprudence. Invalids must see every thing; they persist in ascending mountains, climbing to the dome of St. Peters, the tower of Pisa, and the cathedral of Milan; travelling from place to place in all kinds of weather, and exposing themselves to the sun, as if the mere circumstance of their breathing the air of Italy was a guarantee against fatigue, exposure and dissipation itself.

I have considered this interesting subject at considerable length in another work,* and shall now merely indicate, in the briefest manner, certain winter resorts in the United States and West Indies, which have been found most salubrious under the circumstances in question.

St. Augustine, in East Florida, is our principal winter resort for pulmonary invalids. It certainly possesses one of the most equable climates of the United States, yet is subject to no small vicissitudes of temperature; while the inadequate provision the inhabitants make for cold weather renders a severe winter very exposing to the sick. From a letter of Dr. Porcher, contained in Dr. Dunglison's admirable work on *Hygiéne*, I have gleaned the following facts:

1. The thermometer, in a solitary instance, fell 37° in 24 hours.

"2. Changes of 20° or 25° occur frequently every winter; in some instances even in a few hours." These changes, however, are between 65° and 45° or 40°.

3. The thermometer does not fall to 35° more than five or six times in a winter, nor does it remain so low more than a few hours.

4. The lowest degree to which the mercury is known to have fallen, is 20° of Fahrenheit; nor has it been observed to remain for 24 hours so low as 32°.

5. Cold weather seldom lasts beyond two or three days, and is generally followed by a "long succession of days with an atmosphere the most bland and delightful."

It would, therefore, seem, that while St. Augustine presents an equable climate, it is liable to serious objections: at the same time, it is well known that many pulmonary invalids annually derive important benefit from passing the winter there. Cape Florida may yet prove more salubrious than St. Augustine. The Passa Christiana, on the Gulf of Mexico, has also been much extolled as a winter retreat. Texas, too, possesses a most genial climate.

During the summer season, the Red Sulphur Springs, in Virginia, and the Pine region, in the vicinity of Pemberton, in New Jersey, are resorted to with great advantage by many.

[* Illustrations of Pulmonary Consumption, 2d edition.]

Of the West Indies, the islands of Barbadoes, Cuba and Santa Cruz offer the strongest inducements to the sick; but particularly the last named island, in which the thermometer scarcely varies 10 degrees the year round. An almost constant sea breeze, a clear elastic atmosphere, and a profusion of fruits render this island one of the most delightful in the world.

Every person, however, who visits the West India islands, must expect to feel the enervating influence of so warm a climate. Languor of body and listlessness of mind are inevitable consequences, and indispose alike to physical and mental exertion.

The West Indies should not be visited earlier than December nor later than March.]

The duration of phthisis is very various: few survive above a year; indeed, the generality of patients sink in about nine or ten months, and I have often observed that women die quicker than men. One case terminated fatally in about twenty days, where there was no other perceptible organic lesion, except the granular tubercles which affected every part of both lungs. Louis says he has seen a case fatal in twenty-four days, but that the general period in *acute phthisis* is about fifty days.

It was formerly mentioned, that Bayle divided phthisis into as many species as there have been diseased appearances found in the lungs. He has, therefore, treated of calculous concretions under this title; together with the condition which has been called melanotic; and that which has been so well described by Laennec, under the term "medullary cancer." It appears to me that Bayle was so far right, because when the lungs are thus affected, the individuals frequently emaciate, cough, and breathe in the same manner as in the tubercular disease.

The following account of the more rare varieties of structural derangement found in the lungs, is compiled from Laennec's work:

1*st. Bodies of a cartilaginous, osseous, calculous, and cretaceous nature.*—Sometimes cartilaginous cysts are seen, containing bony or chalky concretions. Laennec states that the bony matter is not perfect, containing a greater quantity of calcareous phosphate, and much less gelatine than true bone, and hence these bodies resemble a piece of stone more than bone. In some cases, he says they contain no gelatine, and resemble moistened chalk. There are also found points of ossification in various parts of the lungs. I have never seen them provided with cysts, which Laennec states are very rare indeed; the non-encysted ossifications are those to which I now allude. They are sometimes very numerous; they feel rough and pointed, and are generally adherent to the pulmonary tissue, which is sometimes of a cartilaginous hardness. Lately I dissected a lung studded over with this kind of production; each was surrounded with a melanotic mass, which, when situated on the surface of the lung, adhered to the pleura in such a manner as to prevent a separation. Sometimes they are observed in the bronchial glands.

The chalky concretions are found in two states, one resembling soft chalk, the other like common mortar. In general, these are encysted. Sometimes calculous bodies, of the shape and size of small

peas, are not only found on the surface of the lungs, but are also occasionally expectorated, which leads many to suspect that they are formed in the bronchial tubes; it is more probable they are formed in the substance of the lungs, and find their way into the air-passages by ulceration or absorption. When meeting with these large bodies on dissection, I have always seen considerable disease in the surrounding pulmonary tissue, sometimes in the state of recent inflammation, at others of gray or red hardening. I cannot sanction the opinion that these concretions are the product of powdery substances taken into the lungs, suspended in the air we breathe; but bronchitis is often produced in this manner. Laennec supports the same opinion, and his reasoning appears to be quite conclusive. He believes that these concretions are consequent to tuberculous affections that have been cured; but I see no reason for agreeing with him.

2d. Melanosis of the lungs.—These productions, in their early or crude state, "possess a consistence equal to that of the lymphatic glands, and a homogeneous and somewhat humid composition; they are opaque, and in structure very much resemble the bronchial glands in the adult. When they begin to soften, a minute portion of fluid can be expressed from them, of a thin reddish character, intermixed with small blackish portions of a substance which is sometimes firm, sometimes friable, but which, even when friable, conveys to the touch an impression of flaccidity. In a more advanced stage, these portions first, and subsequently the whole mass in which they are contained, become quite friable, and are soon converted into a black paste. Melanotic matter is found in four different forms, encysted, non-encysted, generally infiltrated into the natural texture, and deposited on the surface of organs."*

Encysted melanosis.—"The cysts inclosing this species are very regularly rounded, and vary in size from that of a small hazelnut to that of a walnut. They have a very regular and equal thickness, which is never greater than half a line. Cellular substance appears to be the only tissue that enters into their composition. They adhere by means of a very fine cellular membrane to the substance of the organ in which they are situated, and from which they can be readily separated by dissection. Their interior surface is rather smooth, but adheres to the morbid matter which it surrounds. The medium of this adhesion appears to be a very fine imperfect cellular tissue, though it cannot always be distinguished. I have hitherto (says he) only found this variety of melanosis in the liver and lungs; and in the latter organ I have only as yet met with a single mass of it."†

Unencysted melanosis.—"This variety is much less rare than the preceding. I have met with it (he says) in the lungs, the liver, the pituitary gland, and the nerves; but it has been since found in almost every organ. The volume of masses of this kind is quite indeterminate, varying from that of a millet seed to that of an egg, or more. They are also quite irregular in figure. They commonly adhere very closely to the parts in which they are situated; sometimes, however, they are united to these by a very fine, though sufficiently

* Forbes's Laennec, p. 383. † Laennec, p. 383.

visible, cellular tissue, which permits their removal without any laceration. In this last case they are commonly of a rounded shape."*

Melanotic matter generally infiltrated into the natural texture. —"It frequently happens that this morbid matter, in place of being segregated in distinct masses, is disseminated throughout the organs in which it is found, and deposited between the particles or molecules of the natural tissue. The appearance and colour of parts affected in this manner present a good many varieties, according to the texture of the organ, the quantity of matter deposited, and the particular condition of this matter. When the infiltration is recent, and in moderate quantity, the appearance of the affected part merely differs from the natural condition, in being intermixed with small black dots or striæ, the intermediate portions being quite of a healthy character. As the disease increases, the dots and striæ enlarge in number and volume, until the whole of the natural tissue of the part is lost in the morbid degeneration. It is usually only at this period of its progress that the melanosed matter begins to soften; but if the softening takes place before the complete removal of the natural tissue of the part, it frequently happens that this softens also, and intermingles with the morbid matter, the colour of which is thereby changed to brownish, yellowish, or grayish."

There are various preparations in my museum, which illustrate these very excellent descriptions of M. Laennec. There is one, showing the last variety of this affection, which was found in the stomach of a dram-drinker. I have also the portion of a lung, the whole of which was affected with the disease, and which looks like a sponge filled with very black ink. There is also a rare specimen of melanosis affecting the pleura pulmonalis.

A case, rapidly fatal, occurred to me in 1825. The subject was a middle-aged man, who began to complain on the 15th July, but did not take medical advice till the 19th, when he was found to complain of severe pain and weight in his head, some ringing in his ears, but no intolerance of light; the pain was increased by motion and coughing; his breathing somewhat accelerated, respiration 24 in a minute; but he had neither pain, cough, nor expectoration; complained of uneasiness in the abdomen, which was not increased on pressure; tongue whitish in the centre, and at the edges red; skin hot and dry; pulse 90, full and strong. Twenty ounces of blood were taken without any decided relief, and in five hours afterwards, twelve ounces more, which removed the headache. On the 20th, he was so much better as to be able to leave his bed, but became worse again towards evening. 21st. Again somewhat improved. By the stethoscope, the respiration was noisy and blowy, which led to a suspicion of the existence of crude tubercles, surrounded by healthy structure; respiration 30; pulse 112; tongue not improved; face somewhat flushed; skin hot and dry. He died next morning in what his friends called "a fit," which appeared to be asphyxia.

The lungs were found completely infiltrated with melanotic mat-

* Laennec, p. 384.

ter, but still crepitating; and they floated when placed in water; the spleen was affected in the same manner.*

3*d. Medullary sarcoma.*—According to Laennec, "medullary sarcoma may exist under three different forms, viz.: 1st, encysted; 2*d*, in irregular masses without a cyst; and 3*d*, diffused in the tissue of an organ. In whichever of these forms it exists, it presents, in its progress, three different and distinct stages, viz. 1*st*, the incipient or crude state; 2*d*, its perfect state, in which it exhibits the resemblance to brain, which forms its special characteristic; and 3*d*, its soft or dissolved state.

"I shall first describe it as it is observed in the second or perfect state, as this is the condition in which the three varieties most nearly resemble each other, there being much difference between them in the first and last stages. In its perfect state it is homogeneous, of a milky whiteness, and very like the substance of the brain. In different parts it has commonly a slight rose tint. It is opaque when examined in mass, but in thin slices it is in a slight degree semi-transparent. Its consistence is like that of the human brain; but it is commonly less coherent, being more easily broken and comminuted by the finger. According to its degrees of density, it resembles one part of the brain more than another; but it is more commonly like the medullary substance of a brain that is more ordinarily soft (or like that of a child's) than the healthy brain. When existing in any considerable extent, this species of cancer is, in general, supplied by a great many blood-vessels, the trunks of which ramify on the exterior of the tumours, or between their lobes only, while the minuter branches penetrate their substance. The coats of these vessels are very fine, and readily ruptured; and this accident gives rise to clots of extravasated blood in the interior of the tumours, sometimes of considerable size, which bear occasionally a striking resemblance to those found in the brain of subjects dead of apoplexy. Extravasations of this kind may sometimes be so considerable as to supplant almost the whole of the brain-like matter, so that the true nature of the tumour can only be ascertained by some small points, still remaining of the original growth. This change occurring in superficial tumours of this kind, and being productive of much hæmorhage, appears to me to have given rise to the name of *Fungus hæmatodes*, applied to certain cancers by modern surgeons. Under this name, however, I am also convinced that they have confounded tumours of different kinds, especially those commonly called *varicose*, which are composed of an accidental tissue, very analogous to that of the *corpus cavernosum penis*. I have never observed any lymphatics in tumours of this sort, but it is probable that the circulating

[* In the splendid work of Dr. Carswell, "Illustrations of the elementary forms of disease," the reader will find an admirable view of every form and variety of melanosis. On the present occasion I shall merely quote one or two facts respecting the chemical characters of true *melanosis*, which Dr. Carswell, however, calls *melanoma*. Melanotic matter is essentially composed of the colouring matter of the blood, united with fibrine, (both of them in a particular state,) three kinds of fatty matter, and a considerable quantity of phosphate of lime and iron.

I am inclined to believe that melanosis is of less frequent occurrence in the United States than in Europe. In my dissections it has occurred with extreme rarity.]

system is complete in them, as I have seen their substance deeply tinged with yellow in cases of icterus. The matter of encephaloid does not continue long in the state just described; it tends incessantly towards a softer condition, and, in a short space, its consistence scarcely equals that of a thickish paste. Then begins the last stage: the process of softening becomes more rapid, until the morbid matter becomes as liquid as thick pus, still, however, retaining its whitish or rosy white tint. Sometimes, at this period, or a little earlier, the blood extravasated from the vessels contained in the tumour, becomes intermixed with the morbid matter, so as to give it a dark red colour, and the resemblance of clots of pure blood. In a short time the extravasated blood is decomposed; the fibrine concretes, and, together with the colouring matter, unites with the brain-like matter of the tumour; and the serum is absorbed. In this condition the morbid growth retains no resemblance to brain; it is of a reddish or blackish colour, and of a consistence like that of paste, somewhat dry and friable. Sometimes the change of structure and appearance is so complete, that one would be led to consider the tumours as of a different kind, but for the existence in them of portions of the original matter still unchanged. In some cases, contemporaneously with tumours that have changed in this manner, there will be found others retaining the original cerebral character; so that, in all cases, we are able, with a little practice, to discover the true nature of the tumour in all its stages."*

"Such are the characters which this species of cancer presents in its two latter stages, and equally in all the three varieties. I shall now describe the characters of each of these varieties in the first or crude state.

"1. *Encysted medullary sarcoma.*—The size of this species is very various. I have seen the tumours as small as a hazelnut, and larger than a middle-sized apple. I have found them as large as this in the lungs. The cysts are of pretty equable thickness; and this is never more than half a line. They are of a grayish-white, silvery, or milky colour, and have a semi-transparency, more or less, according to their thickness. Their texture is altogether cartilaginous, and rarely fibrous; but it is much softer, and less easily broken by bending, than cartilage; on this account they must be ranged among the *imperfect cartilages.* The medullary matter contained in these cysts can be easily detached from their inner coat. It is commonly divided into several lobes, by a very fine cellular tissue, which may be compared with the pia mater, and the more so from the great number of blood-vessels which traverse it. The fineness and brittleness of these have been already noticed, and also their penetration of the cerebriform matter itself, to which they give a rose tint here and there. It is their rupture that gives rise to the clots of blood formerly mentioned. Sometimes, also, the trunks of these vessels are ruptured in the interstices of the lobules; and the blood being injected beneath the fine cellular substance which accompanies them, gives this the appearance of a distinct membrane. It is com-

* Forbes's Laennec, p. 393.

monly in their early or crude stage that these tumours are divided into distinct lobes. These are especially observable on their surfaces, and have sometimes considerable resemblance to the convolutions of the brain. The cyst does not at all enter between these convolutions, nor does it even indicate on its surface their place or configuration. In this stage the medullary matter is pretty firm, often firmer than the fat of bacon. It is of a dull white, pearl gray, or even yellowish colour, and, in thin slices, has a slight degree of semi-transparency. When cut into, it appears subdivided interiorly into lobules, much smaller than those seen on its surface. These lobules are in such close contact as to leave no interval whatever; and their separation is merely indicated by the reddish lines traced by the vascular cellular tissue by which the separation is effected. These lines rarely cross each other, but exhibit many irregular curves and convolutions. When these tumours pass into the second stage, their texture becomes more homogeneous, and all distinction of the small interior lobules is quite lost; the distinction, however, of the larger exterior lobes still continues. The blood-vessels, which run between these lobes, and in the cellular tissue immediately investing the tumour, are much more developed than in the early stages of the disease, and it is only at this second stage, or as it approaches the third, that the extravasations of blood take place. The third stage begins, as I have already mentioned, when the medullary matter has acquired a consistence like pap or paste, or like that of a brain softened by commencing putrefaction. In this state, it has still much resemblance to cerebral substance. I have never found that the morbid growth ever softens still more, or that it is absorbed or evacuated, so as to leave an empty cyst or cavity like tubercles; consequently, it is not probable that we shall ever find pectoriloquism as a sign of this affection. Hitherto I have only found these encysted medullary tumours in the lungs, liver and cellular substance of the mediastinum."*

"2. *Unencysted medullary sarcoma.* — Medullary tumours of this species are very frequently met with. Their size is very variable. I have seen them from the size of the head of a full-grown fœtus to that of a hemp-seed. Their shape is commonly spheroid, but occasionally flattened, ovoid, or altogether irregular. Their external surface is lobulated, but the divisions are less regular than in the encysted species; their internal structure, in the two last stages, is precisely the same. The cellular membrane, which invests them, is more or less marked, according as they are placed in a loose cellular tissue, or in the substance of a viscus of firm texture: in the latter case, their investing membrane is thinner and less distinct. In their first or crude stage, their semi-transparency is greater than afterwards; they are almost colourless, or have a very slight bluish tint in ocellated patches; they are pretty hard, and divided into numerous lobes. Their substance is then fatty, like lard; but when incised, it does not at all grease the scalpel, and it coagulates by heat, without showing a particle of fat.

The transition from the first to the second stage takes place in the

* Forbes's Laennec, p. 395.

following manner:—The substance of the tumour becomes more opaque, softer, whiter; and its inner distinction into lobules, for the most part, disappears. The original texture is observed longest in the neighbourhood of the external interlobular fissures. In this situation, I have found portions still in a state of induration, after the mass of the tumours had passed into the third stage. I am led to conclude that the encysted tumour follows precisely the same progress as that just described. The non-encysted medullary tumours may exist in any part of the body; but they are most frequently met with in the loose and abundant cellular tissue of the limbs, and in the larger internal cavities. I have met with them in the cellular membrane of the forearm, thigh, neck and mediastinum; they are still more frequently found in the cellular substance around the kidneys, and the anterior part of the spine; and in these situations they often have a very large size. Although they are frequently found in the viscera, they are, however, much rarer there than in the cellular substance." *

In my collection there are several fine specimens of all these varieties of medullary sarcoma, and others unnoticed by any author, but which it would be tedious to describe.

* Forbes's Laennec, p. 397.

CHAPTER VII.

ASTHMA.

This term was formerly used to express every species of difficulty of breathing. Latterly it has been employed to signify a specific intermittent dyspnœa, independent of organic lesion; but I shall show how erroneous such views of this disease are when I come to treat of its pathology.

This disease is observed most frequently in people beyond the middle age, rarely in youth; it affects men oftener than women, and those of full habit of body more frequently than the spare; and it would seem to be occasionally hereditary.

Phenomena.—Attacks of asthma sometimes appear towards the afternoon, or at the moment the patient is going to bed, but more frequently they occur during the night; occasionally, indeed, the patient is seized during a sound sleep, and awakes with a sense of suffocation. In describing the disease, I shall confine myself to a few of the leading symptoms, because, depending upon so many morbid conditions of the lungs, heart, and perhaps the brain, the symptoms which may take place, have too wide a range of character to be taken into a short general sketch. Upon the approach of a paroxysm, the patient usually feels a sense of coldness over the surface of the body, indeed sometimes severe rigors take place; a sense of constriction is experienced in the chest and difficulty of breathing, both of which are increased in the recumbent posture. He sits up, because he can then breathe more easily; he demands more air to be admitted into the apartment; he employs all his efforts to dilate the chest, and then to empty the lungs. There is restlessness; occasional cough, which the patient makes efforts to perform, thinking to force something out of the lungs which impedes his breathing. *Expiration* is performed with a peculiar whistling sound, and sometimes it is sonorous. The face is either pale or livid. The eyes have an anxious expression. The extremities are frequently cold, even the nose and the ears; and the face and breast are covered with a cold dew. The pulse is in various states—full and quick—small and quick—sometimes oppressed—and it occasionally intermits. The skin is frequently discoloured; and there are often a troublesome flatulency and sense of fulness in the abdomen. These symptoms continue with more or less violence for some hours or days till expectoration takes place, which generally precedes a remission. The expectoration is sometimes scanty, at others copious. This is a short description of

the symptoms as they generally occur. In slight cases, however, a sense of constriction in the chest only is complained of, which is sometimes relieved by the expectoration of a whitish mucus; but in more severe instances, the symptoms are much more violent and alarming, not only to the patient, but to the bystanders; instant suffocation being threatened, he solicits relief in the most urgent manner. A remission sometimes takes place immediately after the occurrence of profuse perspiration, and occasionally after a copious discharge of urine.

An individual may have an attack for three or four successive nights, and not be again affected for months; sometimes it returns every month for a number of years, and then disappears for a considerable time. Women are generally attacked immediately preceding the catamenia. The duration of each paroxysm is very various, from two or three days to three or four hours. One attack leads to another, and the paroxysms generally become more and more frequent and severe.

In describing this disease, authors have mentioned two varieties —the humid and the dry. The first commences more gradually, and becomes slowly worse; the cough is frequently severe, attended with early and copious expectoration, which produces relief; the mucous râle is heard almost from the beginning. The dry asthma commences suddenly, and becomes quickly severe, but does not continue long. The cough is slight; the expectoration very scanty, and observed at the close of the paroxysm only; the mucous râle is not heard till towards the conclusion of the attack—even then it is very slight and, perhaps, partial.

Causes.—Asthma is liable to return occasionally during the whole period of a man's life. The subsequent attacks depend on different circumstances in different constitutions. Some are affected by external heat, others by external cold; many by eating indigestible substances, or by overloading the stomach; and almost all asthmatics are affected by hurried exercise, and by any other cause that increases the rapidity of the circulation. It will generally be observed, that those who are predisposed to it, dread cold, moist weather, and stormy seasons. Individuals who follow particular occupations, would seem to be more subject to this affection than others, particularly those who are exposed to irritating vapours, and breathing an atmosphere in which different substances, in very fine powder, are suspended. Causes particularly affecting the nervous system, would also seem to be capable of producing paroxysms, such as passions of the mind, &c.

Pathology.—It is generally admitted, that that kind of dyspnœa which is now under consideration, and which is commonly known by the name of asthma, is produced by various diseased states of the lungs and heart. Chronic bronchitis, emphysema and congestion are the three conditions of the lungs which most frequently produce asthma; and I believe it is likewise occasioned by some kind of nervous irritation, the nature of which is yet unknown. It is, perhaps, from this view, that the doctrine of a spasmodic structure in the air-tubes has arisen.

Having already treated of chronic bronchitis, it is unnecessary to say more upon the subject in this place; I shall therefore proceed to describe EMPHYSEMA of the lungs, of which there are, according to Laennec, two kinds: 1*st*. That which consists in the simple dilatation of the air-cells, which he calls pulmonary or *vesicular emphysema;* and 2*d*. That which is characterized by infiltration of air between the lobules of the lungs, which he terms *interlobular emphysema.*

In the first, the size of the vesicles is much increased, and also less uniform; the greater number equal or exceed the size of a millet-seed, while some attain the magnitude of cherry-stones, or even French beans. The largest are, in all probability, produced by the union of several of the air-cells, in consequence of the rupture of the intermediate partitions; sometimes, however, they appear to arise from the simple enlargement of a single vesicle. The bronchial tubes, especially the small ramifications, are sometimes very evidently dilated in those portions of the lung where the emphysema exists.

The *interlobular emphysema*, according to the same author, is characterized by infiltration of air between the lobules of the lung, and must be considered as necessarily depending on a rupture of some of the air-cells in the first place, and the consequent extravasation of the air contained in them. When the extravasation exists near the root of the lungs, it sometimes extends to the mediastinum, thence crosses to the neck, and occasionally spreads over the whole subcutaneous and inter-muscular cellular substance of the body.

The pathognomonic signs of the pulmonary emphysema, says Laennec, "are furnished by a comparison of the indications derived from percussion and mediate auscultation. The respiratory sound is inaudible over the greater part of the chest, and is very feeble in the points where it is audible; at the same time, a very clear sound is produced by percussion. From time to time, also, we perceive, while exploring the respiration or cough, a slight sibilous rattle, or sound of the valve, as in the dry catarrh, occasioned by the displacement of the pearly sputa." When existing in a high degree it may be recognized by a sign which is altogether pathognomonic, which Laennec calls the crepitous rattle with large bubbles. "In this case, the sound, during inspiration or coughing, is like that which would be produced by blowing into half-dried cellular substance."*

In the interlobular emphysema, Laennec assures us, "there is one sign completely pathognomonic, viz.: the *dry* crepitous rattle with large bubbles, when very distinct and continuous, or nearly so. Together with this sign, (continues he,) we usually perceive, during inspiration and expiration, a sound or sensation as of one or more bodies rising and falling, and rubbing against the ribs."

Emphysema of the lungs is a common disease in horses, and is the great cause of what is called *broken-wind;* and is more common in man than is generally imagined. It is produced by various causes, as lifting a heavy weight: it occurs during the act of bearing down in labour; but more frequently it is a consequence of violent cough-

* Forbes's Translation, p. 158.

ing in cases of bronchitic inflammation; indeed, I have scarcely ever witnessed a dissection of a person who died of bronchitis or hooping-cough, without seeing pulmonary emphysema.

For a more particular account of these morbid states, the reader is referred to the work of Laennec.

There cannot be a doubt that the nervous system has a powerful influence on the functions of the lungs, when labouring under disease, as well as in health; and I imagine no one can deny that asthma may be produced, either in consequence of some diseased action in the brain, or in the nerves themselves which supply the lungs. It has been attempted to be shown by Reisseissen and Laennec that the bronchial tubes possess a muscular structure, through the agency of which the air-vessels contract, when under the influence of spasm; but this is not a new idea on the part of Reisseissen or Laennec, for Cullen makes the following statement:—"From the whole of the history of asthma, now delivered, I think it will readily appear, that the proximate cause of this disease is a preternatural, and, in some measure, a spasmodic constriction of the muscular fibres of the bronchiæ, which not only prevents the dilatation of the bronchiæ necessary to a free and full inspiration, but gives also a rigidity which prevents a full and free expiration."—(Par. 1834.) But neither is this an original idea of Cullen's, for it was entertained long before his time by Hoffman and Willis. It is foreign to the object of this work to enter into anatomical controversy, and unnecessary in this instance, for even Laennec states that he had "met with only a very small number of asthmatics in whom there was evidence of pulmonary spasm, without any attendant catarrhal affection; but some few I have met with. On the other hand, I have known a great number of patients, in whom the catarrh, whether dry, pituitous, or mucous, was too slight in degree, or too small in extent, to be considered as the real cause of this asthma."—(Page 412.) Because, perhaps, there might be, in these cases, some organic lesion of the heart and large vessels, or the coexistence of cerebral irritation. These observations lead me to remark, that there is almost always something more in this disease than the original organic lesion in the lungs themselves; this experience has frequently led me to trace to sudden congestion of the lungs, which flattens the air-vessels, and prevents them from dilating.

Various diseases of the heart produce asthma; the most frequent are dilatations of its cavities, diseases of its valves; and aneurism of the aorta, of which more hereafter.

Treatment.—From want of attention to the pathological condition of the body, the treatment of asthma has hitherto been uncertain and empirical. Some highly extol one remedy, and some another; some always use the lancet, and others invariably condemn it. Although an advocate for occasional bleeding in asthma, yet I am convinced that no remedy, except the indiscriminate use of opium, has done more mischief. There are two circumstances only in which bleeding should be had recourse to: 1st. Where we have evidence of acute action in any tissue of the lungs, superadded to any of the organic lesions already mentioned; 2d. When there is much venous engorge-

ment of the lungs. In old chronic cases, it must always be a doubtful, and occasionally, a dangerous remedy. Dr. Bree assures us, that he repeatedly tried bleeding, but does not think the paroxysm was ever shortened an hour by the remedy; and in old people he found it injurious. It may be mentioned, that Dr. Bree was himself an asthmatic, and after paying much practical attention to the disease, he wrote a treatise upon the subject, which is worthy of perusal. Bleeding must be employed early in the paroxysm, or not at all, unless the patient is threatened with suffocation. The pediluvium is to be instantly had recourse to, which I have known to arrest a paroxysm; as well as inhaling the vapour of hot water. The apartment is to be freely ventilated, and too many people are not to remain in the room. Laxatives are always necessary, as confined bowels aggravate the complaint. Vomiting is a favourite remedy with many, and is useful principally in two cases — when there is evidence of a load of food being in the stomach — and when we know that the disease depends upon chronic bronchitis. In the last case, vomiting will assist in clearing the air-passages of superabundant mucus. In almost all cases, contra-irritation is useful, whether produced by mustard plasters, stimulating embrocations or blisters. Strong coffee was formerly recommended by Sir John Floyer, from the relief he experienced in his own person, and it has since been highly lauded by his fellow-sufferer, Dr. Bree. With respect to opium, very opposite opinions have been maintained. Laennec speaks strongly in favour of the whole class of narcotics, with a view of producing sleep, upon the theory of bringing patients so affected as nearly as possible to the level of *bats*, and other animals, which hybernate, and consume nearly a hundred times less air when in a state of torpidity. He seems to have been influenced by an idea of producing relaxation of the muscular fibres of the air-tubes, thereby overcoming the spasm of the lungs. The following narcotics are recommended by Laennec—opium, belladonna, stramonium, phellandrium aquaticum, aconitum napellus, colchicum, tobacco smoked or taken internally, cicuta, dulcamara, hyoscyamus. With respect to tobacco, it may be mentioned, upon the authority of Dr. Ferriar, that Baglivi used the "*Julapum tabaci*," in cases of asthma.*

If the disease generally depended on spasm, opium should be useful in a great number of cases; but I am convinced, from what I have seen in practice, that it is the most dangerous of all the remedies which have hitherto been recommended. Dr. Bree tells us that four grains nearly sent him into the next world. In truth, it is a remedy which must very often interfere with the efforts of the constitution for relieving the patient; more particularly in that form of the disease produced by chronic bronchitis, when opium, by allaying the cough, promotes a collection of mucus in the air-passages: hence the common observation, that opiates dry up the expectoration. I have seen some individuals very much relieved by smoking tobacco, and some by smoking stramonium.

As the disease is frequently observed to terminate by expectora-

* Reflections, p. 204.

tion, the class of medicines called expectorants has been much employed. In fact, if routine practitioners were asked what should be done for a patient in a fit of asthma, they will be found either to order bleeding, or to give an expectorant. I have seen them often tried, but very seldom with any good effect. Of this class, squills is much in use, together with the fœtid gums.

[I have been much pleased with the use of the infusion of valerian; and when an expectorant is necessary, liquorice root may be added. Of all anodynes, that which has had the happiest effect in my experience is pure Hoffman's anodyne, given in full doses. In cases attended with a dry cough and great oppression, I have found signal relief to follow the application to the chest of a large poultice of flaxseed and hops, or bran and flaxseed. These ingredients should be mixed with hot water or hot vinegar, until the mass attains a proper consistence, when it should be enveloped in gauze or thin muslin, applied as warm as it can be borne, and renewed every three hours.]

After the termination of the paroxysm, tonics are frequently recommended. Dr. Bree speaks much in praise of a remedy composed of nitric acid, hyoscyamus and squills. Some tell us to avoid warm bathing, and to use the cold bath as a tonic during the intervals; the cold bath agrees with some better than the warm, and I have seen both do much mischief. [I have known great benefit to be derived from frequently bathing the feet in hot salt and water; but to be serviceable during the paroxysm, the bath should be protracted for at least half an hour.]

Issues, setons and cauteries have all been used as contra-irritants, and it is worthy of remark, that many fits of asthma have taken place immediately after the disappearance of a cutaneous eruption. I have myself witnessed examples of this kind, and I have been acquainted with asthmatics who were occasionally affected with cutaneous eruptions, and who, although they complained of much distress from the itching and tingling of the skin, were yet contented with their lot, and invariably expressed themselves as being certain of an attack of asthma if the eruptions were repelled. The observation of such circumstances has led me to insist much on the propriety of employing contra-irritation in all diseases of the chest, but particularly in those of a chronic nature.

The subcarbonate of iron has been recommended, but I cannot speak from experience of its effects.

A very dangerous complication of asthma with anasarca occasionally takes place; the routine practitioner amuses himself and distresses his patient, by "pumping out the water." But I cannot too strongly condemn this as a general practice, because the remedies weaken, sometimes hasten the fate of the patient, and do not reach the root of the evil.

Galvanism is another remedy which has been much lauded, not only in this country, but on the continent. Dr. Wilson Philip, to whose exertions in endeavouring to improve the science of medicine, the profession stands deeply indebted, directed his attention to this subject. He made many experiments on animals, in conducting an

inquiry into the laws of the vital functions; and among others, he divided the pneumogastric nerves, in order to diminish the nervous influence in the lungs and stomach; the digestive powers were found to be thereby much impaired or suspended, and dyspnœa was produced. He then directed galvanic influence towards the lungs and stomach, and he observed that the animal could be made to breathe easily, and digest its food. After these experiments had been repeated and confirmed, Dr. Wilson Philip was naturally led to inquire what diseases depended on a failure of the nervous influence. Judging from analogy and observation, he thought it probable that indigestion and asthma were two, at least, of the number. This is a short view of the circumstances which led Dr. Wilson Philip to expect relief from galvanism in *habitual asthma;* which name he has given to that form of the disease, in which the breathing is constantly oppressed—better and worse at different times, but never free—and often continues to get worse in spite of every means we can employ. He states that he used galvanism in many cases, and almost uniformly with relief, applying as much of the galvanic influence as patients could easily bear. The period varied from five to fifteen minutes before relief was experienced; and he generally found, that the stronger the sensation excited, the more speedy the relief; he found from eight to fifteen four-inch plates of zinc and copper sufficient; the fluid used, was one part of muriatic acid to one hundred and twenty of water. Some people required more than sixteen plates, and a few could not bear eight. It is a curious fact, that on the first application of galvanism, a person may experience little sensation from the operation of twenty-five or thirty plates, yet afterwards he may not be able to bear more than six or eight. He applied it in the following manner:—he placed two thin plates of metal dipped in water, one on the nape of the neck, the other on the lower part of the epigastric region. The wires from the different ends of the trough were brought in contact with the plates; in this way the galvanic influence was sent through the lungs, as much as possible in the direction of the nerves. The operation was discontinued as soon as the patient said his breathing was easy, any further application being found quite unnecessary. We are assured that this means afforded relief to those who had laboured under oppressed breathing for ten or twenty years, as readily as in more recent cases; therefore, we must join Dr. Wilson Philip in taking this as a proof, that no organic lesion existed in the lungs. For further information on this interesting topic, the reader is referred to his work, entitled "Inquiry into the Laws of the Vital Functions."*

Whatever differences of opinion exist respecting the nature and seat of asthma, and the treatment proper to be pursued during a paroxysm, all agree in recommending, that the diet of an asthematic should be light, sufficiently nourishing, and easy of digestion; his clothing warm; and that he should avoid exposure in cold, damp weather, particularly when the wind is in the east. The bowels

[* Another and a simpler mode of applying the galvanic fluid will be mentioned under the head of Epilepsy.]

should be kept easy; but it is proper to mention, that I have known a paroxysm brought on by hypercatharsis as well as constipation.

[M. Aboussohn, in a recent memoir, has shown that *worms* sometimes infest the air-passages, giving rise to extreme distress, and to death itself. The worm, in every instance, has been found to be the *ascaris lumbricoides*, which, no doubt, passes from the œsophagus into the trachea. The above author cites six cases, and adds, "that there were five in which the accident happened to children between eight and nine years of age, four of whom were girls; the sixth case, however, proved that it may happen in advanced years, (the patient having been 52 years old) when circumstances are favourable to the development of worms. The symptoms differ according to the situation of the worm: when it was in the larynx, the violent paroxysms of cough threatened suffocation; when in the trachea, the cough was less intense; there were rather dyspnœa with paroxysms of orthopnœa, and great agitation, vomiting, and incontinence of urine. Death was preceded by convulsions in one case, and in another was sudden, as if the lung, fatigued by the struggle, was deprived of all nervous influence. The impression of the patient, that a fixed and local obstacle prevents his respiration, is a valuable diagnostic sign. The means to be employed would be, 1. Immediately to pass the finger into the throat to examine if a worm can be felt, and to remove it. 2. Vomiting should be excited. 3. As a last resource, tracheotomy should be performed."*]

[PULMONARY ŒDEMA. ŒDEMA PULMONUM.]

[This is an effusion into the cellular tissue of the lungs; when cut into, these organs pour out a frothy serum, are heavier than natural, and pit under the finger. This form of dropsy often accompanies general anasarca, and especially when the latter is a sequel of scarlet fever. The symptoms are cough, dyspnœa and serous or other mucous expectoration; but there is no mode of diagnosis, not even that derived from auscultation, which is not liable to some fallacy; because the effusion is usually a mere consequence and concomitant of other morbid states which mark this particular condition. The sound on percussion is, of course, more or less diminished in clearness and duration; while the respiration, as heard by the stethoscope, is harsh, bronchial, blowing and unequal or circumscribed. The heart's sounds are transmitted with undue intensity.†

The treatment of this form of dropsy must depend on its cause and the attendant circumstances; but should the dyspnœa be urgent and sudden, immediate cupping between the shoulders and blistering to the chest in front, with a hot, saline pediluvium, will constitute the most available treatment.]

[* Brit. and For. Med. Rev., No. 3, 1836.]
[† Walshe. Physical Diagnosis, p. 133.]

PART IV.

DISEASES OF THE CIRCULATING SYSTEM.

CHAPTER I.

GENERAL REMARKS ON DISEASES OF THE CIRCULATING SYSTEM.

Diseases of the heart, from their frequency, and the extreme severity of their symptoms, constitute a very important branch of practical medicine. Till the conclusion of the last century, the generality of the profession were very imperfectly acquainted with them, and even now, when so much has been done by the labours of Corvisart, Laennec, Bertin and others, very erroneous notions prevail both with regard to their diagnosis and treatment. On this subject, our common systematic works are particularly deficient, and with the exception of the imperfect Treatise of the late Mr. Burns, no original work exists in English on this interesting and important class of diseases; but it behoves me to mention, that the "original cases" of Dr. Forbes are particularly deserving of attentive perusal; and many valuable papers and cases are scattered through our periodical works, and the transactions of different societies.

The utilities of the discovery of mediate auscultation by Laennec, in diseases of the lungs, have been already as fully discussed as the plan of the work will allow. Great advantage may also be derived from the employment of the stethoscope in diseases of the heart. Percussion affords us some assistance, but much less than in many of the affections of the lungs. Some physicians inform us, that the stethoscope is entirely useless in affections of the heart, because, according to their account, we cannot distinguish between organic disease and nervous palpitation, which we confess we cannot always do by the stethoscope alone. These gentlemen seem to forget, however, the impossibility of forming an accurate diagnosis by the common signs or symptoms; and I may observe, that they might as well be required to give up the exercise of their profession altogether, as reject the important assistance which we derive by mediate auscultation, because it does not in all cases afford an absolute certainty.

A common prejudice prevails, that as diseases of the heart are in their nature irremediable, therefore an accurate diagnosis would only lead to despondency and inertness of practice. Stethoscopists deny both the premises and the conclusion; and we insist, that the more accurately we are acquainted with the nature and seat of a disease, the more appropriate will be our practice. I can state, from experience, that much may be done by judicious treatment, not only in alleviating, but in some cases in curing, diseases of the heart. We

have seen patients labouring under disease of the heart, pronounced to be far advanced in consumption; and others, with disease of the valves, treated for indigestion and gastric irritation; and we have also seen patients labouring under enormous dilatation of the heart, in its last stage, who were laughed at, and treated for nervous or dyspeptic complaints, and recommended to avoid vegetables, and eat beef-stakes; who were urged to use exercise, when the very effort brought on severe dyspnœa, and a sense of suffocation. I shall content myself, at present, by stating one additional circumstance—that it is of the greatest consequence to be able to distinguish simple hypertrophy from dilatation of the heart, because I feel convinced the former is as capable of being cured as almost any other disease to which the animal frame is liable; so that, if there were no other circumstances to uphold us, in making use of the stethoscope, as an additional means of diagnosis in diseases of the heart, this alone should induce every professional man of common feeling and honesty, earnestly to set about acquiring the power of employing the instrument. I blush to confess, that I was formerly one of those who ridiculed mediate auscultation, merely because, on applying the stethoscope once or twice I could hear nothing; but after putting myself under the direction of Dr. Scott, I was able, in the course of a very short time, to discriminate between the sound produced by respiration in a healthy state of the lungs, and that in disease.

The contractions of the heart give rise to very distinct sounds, which enable us to study with ultimate success the actions of that organ, and to detect any irregularity or deviation from its natural condition. Before describing the organic changes which the heart undergoes, it is necessary to give a very brief analysis of its natural action as heard and felt with the stethoscope. If we apply this instrument to the region of the heart, and place a finger on the radial artery, a moment previously to the arterial pulse, the ear is sensible of a slight impulse, accompanied by a somewhat dull, but very distinct sound. Immediately, and without any interval, a clear sound is perceived, resembling that of a valve, or whip, or the lapping of a dog. After this, there is a short but well-marked period of repose.

In a healthy person, with a well-proportioned heart, and carrying a moderate quantity of flesh, the shock or impulse of the heart can be felt over, or very near, the cardiac region only. In persons who are thin, and the thorax narrow, the impulse is more extended, and may be felt over the whole of the sternum, and occasionally over the left side of the thorax.

The sound can generally be heard over the left side, anteriorly, and under the clavicles, but more faintly as we recede progressively from the cardiac region. When more extended, it is heard successively in the following places:—1. Left side anteriorly—2. Right side anteriorly—3. Left side posteriorly—4. Right side posteriorly.

The intensity of sound is progressively less in the order above mentioned; but it must be recollected, that a condensed, or strongly compressed lung, transmits the sound better than a healthy one; and when there is much wheezing, the sound of the heart is obscured.

Therefore, in estimating the heart's action, we must always take into account the state of the lungs.

When the heart can be heard in all the points stated, we may suspect that it is larger than natural, and that it is dilated; for it may be stated generally, that a great extent of sound is a mark of thin parietes; and that a strong impulse, with a confined range of sound, coincides with hypertrophy, or increased thickness in the walls of the heart.

By the shock or impulse, we mean the sensation of percussion which is communicated to the ear on applying it immediately to the chest, over the region of the heart, or through the medium of the cylinder of wood. The degree of impulse is inversely as the extent of the sound, and directly as the thickness of the walls of the heart; when these walls are very thick, the shock is often so great as to elevate the ear of the observer, and may be often perceived even through the garments.

When the walls are *very* thin, no impulse is communicated, even when the sound is very loud. A strong impulse, then, is to be considered as a characteristic of simple hypertrophy;—the absence of impulse, with increase of sound, as an indication of simple dilatation;—sound and impulse conjoined, point out the combination of hypertrophy and dilatation.

It has been stated, that the action of the heart is accompanied by two distinct sounds, and one impulse; that the first sound is dull and prolonged, and that the second, which immediately succeeds the other, is sharp and clear; after which there is an evident interval. Accompanying the first sound, there is a shock or impulse felt by placing the hand over the region of the heart, which is not synchronous with the pulse at the wrist. Much diversity of opinion exists, and considerable discussion has lately taken place, as to the causes of the impulse and sounds, as well as respecting the rhythm or order of contraction of the different cavities of the heart; and it appears that the opinions of Laennec upon these physiological points are erroneous, and must be abandoned. Laennec supposed that the first sound is produced by the contraction of the ventricles, the second by that of the auricles; but Mr. Turner has shown, in a paper published in the 3d vol. of the Ed. Med. Chirur. Transactions, that the contraction of the auricles always precedes that of the ventricles; thus reversing the almost universally received opinion of the order of the contraction of the different cavities of the heart. Mr. Turner states that the contraction of the auricles is so immediately succeeded by that of the ventricles, that he found it very difficult, if not impossible, to distinguish any interval between them. He thinks, therefore, that the first sound is occasioned by the almost simultaneous contraction of both sets of cavities.

Cause of the first sound and impulse.—It is proper to mention, in this place, that the sounds produced by the heart's action are not dependent on the contraction or relaxation of the muscular fibres of that organ, but are occasioned by the motion of the blood on the uneven surface of the cavities of the heart; the intensity of the sound being increased by the rapidity of the motion, the roughness of the

surface over which the blood passes, and the thinness of the muscular structure of the heart. On this point Dr. William Stokes, of Dublin, and Mr. Spittal are agreed. After a careful review of all the writings on this subject, and frequent examinations of the action of the heart by auscultation, I believe Dr. W. Stokes's view to be correct, that the first sound and its accompanying impulse, are produced by the motion of the blood propelled into the ventricles by the contraction of the auricles. M. Magendie states, that the two sounds of the heart are owing to the successive impulsation of the apex and side of the heart against the thorax, and that they are quite unconnected with the motion of the blood, or condition of the valves. He further states, that in hypertrophy of the heart to such a degree as to leave no space between the heart and ribs, there is no impulse, and no sounds. These views are erroneous, and have been ably refuted by M. Pigeaux, who has adopted opinions corroborative of those of Dr. William Stokes.

Cause of the second sound.—Mr. Turner supposes the second sound to depend on the flapping of the pericardium on the heart. Dr. Williams considers it to be the effect of the flapping of the mitral and tricuspid valves against the walls of the heart. Mr. Spittal is rather inclined to attribute it to the rushing of blood into the ventricles, during their elastic dilatation. Mr. Spittal has erred, after ably and successfully refuting the theories of M. Laennec, Mr. Turner, and Drs. Barry and Williams. That he should not have formed a correct opinion as to the second of the consecutive sounds, is not to be wondered at, when we consider that he was misled with respect to the first. But it is with pleasure I seize this opportunity to express the high sense I entertain of Mr. Spittal's talents and zeal in the cause of medical science, and his superior acuteness in auscultation, of which I have several times availed myself in practice. Dr. W. Stokes performed some vivisections in August, 1829, to ascertain whether there is a want of synchronism between the impulse of the heart and pulse at the wrist, at the suggestion of Dr. M'Donnel, of Belfast, who had many reasons for doubting the correctness of Laennec's statements concerning the heart, wherein he describes the impulse felt at the side as the effect of the contraction of the ventricles. These experiments were performed in company with Mr. Hart, and in the presence of many pupils; the results were immediately made public by both these gentlemen, in their lectures and in private conversation. They were well known in Dublin many months before the appearance of any other researches on the subject. In the course of these experiments, Dr. Stokes became convinced that the cause of the second sound is the motion of the blood during the contraction of the ventricles, and the dilatation of the auricles; for there appears to be no doubt that the dilatation of one set of cavities takes place at the same moment with the contraction of the other, a fact which was stated some time before by Dr. Barry. I entirely coincide with Dr. Stokes as to the second sound, and his researches will remove many of my doubts as to the possibility of determining disease of the valves and other parts on either side of the heart. If his opinion be correct, the sounds produced by disease affecting the auriculo-

ventricular valves should be synchronous with the first sound, while those occasioned by disease of the aortic valves should be synchronous with the second. The subjects of Dr. Stokes's and Mr. Hart's vivisections were the rabbit and goat. These gentlemen arrived at the following conclusions:

"1*st*. The process of contraction begins at the auricular, and terminates at the ventricular portions of the heart.

"2*d*. The contraction of the auricle in the goat was evidently preceded by that of the sinuses of the vena cava.

"3*d*. The impulse at the side is produced by the dilatation of the ventricle.

"4*th*. After the expulsion of the contents of the ventricle, an interval of apparent rest occurs, during which, however, the auricles are filling."

Having arrived at these conclusions, they next turned their attention to the action of the arterial system. They found,

"1*st*. That in the state of health, the impulse of the heart precedes the pulse at the wrist, by an appreciable interval.

"2*d*. That this interval is more perceptible in proportion to the slowness of the heart's action.

"3*d*. That the length of the interval is directly as the distance of the vessel examined from the heart.

"4*th*. That hence the wave of blood at each pulse is progressive through the arterial system, and not an instantaneous impulse, as has been supposed." (Ed. Med. and Surg. Journal, October, 1830.)

Certain remarkable sounds, which accompany the action of the heart and arteries, require a few observations in this place.

1*st*. The blowing or bellows sound, (*bruit de soufflet*,) as it is called by Laennec, from its resemblance to the sound produced by that instrument when blowing the fire. This sound, when present in the greatest degree, entirely masks the natural sounds produced by the action of the heart. It is sometimes heard in the subclavian and carotid arteries.

2*d*. The sound of the saw or file (*bruit de râpe*) is another phenomenon, occasionally presented by the action of the heart. Both this and the blowing sound were formerly considered as invariably indicating disease of the valves of the heart; and although often present in such circumstances, yet are by no means to be considered as pathognomonic, as they may exist in a slight degree without any organic lesion of the valves. Laennec states, that the only disorder which appeared to him constantly, or almost so, to accompany the bellows and file sound, was a state of nervous agitation, which, however, was more or less marked by other symptoms. These sounds are not unfrequently met with in young persons of a nervous temperament; and, in most cases, we can make ourselves pretty certain that they are owing merely to a nervous affection; for if we examine such patients in a state of repose, no particular sound will be heard; but after violent exercise, or during a state of agitation, they become instantly perceptible: whereas, if they proceed from disease, they will never be entirely absent, although they may be increased by every cause which tends to hurry the circulation, and may be heard

at all times in severe cases, even on the back. It appears probable, that even in the pure nervous affections, sounds, resembling those produced by disease of the valves, may hereafter be found to depend upon a congenital disproportion between the heart and the orifices through which the blood passes, and which produces the effect only when the circulation is hurried.

Since writing the first edition, I have seen several dissections, which proved that both the *bruit de soufflet* and the *bruit de râpe*, but particularly the former, occasionally depended on hypertrophy, with dilatation of the cavities of the heart, as well as on disease of the valves. Examinations after death have convinced me, that both sounds may likewise be occasioned by disease of the aorta.*

Dr. Scott, to whom I am indebted not only for the little knowledge I possess in the use of the stethoscope, but for much valuable assistance in writing this part of the work, informs me, that he has observed a very peculiar sound during the action of the heart in nervous persons;—it is a slight click or jingle, sometimes resembling the splashing of water in a metallic vessel. The first time he met with this sound, was in a very young woman, in a state of insensibility, where the sound gave the distinct idea of a fluid in the pericardium, agitated by the heart. I have noticed this remarkable phenomenon, also, but am more inclined to attribute it to small quantities of fluid and flatus moving from one part of the stomach or bowels to another.

3*d*. The purring or whizzing vibration—the cat-purr, may also be briefly mentioned. It is a peculiar sensation communicated to the hand placed on the cardiac region, and which Corvisart considered a sign of ossification of the valves, more particularly the mitral. This vibration is in general confined to the left side of the chest, and though it is no doubt met with in almost every case of considerable contraction of the valves, yet it is sometimes perceived in a slight degree when no organic lesion exists.

[The great interest which has, of latter years, been excited in the

* [M. Andral has recently instituted some experiments in relation to these sounds, which afford additional evidence that they often exist wholly independent of a disorganization or alteration of structure, and that they are consequent to certain changes in the relative proportion of the elements of the blood. He takes, as we shall hereafter see, the proportion of red globules in healthy blood, to be as 127 in 1000 parts, and then states that the causes capable of producing the *bruit de soufflet*, or bellows sound, are the following:—

First, when the globules have diminished sufficiently to be below the cipher 80, the bruit de soufflet exists in the arteries in a constant manner. I have never found a single exception to this law.

Second, when the globules have remained above the cipher of 80, the *bruit de soufflet* can again show itself, but it is no longer constant; we continue to hear it often enough when the cipher of the globules oscillates between 80 and 100; it is met with again, but much seldomer, according as the cipher of the globules passes 100, and finally, it is no longer observed when the cipher of the globules is raised above the physiological mean.

Moreover, whatever is otherwise the nature of the disease in which these diminutions of the globules exist, the *bruit de soufflet* of the carotids does not show itself the less; I have proved its existence in the most different cases, putrid fevers, eruptive fevers, pneumonias, acute articular rheumatism, and in a great number of chronic diseases. But in all these cases it only took place with the ciphers of the globules marked above.

The *bruit de soufflet* is often present in women with child, which is in relation with the frequent diminution which the globules undergo in them.—Andral.—*Hæmatologie Pathologique.*]

medical profession, in relation to the action of the heart, is familiar to every one; and the admirable epitome which has been given of the present state of the question, needs little, if any addition beyond the following results of a series of experiments performed by Drs. Pennock and Moore of this city. Without attempting to analyze the memoir, published by these gentlemen, I shall merely place before the reader the *conclusions* to which they arrived, after a most arduous and elaborate investigation:

"1*st*. The impulse is synchronous with, and caused by, the ventricular contraction,—and when felt externally, arises from the striking of the apex of the heart against the thorax.

"2*d*. The expulsion of the blood from the ventricles is effected by an approximation of the sides of the heart only, and not by a contraction of the apex towards the base; during the systole, the heart performs a spiral movement, and becomes elongated.

"3*d*. The ventricle contracts, and the auricle dilates at the same time, occupying about one-half of the whole time required for contraction, diastole and repose. Immediately at the termination of the systole of the ventricle, its diastole succeeds, occupying about one-fourth of the whole time, synchronous with which the auricle diminishes, by emptying a portion of its blood in the ventricle, unaccompanied with muscular contraction. The remaining fourth is devoted to the repose of the ventricles, near the termination of which the auricle contracts actively, with a short, quick motion, thus distending the ventricles with an additional quantity of blood: this motion is propagated immediately to the ventricles, and their systole takes place, rendering their contractions almost continuous.

"4*th*. From the termination of their diastole to the commencement of their systole, the ventricles are in a state of perfect repose, their cavities remaining full, but not distended, while those of the auricles are partially so, during the whole time.

"5*th*. The sounds are produced by the motions of the heart or its contents, and not by striking against the thorax, as proved in all the experiments; being much louder when the stethoscope was applied directly to the heart than when to the chest, or with the lungs interposed.

"6*th*. The sounds are more distinct when the muscle is thin, and contracts quickly. Hence the clear, flapping character of the first sound over the right ventricle, as compared with the left.

"7*th*. The first sound, the impulse, and the ventricular systole, are synchronous. This sound may be a combination of that caused by the contraction of the auricles, the flapping of the auriculo-ventricular valves, the rush of blood from the ventricles, and the sound of muscular contraction. When the heart was removed from the body, the ventricles cut open and emptied of their contents, the auriculo-ventricular valves elevated, and a sound, resembling the first, still heard, it may be chiefly attributed to the muscular contraction. That these valves aid but slightly in its production, may also be inferred from experiment 16.

"8*th*. The second sound is caused exclusively by the closure of the semilunar valves from the reaction of the arterial columns of

blood upon them, in its tendency to regurgitate through the aortic and pulmonary orifices. This is proved by the greater intensity of this sound over the aorta than elsewhere, the blood having a strong tendency to return through the valvular opening; by the greater feebleness of the sound over the pulmonary artery, which is short, and soon distributes its blood through the lungs, thus producing but slight impulse upon the valves in the attempt to regurgitate; by the disappearance of the sound, when the heart becomes congested and contracts feebly; and, finally, on account of its entire extinction when the valve of the aorta was elevated.

"*9th.* The second sound is synchronous with the diastole of the ventricle."*]

Symptoms produced by diseases of the heart and large blood-vessels.—Before describing the different diseases of the heart, a brief enumeration may be given of the general symptoms which accompany these affections. In the early stages, it is of the utmost consequence to form an accurate diagnosis; but the general symptoms are very nearly similar in all. These are, habitually short and difficult respiration; palpitation, and a feeling of oppression about the heart on any sudden or violent exertion, as in running or walking up an ascent. The late Dr. Monro was so well aware of this, that before examining a patient suspected to labour under disease of the heart, he was in the habit of desiring him to ascend a flight of stairs quickly. Emotions of the mind frequently induce paroxysms of panting and dyspnœa. Sleep is often disturbed by sudden startings and fearful dreams; there is an anxious cast of countenance, and a marked degree of irritability of temper and restlessness; determinations of blood to the head take place; and very generally a disordered state of the digestive functions is observed, indicated by impaired appetite, flatulent distension, irregularity of the bowels, &c., which invariably aggravate the feeling of uneasiness about the heart. Sometimes the patient suffers most violent paroxysms of pain, which are occasionally attended with great vascular action and palpitation, at others with diminished vascular action, and a tendency to syncope.

In the last stages, diseases of the heart can in general be recognized at a single glance; the patient is unable to lie down; he therefore requires to be propped up in a chair or bed; the face is puffed; the lips are swollen, and display the different shades of colour produced by impeded circulation through the lungs; the legs and scrotum become œdematous, and dropsical effusions often take place into the

[* Medical Examiner, No. 44. M. Cruveilhier has yet more recently published some observations on an infant born with its heart completely exposed, and protruding through an aperture in the thorax. It lived twenty-four hours after birth. He found only two conditions of the heart,—contraction and dilatation; that of *repose* generally mentioned by authors, was completely wanting. During their systole, the parietes of the ventricles became pale, and their surface rugged, and in folds. "The two sounds of the heart," says he, "have their seat at the origin of the pulmonary and aortic arteries, and their cause is the flapping (*claquement*) of the sigmoid valves. The *first sound*, which coincides with the ventricular systole, and with the dilatation of the arteries, is the result of the replacing (*redressement*) of the sigmoid valves, probably lowered. The *second sound*, which coincides with the ventricular systole, and with the contraction of the arteries, is the result of the lowering of the sigmoid valves, pushed down by the reflux of the retrograde blood."—*Gazette Médicale*, quoted in Braithwaite's Retrospect, Part 4.]

cavities of the thorax, pericardium, and abdomen. Hæmorrhage from the lungs is not uncommon; and the case sometimes terminates in apoplexy: indeed, diseases of the heart frequently terminate in sudden death. The pulse varies much, according to the particular disorganization: in hypertrophy, for example, it is hard, full, and bounding; in dilatation, feeble, compressible, and irregular in point of strength; in valvular disease, small, and easily rendered intermitting by exertion, and by mental emotions. Some of these symptoms are, however, common to other diseases; and those of the earlier stages may depend on disorder of the digestive organs, or may accompany affections usually termed nervous. It is of extreme consequence that these cases should be distinguished, if it were only to save the reputation of the medical attendant, as patients so affected generally die suddenly, at a time when the physician has given a favourable opinion, or, perhaps, lightly estimated the complaints of the patient. With the assistance of the stethoscope and percussion, combined with an accurate study of the individual characters of the case and the constitution of the patient, we shall be able to form a more correct diagnosis than those who trust solely to the ordinary means of investigation.

In making our examinations with the stethoscope, we should be particularly careful that the patient is free from agitation, and has been in a state of perfect quietude for some time.

Causes of diseases of the heart.—The causes of diseases of the heart are imperfectly known; affections of the lungs, which give rise to long-continued and severe dyspnœa, are, no doubt, among the most frequent causes; they are considered by Laennec as the best ascertained. We know, perhaps, with more certainty, that diseases of the heart give rise to various affections of the lungs, more particularly hæmoptysis, and pulmonary apoplexy.

A disproportion between the diameter of the aorta and size of the heart, was considered, by Corvisart, as a constant cause of dilatation; and it is probable that a congenital disproportion is a frequent cause of hypertrophy.

Affections of the mind have been considered as the most usual causes of diseases of the heart; thus, we are told, that during the French Revolution, these affections became much more common than at any previous period. The influence of depressing and exciting passions, in predisposing to disorders of this kind, can scarcely be questioned; but it must be borne in mind, that about the period above alluded to, greater attention began to be directed to this branch of pathology, and in point of fact, these diseases became better understood, and more frequently recognized. Every cause which disturbs the balance of the circulation, producing an overload of blood about the heart and lungs, excites this class of affections; hence I have been able to trace it to long-continued intermittent fevers. It would appear that rheumatism is a frequent cause of enlargement of the heart: it is well known, by practical men, that pericarditis sometimes comes on during an attack of acute rheumatism. We find that those who have suffered repeatedly from acute rheumatism, not unfrequently fall victims to enlargement or other diseases of the heart.

In what relation these diseases stand to each other cannot at present be discussed. Gastric irritation is a very common source of disordered action of the heart, and, it is probable, often lays the foundation of structural disease in that organ.

In conclusion, it may be confidently stated, that no subject connected with the exercise of the medical profession, deserves more attentive investigation, or presents more extensive views of deep practical interest and importance.

[ON THE MORBID CONDITIONS OF THE BLOOD.]

[Every practitioner is accustomed to notice certain familiar changes which the blood undergoes in various diseases; and, although observations of this kind are as old as the oldest medical records, we have not, until lately, been made acquainted with the precise nature of these changes, and the pathological conditions on which they depend. Among the most laborious and successful inquirers into the variations which the blood undergoes in diseases, is M. Andral, whose name is honourably blended with every department of pathological research. He has published the result of his observations in a volume which has just been very ably translated into the English language, by two gentlemen of this city;* and from this instructive volume I shall take the liberty of collecting and arranging the more important facts, and, especially, those that have a practical bearing.

The first requisite, in this inquiry, is to bear in mind the relative proportions of the three grand constituents of the blood in its healthy state,—febrine, red globules, and serum.

The average proportion of *fibrine* is found to be only three parts in a thousand; but M. Andral states that the quantity may, and does vary from 25 to 35 in the healthy state.

The proportion of *red globules* is as 127 to 1000; the maximum may be stated at 140; the minimum at 110; but the former is associated with plethora, which, in the progress of development, becomes a strictly morbid condition.

The mean of the solid materials of the *serum*, which are composed almost entirely of albumen, is 80 in the 1000 parts of blood.

One of the pathological conditions of the blood is a change in the relative proportion of its three parts. "The normal elements of the blood," observes M. Andral, "in which the present state of our knowledge enables us to trace these changes of proportion, are the globules, the fibrine, the albumen of the serum, the different organic materials, other than the albumen, and which are found in the serum, (fatty matter and others,) then the inorganic principles contained in the blood, and, in particular, the free alkali, its different salts, and its water."†

[* Pathological Hæmatology.—An Essay on the Blood in Disease. By G. Andral. Translated from the French, by J. F. Meigs, and Alfred Stillé, M. D. Philadelphia, 1844.]

[† Page 37.]

Again, independently of this change of proportions, the principles of the blood may become modified in relation to their size and physical properties.

Lastly, new principles are sometimes developed in the blood, which, though foreign to its healthy condition, have their analogies in other parts of the organization; such are pus, milk, &c., which are sometimes found in the blood. With these few preliminary remarks, we proceed to inquire into the condition of the blood in different diseases, without attempting to introduce those numerical statements and experimental operations, which give so much value to M. Andral's researches, and for which the reader is necessarily referred to the work itself.

OF THE BLOOD IN PLETHORA.

The proportion of fibrine is not appreciably increased in plethora, nor is there any remarkable change in the organic materials of the serum; but the peculiar character of plethora is derived from the augmented proportion of the globules of the blood, and the much smaller quantity of water that it contains; whence its high colour, the large and moderately firm clot, and the absence of the buffy coat; or rather the latter depends upon the small proportion of fibrine relatively to the globules. This condition modifies the healthy action of the organs; all the functions are more active; digestion is rapid; respiration is favoured by the great development of the cavity of the thorax; the heart beats forcibly, and the circulation is rapid.

Plethoric individuals are subject, as every one knows, to certain symptoms, as vertigo, tinnitus aurium, preternatural heat in the head, &c., which M. Andral explains to arise not from congestion of blood in the brain, but from the passage of an excessive quantity of the globules of the blood through the vessels of that organ.

OF THE BLOOD IN ANÆMIA.

The fundamental character of anæmia is a diminution, in various degrees, of the globular element of the blood; for the fibrine and solid matter of the serum present their natural proportions. This remark holds good both in respect to spontaneous anæmia, and that which results from hæmorrhages; so, also, in pregnant women who become anæmic, the globules alone diminish. Again, men are sometimes attacked with spontaneous anæmia, which presents all the characteristics of the chlorosis of women, but the blood assumes the same proportions we have already mentioned. It is a curious fact, that the clot of blood is not unfrequently seen buffed in chlorotic patients and in persons of both sexes who are subject to anæmia; whence M. Andral and others have inferred that the buffy coat is not always an evidence of the presence of inflammation.

When the blood is deprived of a certain proportion of its globules, the patient suffers with extreme prostration, various nervous symp-

toms, and impaired digestion, respiration, and circulation. Moreover, it is not uncommon to meet with persons of a florid complexion and seemingly plethoric habit, who have, nevertheless, a deficiency of red globules.

"Observe, in effect, such individuals a little more closely, and you will be struck with their feebleness; they will have, as in the most advanced anæmia, vertigo, dyspnœa, and palpitations upon the slightest effort; they will bear with difficulty any kind of exertion, and still worse venesection, which, far from diminishing, will increase their symptoms."*

We must not, then, forget, adds the author, that at the commencement of every disease, the blood may present two great modifications in its globules, one of which belongs to plethora, the other to anæmia. It is upon a variation of increase or diminution in the cipher of the globules that depend the peculiar symptoms then observed, and which are superadded to those of the disease.

OF THE BLOOD IN FEVERS.

In the entire class of pyrexia, the *fibrine* never augments in quantity, provided they are not complicated with strictly inflammatory affections; and, in fact, it sometimes diminishes to a point unknown in any other acute disease. It is not even augmented by the presence of the variolous eruption, nor by the dothinenteritis of typhoid fever.

There are some fevers which naturally tend towards a favourable termination; while there are others which, from their very commencement, are attended by symptoms indicative of extreme irregularity of the entire organism, and which threaten dissolution itself; under these circumstances, the blood has been observed to present a peculiar appearance, verging to decomposition; whence the terms putrid, adynamic and typhoid fever. The true typhoid fever is thus characterized more or less from its commencement, and in its severer forms is a proverbial illustration of this pathological state. *This alteration of the blood consists of a diminution of the fibrine;* and is therefore the reverse of what takes place in the phlegmasiæ. The blood, when drawn, presents the following appearances: the serum and the clot are imperfectly separated from each other, whence it happens that *there seems to be but little serum in proportion to the clot.* The latter is voluminous, often filling the whole breadth of the containing vessel. "Its consistence is always slight; it is torn and broken with the greatest facility; and there are some cases where even by the slightest pressure, it may be reduced to a true condition of diffluence; it ceases then to form a single mass, and is divided into a number of grumous portions, which mix with the serum and colour it of a more or less deep red."† The network that kept the globules together and which, by its power of contraction, squeezed out the serum, remains only in an imperfect state;

[* Page 49.] [† Page 54, 55.]

whence also the great size of the clot, which is found to be in an inverse proportion to its density. It is manifest, moreover, that the size of the clot is in part due to the larger proportion of globules it contains, for these, in place of diminishing like the fibrine, are sometimes become remarkably increased in quantity. Another peculiarity of the blood, in idiopathic fevers, is the absence of the buffy coat; and M. Andral avers that he has never met with this appearance in inflammatory fever, in typhoid fever, whether of a mild or a severe form, in measles, scarlatina or in small-pox, unless there was some phlegmasial complication. In fact, the specific cause of pure pyrexial diseases "acts on the blood in such a way that it tends to destroy its spontaneously coagulable matter, while the cause which produces the phlegmasiæ tends, on the contrary, to create in that fluid a fresh proportion of that matter." Finally, in reference to the pyrexiæ, we shall merely observe the curious fact that the diminution of the red globules does not lower the temperature of the human body; which is also true in those cases wherein the blood loses a portion of its fibrine. So far is the temperature from falling under these circumstances, that it may experience an augmentation of several degrees.

THE BLOOD IN INFLAMMATION.

In the true *phlegmasiæ*, observes M. Andral, there is an excess of fibrine relatively to the globules, which is the reverse of what takes place in typhus. The clot is smaller, dense, and of greater consistence, and, if properly drawn, presents a buffy coat of variable thickness; a character which uniformly, except only in cases of anæmia, is indicative of the presence of inflammation; for, while, in the phlegmasiæ, the proportion of globules is unaltered, *the fibrine becomes redundant*, and the buffy coat reaches its full development. This phenomenon will result in every inflammation which is attended by fever, and notwithstanding the constitution may have been exhausted by chronic disease, or a more or less complete state of anæmia has been established, *the fibrine will, nevertheless, be augmented under the influence of whatever inflammation may supervene;* and this result follows whether the subjects of acute inflammation are strong or feeble, of a sanguine or of a lymphatic temperament.* The fibrine will thus increase to a point between 6 and 8 in the 1000 parts of blood; it will less frequently augment to 8 and 9, and in rare instances has reached 10½, which M. Andral regards as the maximum; while the minimum is a point between 4 and 5.

Even the stomatitis, which follows the free use of mercury, presents no exception to the preceding law. If any part of the mucous membrane of the digestive apparatus, from the fauces to the end of the colon, is attacked with a sufficient degree of inflammation to excite to fever, the fibrine is increased to 5, 6 and 7, but never higher; while

[* Page 65.]

we have already adverted to the highly interesting fact, that this increase does not occur when the inflammation, seated in the follicles, exists only as one of the elements of a general disease,—typhoid fever.*

THE BLOOD IN HÆMORRHAGE.

Every hæmorrhage diminishes the proportion of globules in the blood, but unless very prolonged or copious, it has no appreciable influence on the fibrine; in other words, the blood does not differ from that observed in the pyrexiæ, and never presents the buffy coat unless attended by some local inflammation.

THE BLOOD IN DROPSIES.

In simple dropsy the unvarying rule is that the effused serosity, even while it retains the same materials as the serum of the blood, contains a greater proportion of water, and much less of the organic principles, and especially of albumen. Thus in sixteen cases reported by M. Andral, he found the maximum of albumen to be 48, the minimum 4; so that this principle of the blood in no instance equaled the proportion that belongs to true serum. When the effusion of serosity has been excited by an inflammatory process, as in the drawing of a blister, the proportion of albumen is greatly increased. On the other hand the fluid, which is sometimes effused in hydatids of the liver, is as limpid as pure water, and shows no trace of albumen, even by the most delicate tests.

THE BLOOD IN ORGANIC DISEASES.

The mere secretion of tubercles, cancer and encephaloid matter, and the development of hydatids, do not augment the fibrine. So long as tubercle and cancer are unconnected with inflammation, the fibrine remains unaltered. "But as the softening of these hard masses advances, and a process of elimination analogous to inflammation is set up around them, the blood becomes more and more charged with fibrine; so that the excessive formation of this principle is not due to the development of the accidental production, but wholly to the inflammation excited by the latter at certain stages of its existence. This is a new proof to be added to the many others which show that the process engendering the different accidental productions, such as tubercle, cancer, melanosis, hydatid, &c., is not of an inflammatory nature."†

The blood in incipient phthisis always presents a diminution of red globules, varying from 122 as the maximum, to 99 as the minimum; so that such persons are in a state of commencing anæmia,

[* Page 71.] [† Page 119.]

their blood having the character which results from repeated bleedings. In the advanced stages of phthisis the globules become less and less in proportion, until they frequently fall as low as 80; and M. Andral mentions a solitary example at 72. Is it not strange, he inquires, that in chlorosis, without any appreciable alterations of the lungs, or other solid, the globules should even fall lower than 30, while their minimum is at 72 in a disease which it should seem that the state of the lungs could hardly permit the formation of the blood at all? And yet not only do the globules not diminish as much as might be expected, but, when even a large part of the lung is destroyed, the fibrine increases, and the temperature of the body may rise, just as in typhoid fever, or acute pneumonia."*

OF THE BLOOD IN THE NEUROSES.

Clinical observation has long since demonstrated that one of the most frequent causes of nervous diseases is a certain feebleness of constitution; whence the scantiness of the globules in these affections. "Now it is well known that the increase or decrease of the globules of the blood indicates the vigour or feebleness of the constitution. If the globules be diminished, either by depletion or by insufficient nourishment, the nervous disorder will certainly be aggravated; but if the opposite course be pursued, in all probability the nervous affection will be mitigated. In this way may be explained the happy influence which the ferruginous preparations and substantial and nutritious food exert upon the termination of certain neuroses: and it is because the globules are inevitably diminished by depletion and diet, that we so often see such disturbance of the nervous functions follow great loss of blood, and a too prolonged abstinence from food."†

In conclusion, I may repeat, that this abstract, while it may serve to show the practical importance of the work of M. Andral, should not be allowed to supersede the work itself, which is worthy of the careful perusal and study of every member of the medical profession.]

[* Page 123.] [† Page 129.]

CHAPTER II.

PALPITATION, AND ANGINA PECTORIS.

PALPITATION.

By this term I mean the occurrence of an unusually strong and frequent pulsation of the heart, without any organic lesion; the palpitations produced by disease of the heart itself are to be considered afterwards.* The affection now under consideration is to be regarded as purely nervous, occasioned by excessive indulgence in various passions, by mental emotions, and very frequently, by a disordered state of the stomach and bowels. Stimulants of all kinds, violent exercise, excessive depletion, occasionally produce it. Palpitation is more readily excited in persons of a nervous and sanguine temperament; when first observed, the affection is generally slight and transient, but by frequent repetition, the organ at last becomes so irritable that the least circumstance reproduces it.

Nervous palpitations are frequently very distressing, even when the body is in a perfect state of repose; particularly during the first part of the night, and often prevent sleep for many hours. The action of the heart is not only accelerated, but increased in impulse and sound; sometimes the action is tumultuous, and occasionally so strong, that the person affected feels it painfully. There is sometimes a sensation of internal agitation, particularly in the head and abdomen, and, as happens in hysteria, the urine is copious and limpid.

[The pulse is extremely irregular, and often intermittent. In the language of Dr. Abercrombie, there is a series of quick, weak, fluttering, irregular beats, with slight anxiety, acceleration of respiration, and a grieving sensation in the epigastrium, all which may continue from a few minutes to an hour, or several hours, recurring at long intervals, or they may be of constant repetition throughout the day. A yet greater degree of the affection amounts to a fit of palpitation, consisting in increased impulse, sound and frequency of the beats, sometimes with irregularity, and generally with more or less

[* Mr. Teale calls this affection *Neuralgia of the Heart;* but adds, that he uses the term *neuralgia* in an extended signification, so as to embrace not only those conditions which are accompanied with *pain*, but various other morbid states of the functions of nerves.—*On Neuralgic Diseases, &c.*, p. 42.]

anxiety and dyspnœa; there may also be pain in the region of the heart, with constriction of the chest, and flatulent eructations.]

Nervous palpitations are not to be neglected, as by frequent repetition they may lead to disease of structure, either in the heart itself, or in some other organ. Laennec says, that he has never seen any proof of the accuracy of this opinion, but I think I have.

According to Laennec, in nervous palpitation, the first impression conveyed by the stethoscope is, that the heart is not enlarged. The sound, though clear, is not heard loudly over a great extent, but this very much depends upon the thickness of the parietes of the chest. In thin people, I hear the sound during palpitation, in every spot on the anterior part of the chest; and when the heart is acting very violently, I have perceived it in the back also. With respect to the impulse, Laennec states, that in the nervous affection, the head of the observer is never sensibly elevated. This, he says, is the most important and certain of any sign, when taken in conjunction with the frequency of the pulsations, which are always quicker than natural, most frequently from 84 to 96 in the minute. I have seen and felt the impulse of the heart in nervous palpitation, not only elevate the head of the observer, but raise the bed-clothes. Dr. Ferriar, one of the most accurate of observers, in detailing a case of violent palpitation of the heart, states, (p. 205, vol. 1st,) "Every stroke of the pulsation raised her clothes, so as to be visible at some distance;" under the use of castor, with attention to her clothing and diet, she recovered "in the course of a few weeks." In this affection, there are rarely any signs of determination of blood to the head or chest.

It is rare that palpitations, produced by functional derangement of the heart, continue long at any time: they are in general transient, and are perhaps less troublesome when the patient is taking exercise in the open air than at other times. When of long continuance, and without intermission, they will, for the most part, be found to depend on some organic lesion.

I have paid great attention, for the past few years, to what are called nervous palpitations, and have been astonished at their extreme frequency. I have made it a rule to interrogate every patient on this subject, and am satisfied that at least one fourth of the whole number suffers with irregular action of the heart. It is even common in infancy; and although the patient may be too young to describe his feelings, the intermittent pulse detects the irregularity of the heart's action. It is more frequent, however, in latter life, in women than in men, in the old than in the young, in those of a relaxed and irritable habit than in the robust. It is familiar to dyspeptic persons, in whom I have known it to be very harassing when the stomach was empty, for example, just before dinner: under such circumstances, moderate eating relieves the palpitation; but if the patient continues to eat to repletion, or indulges in stimulants, so as to render digestion laborious, the palpitation not only returns but is greatly aggravated.

Mr. Teale refers this disease to a morbid state of the cervical ganglia of the sympathetic nerve. He also remarks, and I think with great truth, that "palpitations purely nervous are principally distin-

guished from palpitations dependent upon organic disease of the heart, by the absence of other symptoms which denote a change of structure in that organ. In hypertrophy the pulsations of the heart are more vehement and more uniform: in dilatation they are felt over an unnatural extent of the chest; when there is obstruction to the circulation from contracted orifices, from loss of function in the valves, or from morbid alterations of the muscular structure, there are generally, in a greater or less degree, blueness, œdema, &c."*

Dr. Hope has pointed out several varieties of *inorganic palpitation*, which are the more important, because the treatment is different, and even opposite.

1. Palpitation dependent on dyspepsia, hypochondriasis, hysteria, latent gout, mental perturbations of all kinds, and depressing excesses, constitutes the first variety, and embraces a very large class. This affection may be readily distinguished from that which occurs in disease of the heart, by the occasional nature of the palpitation; by its being relieved, instead of excited, by active exertion; its appearance while the patient is at rest; by a fluttering sensation in the epigastrium; by the general prevalence of nervous symptoms, which aggravate the palpitation; by the regularity of the pulse in the interval between the paroxysms; and by the absence of valvular and aortic murmurs, and of undue impulse.

2. Palpitation from *anæmia*,--a term which is now adopted for a peculiar condition of both sexes, but which was formerly restricted to the female constitution, under the name of *chlorosis*. This part of the inquiry we shall postpone for consideration in a future part of the work.

3. Palpitation from too stimulant diet. Dr. Hope has particularly remarked this condition in young men who abandon active exercise in the country, where they have indulged a full diet, and come to reside in large cities, and to follow sedentary pursuits, without adapting their diet to the change in their habits. A febrile excitement takes place, with an accelerated pulse, whitish tongue, constipation, flushed face, with throbbing in the head, and sometimes of the whole body. Palpitation is induced on slight exertion, mental emotions, &c. This is, perhaps, the most manageable of the several forms of this malady.

4. Palpitation from plethora. This condition is closely analogous to the one just described. It occurs in persons of a plethoric habit, who continue to live full, without the use of active exercise. In fact, the symptoms proceed from an engorged condition of the heart and whole vascular system.

Treatment.—If we have careful reference to the several varieties of this affection, we shall find it necessary to vary the treatment according to the characters of each. When it arises from too stimulant a diet, or from any other irregularity of living, the treatment is too obvious to require further explanation than is contained in the chapter on dyspepsia. So, also, when it occurs in persons of a full habit.]

[* Treatise on Neuralgic Diseases, p. 44.]

Venesection, or the application of leeches, is sometimes advisable, particularly in young plethoric individuals, who are affected at the same time with some febrile movement. French practitioners recommend the application of leeches to the anus in nervous palpitations. Laxatives, cold or warm bathing, moderate exercise in the open air, light nourishing diet, early hours, and avoiding the exciting cause, will usually be found successful, especially in those cases which present a divided nervous or anæmic character. When the affection, however, resists these remedies, various antispasmodics have been recommended, as opium, ether, musk, castor, and valerian; of all these, perhaps the best is the volatile tincture of valerian.

[I have somewhere seen it asserted that twelve grains of camphor, given in divided doses through the day, will quiet the most tumultuous inorganic action of the heart.

When palpitation can be traced to spinal irritation, Mr. Teale's plan of applying the remedies to the spine itself should not be omitted. It must, however, be acknowledged, that although leeching, cupping and blistering to the spine will sometimes relieve, and even remove the palpitations for a time, yet they are very liable to recur; and most persons seem rather disposed to bear them than to submit to the frequent repetition or long continuance of active counter-irritation. I am convinced that long travel, and active occupation of body and mind, avoiding, of course, excessive fatigue and over-excitement, are the most certain means of counteracting nervous palpitations. In one instance considerable relief was obtained by wearing a broad belt, so as to compress and support the lower part of the abdomen.]

ANGINA PECTORIS.—NEURALGIA OF THE HEART.

This dreadful disease generally makes its attack in the following manner: It is commonly first felt when an individual is walking up hill; he is suddenly and unexpectedly seized with an agonizing sensation in his breast, a little to the left of the sternum; he experiences a sense of constriction and suffocation, which obliges him to stop. After a little rest, these symptoms disappear, and he flatters himself that it is nothing more than a common stitch in the side, from walking too quickly. I have known a person fall down in a state of temporary asphyxia, even in the first attack; those affected in this manner fancy that they have merely fainted from excessive pain. Several such attacks may take place in the course of a few years, or even a few months, the paroxysms continuing only for one or two minutes, and the person thinks nothing further of them. In the course of time, however, they return more frequently; the pain becomes more and more excruciating, and the paroxysms continue longer. In the early part of the disease, exercise seems to be required to bring on a paroxysm, but when more advanced, every little excitement or exertion of mind or body, or eating an indigestible article of food, produces an attack; at last, the paroxysm comes on without any assignable cause, even when in bed, and during sleep.

At the first onset of the disease, the pain is usually confined to the breast, in the region of the heart; afterwards it extends towards the shoulders, and frequently affects the superior extremities down to the wrists. I had a gentleman under my care, who complained of the pain extending from the breast to the arms, stopping exactly at the insertion of the deltoid muscle on each side. In severe cases, the patient is pale, perhaps quite ghastly—his features contracted—his eyes hollow—his countenance expressive of the most dreadful suffering;—his body perhaps cold, and covered with a cold clammy sweat;—his respiration is quick, but free; that is to say, the patient can, if you desire him, occasionally take in a deep inspiration. In such cases, the pulse is in general slow, and so contracted and weak as scarcely to be perceptible; but this varies much, for in other instances, particularly when the skin is warm, and the face flushed, the pulse is quick, strong and irregular. I have seen cases in which it was perfectly natural in strength and number of pulsations during a paroxysm.

In slight cases, the whole paroxysm is sometimes over in half an hour; in others, in an hour; and it ceases often with a discharge of flatus from the stomach and bowels. Sometimes it disappears suddenly leaving no sense of uneasiness behind; at others, considerable soreness remains in the chest for several hours or days.

In the most dreadful cases, the patient never feels entirely free from uneasiness and constriction in the chest, and he dreads making the least exertion.

In the year 1826, I was requested, by one of my pupils, to see a gentleman who had had several attacks of this disease, and was then labouring under one of the most severe paroxysms I have ever witnessed, which had continued for several days before my visit. It was most afflicting to see a strong and a brave man weeping like a child, and imploring relief in the most impassioned strain.

An interesting case of angina pectoris occurred in my dispensary practice in the year 1828. The patient was carefully attended by the late Dr. T. Briggs,* formerly of Liverpool, from whose notes the following particulars are taken:—James Terry, æt. 38, a remarkably tall and athletic man, by trade a sawyer, habits temperate. Has been ill three years; his complaints began with occasional fits of palpitation, and severe pain in the region of the heart; but he was able to continue at his work for the first three months. He was then obliged to relinquish his occupation from the frequency and violence of the paroxysms, which were most severe when walking, or making any unusual exertion. He found relief by pressing a walking stick strongly against the breast during the fit. His symptoms have become progressively worse: he has been under the care of many medical gentlemen, and has been put under the influence of almost every

* Dr. Briggs' benevolent and enterprising spirit led him to join the late expedition to Africa, where he fell a victim to disease; and I regret to learn, that an effort has been made to tarnish his reputation by some one connected with the enterprise, by way of accounting for its failure. But it has not produced the desired effect. His aged parents may rest assured, that notwithstanding the wicked attempt to throw odium upon their son, his memory will be long cherished by all who had the pleasure of knowing him.

known remedy. Mr. Liston ordered him to be bled twice, and blistered many times, without relief. In the infirmary of Edinburgh, under Dr. Alison's care, he was bled again, and took mercurial medicine till the mouth was made sore, with temporary benefit. But in a fortnight he became as bad as ever he had been, and Dr. Alison advised him to go to the country. In continuing the history of the case, he stated that a gentleman punctured "*the bag of his heart*," and blew air into it; "*but I understand*," says Dr. Briggs, "*that the air was injected from a bladder into the cavity of the left pleura, and was taken out next day.*"

Terry is now (13th Nov. 1828) seldom free from violent pain in the chest, which he compares to that produced by boiling water applied to the body. The pain shoots down the arms to the wrists; it is always brought on by any muscular exertion, during the act of eating or drinking, and voiding stools or urine, and by lying down in a recumbent posture. He is always worse during the night. The violence and extent of the pain can be diminished by taking a deep inspiration, and keeping the lungs distended, and by pressing the chest with considerable force against the back of a heavy old-fashioned arm chair which he keeps for the purpose, and in this position he generally spends the night. The inferior extremities are œdematous, and greatly enlarged. Appetite good; but he eats very little, and that slowly, in consequence of the exacerbation of pain during the act of swallowing. Digestion appears to be perfect, and the state of the bowels regular. The heart's impulse is very great —it shakes the whole frame, and when the patient leans over the chair, the pulsations may be counted by the violent motion of the heart against the posterior part of the thorax. Over every part of the thorax there is a sound like the rushing of water, corresponding to the contractions of the heart. This sound masks all other sounds, even that of respiration; and a similar sound is perceived by applying the ear over any considerable artery. The pulse is strong and full—it vibrates against the finger, imparting a sensation as if the artery were ready to burst. The pulse, which is sometimes stronger in one arm than the other, generally beats 60 in a minute—now and then there is a double beat, as if an additional pulsation were interposed; during a paroxysm the pulse is suddenly quickened so as to beat 120.

At this period the patient's sufferings were occasionally mitigated by large doses of the wine of colchicum, and tincture of hyoscyamus; but he soon gave up these remedies, from the languor and drowsiness they occasioned. Death took place early in the morning of the 9th December, having complained for some time previously of severe pain in the right thigh and knee, which were intensely swollen from effusion in the cellular substance. Before his death, he talked calmly of the event which was to terminate the most severe bodily suffering I have ever had the misfortune to witness; and he desired his wife to allow me to take away any part of his body that might be found diseased on dissection.

The examination of the body took place on the following day, 10th December, 36 hours after death.

Putrefaction had already made great progress; the cuticle was everywhere loose, and the body crepitous from air in the subcutaneous cellular tissue. The lower extremities and scrotum were tense from œdema. The thorax capacious and well formed, only it was deeply indented by the constant pressure on the chair.

On opening the thorax, the pericardium, containing a heart of enormous size, seemed to fill the chest, and concealed the other contents. It lay obliquely across, occupying a space of about fourteen inches, extending from the 7th left rib to the 1st on the opposite side. In size it resembled a large ox's bladder fully distended. The right lung, compressed into a narrow space, adhered firmly to the surrounding parietes everywhere, except in the antero-superior part. It was greatly engorged with blood, but upon minute examination, was found healthy in structure. The left lung, free from adhesions, was found compressed into a small space also. The heart was then carefully removed, when the fore part of the bodies of five or six of the dorsal vertebræ were observed to be partially absorbed by the pressure of the heart. On opening the pericardium, it was found to contain a small quantity of serous fluid, and some bubbles of air; its coats presented a natural appearance, and there were no adhesions with the heart. The heart appeared to all present to be about the size of that of an ox—it was enlarged in every part, and the left auricle and ventricle were fully distended with blood. Both auricles and ventricles were in a state of hypertrophy, and greatly dilated; the left ventricle contained more than twelve ounces of blood. The orifices were all remarkably dilated also, but the valvular apparatus was found in a sound state. The size of the aorta was not much, if at all, increased from the arch; its internal surface was vividly red, as were the mucous membranes in every situation. The heart and pericardium, forming two dried preparations, are preserved in my museum.

Angina pectoris rarely attacks people under forty; gouty subjects, and those who are corpulent, seem to be more liable to it than others. It appears to attack men more than women; and I believe that sedentary habits create a predisposition to it, as well as long-continued and very violent bodily exertion.

Appearances on dissection, and pathological remarks.—This disease has attracted considerable attention on the part of pathologists to ascertain its nature and seat, since it was first noticed by Dr. Heberden, in 1768, in a paper contained in the 2d vol. of the "Transactions of the College of Physicians" of London.

Subsequent writers have committed a great error by attributing angina pectoris to one particular disorganization: thus, one has attributed it to ossification of the cartilaginous extremities of the ribs, a second, to ossification of the valves of the heart; a third, to fat accumulated about the heart; a fourth to dilatation and hypertrophy of the heart. Dr. Parry supposed that it depended on ossification of the coronary arteries;—Dr. Haygarth, on inflammation of the mediastinum;—Dr. Hooper, on diseases of the pericardium;—and there are many who think it is produced by asthma. Dr. Hosack, an American physician, is of opinion that it most frequently arises from

general plethora, more particularly "from a disproportionate accumulation of blood in the heart and large vessels." I have seen each of these morbid appearances on dissection, in subjects who were never affected with angina pectoris; and it has been alleged, that patients have died suddenly from this affection, in whose bodies not the slightest trace of disease of any kind was perceptible, which has led some to assert that it depends upon scrofula, syphilis, a nervous temperament, or a peculiar affection of the *par vagum*. Dr. Parry's opinion seems still to have great weight with many in the profession; but it may be mentioned, that I have seen two cases in which the coronary arteries were extensively ossified, and a third, in which they were completely so, and yet none of the patients had symptoms of this disease. A remarkable case of the same kind, which happened many years ago, is detailed in the 1st vol. of the "Medical Communications," by Mr. Watson. In justice, however, to the memory of Dr. Parry, it ought to be stated, that he did not attribute the disease to the effects of ossification of the coronary arteries alone, for he distinctly states, that the symptoms show that an accumulation of blood *takes place about the heart and large vessels*. This statement goes so far to confirm the opinion of Dr. Hosack, which Dr. Forbes assures us is more in accordance with his own observation than any of the other opinions; but he adds, that "in persons subject to this complaint, in whom no severe organic disease of the heart existed, I have generally found, by auscultation, that the organ was possessed of thin parietes and feeble powers."* In my work on "Puerperal Fever," which was published in the year 1822, a case of angina pectoris is recorded, which was evidently produced by an accumulation of blood in the heart and large vessels. The life of the individual appears to have been saved by timely blood-letting; thirteen years have now elapsed, and there has been no tendency to a return of the disease.

[Angina pectoris is now regarded, in accordance with the views of Laennec, as a neuralgia of the nerves of the heart, mostly connected with some organic lesion of that organ, and certainly always aggravated by such lesions. But here again pathologists differ as to the nerves involved in the affection, Desportes referring it to the pneumogastric nerve, and Laennec to the filaments which the heart derives from the sympathetic. M. Bouillaud thinks the pain is seated in the phrenic and intercostal nerves. There is no reason why it may not be sometimes in one of these nerves, sometimes in all; and be propagated to others, as Dr. Hope remarks, by sympathy or anastomosis, viz: "to the superficial cervical plexus and its anterior thoracic branches, whence proceeds the pain in the neck, and on the surface of the chest; to the branches of the brachial plexus, especially the ulnar, whence arises the pain descending to the elbow, and sometimes to the fingers; finally to the branches of the lumbar and sacral plexus, whence the pain and numbness felt in the thighs and legs, and even in the spermatic cord and testicles."†]

Treatment.—The symptoms of angina pectoris occasionally ac-

* Trans. of Laennec, p. 692.

[† Hope. Diseases of the Heart, p. 465.]

company such a variety of organic lesions, and take place from what, to all appearance, may be considered a neuralgic affection, that it is scarcely to be wondered at that so many remedies have been recommended, and so few found serviceable.

If there be marks of general plethora, with or without an organic affection of the heart, blood is to be taken from a vein, particularly if there be signs of an accumulation of blood either in the heart or lungs; at the same time, we must be careful to restore the heat of the body, if it be below the natural standard. I have so frequently seen a neglected state of the stomach and bowels precede an attack of angina pectoris, that I consider it of the greatest importance to clear out the primæ viæ as speedily as possible. Should the attack come on soon after a meal, an emetic is to be prescribed; if not, purgatives are to be had recourse to, and repeated at short intervals. I have seen leeches serviceable, as well as the application of a large mustard plaster over the præcordial region. Long-continued contra-irritation on the chest, with tartar-emetic ointment, is to be persevered in for a considerable time, and repeated at intervals, upon the least unpleasant sensation in the chest.

It is a great matter to be able to say, whether or not there be any organic disease of the heart; and although the stethoscope is said not to be so useful in diseases of the heart as of the lungs, yet, in a majority of cases, taken along with other symptoms, we shall be able to determine this point with sufficient accuracy. If there be no disease of the heart, very large opiates, united with colchicum, will be occasionally found singularly beneficial; even in Terry's case, (p. 17,) this treatment was serviceable. If the bowels are in a bad state, a pill may be exhibited every second or third hour, composed of five grains of calomel, the same quantity of opium, and three or four drops of oil of croton. Many object to the use of opium in such cases, but without sufficient grounds. The celebrated John Hunter took opium, it is alleged, with an aggravation of the disease; but the small doses he used were quite inadequate in such a severe disease. It is stated by Sir Everard Home, that John Hunter was advised to take wine, which he did accordingly, but found the paroxysms more readily brought on after it. Laennec speaks highly of magnetism in such cases, and although too much cried up at one time by medical men, he thinks it is too much neglected at present. He used it in the following manner:—"I apply," says he, "two strongly magnetized steel plates, of a line in thickness, of an oval shape, and bent so as to fit the part—one to the left præcordial region, and another exactly opposite on the back, in such a manner, that the magnetic current shall traverse the affected part. This method is not infallible, any more than others employed in nervous cases; but I may say that it has succeeded better in my hands, in the case of angina, than any other, as well in relieving the paroxysm, as in keeping it off." And he subsequently assures us, that when the magnet affords little relief, a good effect has followed the application of a small blister under the anterior plate.

Should our remedies unfortunately fail in producing relief during a paroxysm of angina pectoris, we have the consolation to know, that

much may be done to prevent a return of the complaint if there be no organic disease of the heart. Fatigue and violent exercise, together with all excesses, are to be carefully avoided, as also stimulants and the application of cold. The diet of a patient so circumstanced must be light, and easy of digestion, and he should limit himself to a certain quantity of food by weight: and he should not drink more than is necessary for the purposes of digestion. Assiduous attention must be paid to the state of the bowels, to prevent constipation; and the patient should regulate himself by medicine, or other means, that he shall have one or two stools daily.

CHAPTER III.

PERICARDITIS AND CARDITIS.

PERICARDITIS.

This is a disease, which is seldom so well marked in its external characters, as the importance of the organ affected would lead us to expect. It is sometimes so insidious as to produce considerable disorganization before severe symptoms appear to attract our attention; at others, it creates constitutional disturbance, which indicates a disease of great severity; but our attention becomes fixed, perhaps, upon some local pain, at a distance from the seat of the disease, to relieve which, our best efforts are directed. In truth, as Laennec observes—"There are few diseases attended by more variable symptoms, or of more difficult diagnosis than this." And he assures us that it is as frequently mistaken as recognized:—"This is the result (says he) of my own experience up to the present time; and to mine I may add that of many of my medical brethren, and among others, M. Recamier." Cullen confesses that he knew little upon this subject—so little, that he has not devoted more than twenty-seven lines, in his work on the practice of physic, to the consideration of carditis and pericarditis; and his concluding words are—"There is, therefore, upon the whole, no room for our treating more particularly of inflammation of the heart or pericardium." Nevertheless, he has given the following definition:—"Pyrexia; pain in the region of the heart; anxiety; difficult respiration; cough; unequal pulse; palpitation; syncope. All the systematic authors seem unfortunately to have followed this definition, in the descriptions which they have given of this disease, instead of copying from nature.

By pericarditis, I mean an inflammation of an acute, subacute, or chronic nature, of the serous membrane which lines the pericardium, and also that which gives an external covering to the heart itself, and the roots of the great vessels. In describing the phenomena of this disease, it must be kept in recollection, that in this, as well as in other inflammatory affections, a great number of varieties occur, giving rise to symptoms more or less urgent. In two or three instances, I have seen the symptoms so urgent, as to produce great affliction; in these, the pain was situated in the region of the heart, increased on taking an inspiration, as well as by any considerable motion of the trunk, which produced a tendency to syncope; the breathing

anxious and irregular, rather than difficult; cough but slight in proportion to the anxiety of the breathing; the countenance sharp, and peculiarly expressive of distress: the pulse was regular at first but small like a wire; it generally becomes irregular, however, during the act of speaking, and when the patient moves. It is of great consequence, in all severe diseases, to compare the strength of the pulse at the wrist, with the action of the heart, by applying the ear in the same situation; and this precaution is peculiarly necessary in diseases of the heart and pericardium. In the latter, the pulse, as already stated, is generally wiry and small, when the action of the heart itself is perhaps excessively strong, or I should have rather said tumultuous. Even in insidious cases, an inequality will sometimes be perceived between the strength of the heart's action, and that of the pulse at the wrist. A case lately occurred to me of an insidious nature, which I shall briefly relate:—A middle-aged gentleman, having an extraordinary curvature of the spine, but who had nevertheless, enjoyed robust health, remarkable for agility and muscular strength, called at my house to seek advice. He told me that, for a week previously, he had been affected with an asthmatic complaint, which had now increased to such a degree, that he could scarcely take any exercise; that he passed sleepless nights; was afflicted with cough, attended by some expectoration; but he described his greatest suffering to proceed from violent spasmodic contractions affecting the muscles of the extremities. He had not lost much flesh, but laboured under considerable oppression and debility. On examining the chest, he was found to be somewhat chicken-breasted; he was unable to fill his lungs completely; the action of the heart was felt over a large space, tumultuous and irregular, intermitting occasionally six times in the minute, generally three or four; the pulse at the wrist having the same irregular and intermittent character, but it was small and weak in proportion to the strength of the heart's action. He stated that his appetite was bad, that it was almost impossible to keep his extremities warm, and that he chiefly attributed his complaints to flatulency. I desired him to go home, and upon no account to venture abroad again. Next day I found him rather better, having had several copious stools, with which he passed a great quantity of flatus;—this was on Wednesday. On Thursday and Friday he still continued to improve; but I had no doubt he laboured under an affection of the heart, and, much to his disappointment gave strict orders that he was on no account to go out. On Saturday, I found him very ill, complaining of great oppression in his breast, and difficulty of breathing; but his chief suffering proceeded from cramps in his extremities, and occasional spasmodic rigidity of the whole body, which was sometimes bent backwards, supported by the occiput and heels; and his landlady said, that the spasms were so severe during the night, that he could scarcely be kept in bed. He died suddenly in the course of the following night. On dissection, the brain was found to be quite healthy. No trace of disease was found in the spinal cord except that a very old adhesion was discovered, and two or three large ossific scales on the surface of the arachnoid membrane. The pericardium was large, and contained a considerable

quantity of turbid serum, with a deposition of lymph, adhering in various places to the surface of the heart, but which was more abundant at the roots of the great vessels; the heart itself was large, although it did not seem disproportioned in its different parts; the valves were sound. That I mistook the case, is very evident, and it is related expressly to show the circumstances which led me astray in the investigation. Had the individual not had a deformed spine, and severe cramps, I might, in all probability, have detected the true nature of the disease. I considered the dyspnœa to proceed from a nervous affection of the lungs, complicated with enlargement of the heart. Previously to the occurrence of this case, I would have declared it to be impossible for any one, labouring under pericarditis, to be able to walk more than half a mile up a hill, which this gentleman did when he came to me on the Tuesday before his death; and when returning home, before he reached his lodgings, he had to mount three flights of stairs.—Since the publication of the first edition, I have seen several severe and insidious cases, all of which were connected with acute rheumatic attacks. In one fatal case, there was no pain in the thoracic region, but the patient complained of oppression, and was affected with slight dyspnœa; the action of the heart was tumultuous, and the pulse quick. The tongue was rough, deeply fissured and red.

Laennec and other practical physicians agree, that, in the present state of our science, we are not acquainted with any symptoms which point out, with certainty, the presence of pericarditis. Perhaps this is more to be attribued to imperfect observation of the cases which have occurred, (very good examples of which are quoted above,) than to the obscure nature of the disease itself. M. Louis thinks that our ignorance of diagnostic signs is to be attributed to our imperfect observations—and in this opinion Dr. Scott concurs. According to these gentlemen, the observations of authors have generally been incomplete—many of the means of diagnosis have been neglected, and several circumstances of the greatest importance in forming an opinion of the nature of the disease, have been overlooked. From his own observations on this disease, and from an analysis of the cases on record, M. Louis is inclined to draw the following conclusions:—that pericarditis is characterized by pain in the region of the heart, sometimes extending to the back and epigastrium, attacking the patient suddenly, and accompanied with a greater or less degree of oppression, and in certain cases with palpitation—irregularity and intermission of the pulse, and more particularly by a dull sound in the præcordial region, the other parts of the left side of the thorax remaining perfectly sonorous. Syncope sometimes also accompanies these symptoms, and occasionally infiltration of the extremities—this probably takes place when the progress of the disease has not been very rapid; but when it does appear, as it is one of the symptoms of disease of the heart, it ought particularly to fix our attention, and lead us to suspect an affection of that organ, or confirm our diagnosis, if we have already formed one. From the cases on record, Louis thinks that the disease may be detected in half of the cases where it exists; and when free from

complication, he considers it to be as easily recognizable as the best marked pleurisy.

Causes.—These are, generally speaking, the same as produce other inflammatory affections within the chest. It may be attributed to moral causes also, such as grief and anxiety; and there can be no doubt that it is often occasioned by a metastasis during the course of rheumatism and gout.

[*Physical signs.*—One of the most obvious of these is that derived from the attrition of the two surfaces of the pericardium, (which is roughened by the secretion of lymph,) and which has been compared to the grating or rasping of woad; or sometimes to the rustling of silk or the crackling of parchment; and Dr. Pennock adds that these friction sounds, when the effusion is inconsiderable, are first heard near the base of the heart; that they are almost always double, and frequently are triple or more; whence the term "to and fro sounds," in use among English writers. The friction, in strongly marked cases, is also perfectly sensible to the touch.

Adhesion may be inferred from the cessation of these attrition murmurs, and a strong jogging action of the heart, even though the fever has subsided.*

Contrary to what might be anticipated, effusions of water in the pericardium (hydropericardium) are but obscurely detected by stethoscopic signs. This condition does not take place until the disease is somewhat advanced, and is first detected by a *circumscribed* deficiency of sound, which extends more or less beyond the limits of the cardiac region, and sometimes occupying a large part of the left side of the chest. But if the effusion be complicated with diseases of the lungs or pleura, the diagnosis becomes yet more difficult and deceptive.]

Appearances on dissection.—There is very seldom any redness to be seen in the acute affection; but we always find flakes of lymph floating in a larger or smaller quantity of serum, and attached to the membrane itself. Sometimes the pericardium is amazingly distended, containing a quart, and even more of this fluid. When any redness is observed, it is generally in small spots upon the surface of the pericardium. In some chronic cases, the pericardium is much thickened, and the heart enveloped with exudation. As Laennec very justly observes, it rarely presents the appearances of an equable membranous layer, like the false membrane of pleurisy; on the contrary, its surface is most frequently marked by a great number of rough and irregular prominences. If the patient survive the first effects of the effusion, the lymphy part becomes quickly absorbed, and afterwards we find the albuminous matter slightly glueing the pericardium to the heart. I have seen some cases where there was apparently no serous effusion, but a considerable quantity of lymph thrown out everywhere over the heart. Occasionally, we find the pericardium closely attached to the heart, forming a dense fibro-cartilaginous mass, incapable of being separated, even by dissection. Within these few years, I have seen two cases of this sort; one individual died

* Hope. Loco citat.

during an attack of erysipelas, from the united effects of inflammation of the membranes of the brain and mucous membrane of the lungs: the disease in the pericardium must have been of very long standing, but he enjoyed, nevertheless, excellent health, and great activity of body and mind, up to the period of his last illness. The subject of the other case was a young athletic man, who died from inflammation of the substance of the brain after a very short illness. About a year before, he had a severe indisposition, which was supposed to be hepatitis, and treated accordingly. After being in considerable danger, he gradually recovered health and strength. On dissection, the pericardium was found thickened and indurated, adhering firmly to every part of the heart, it being impossible to separate it in many places, even by careful dissection, without taking away the proper membrane of the heart. These two cases, and several others which I could quote, completely disprove the assertion of Corvisart, that no person can live, and preserve a good state of health, who is affected with a complete and close adhesion of the pericardium to the heart. On other occasions, the false membrane appears to be converted into cellular substance; and, although united to the heart, the adhesions are loose and long, and the pericardium can be easily separated.

On the surface of the heart, we sometimes observe opaque, white spots, generally of an oval figure, about an inch in length, sometimes much smaller, and at others, very much larger. A great difference of opinion prevailed respecting the true nature of these spots. From my own observations and examinations after death, I have no doubt that they are the result of a partial inflammatory action on the surface of the proper covering of the heart. I used formerly to find it impossible to separate these in such a manner as to prove whether they were on the outside or beneath the serous membrane. At last, after submitting the parts to maceration for a few days, I have been able to remove them completely from the heart, leaving the serous membrane untouched, and apparently in a healthy state.—Baillie and Laennec are of the same opinion; Corvisart, on the other hand, considers these productions to be situated beneath the serous membrane, and entirely unconnected with inflammatory action.

Laennec states, that a tuberculous formation may sometimes take place, and thereby convert the acute into the chronic disease, as it frequently happens in the case of pleurisy and peritonitis, of which he has seen two instances; a third is noticed by Corvisart; and I have seen one case of it myself, in a man who died of a surgical disease, quite unconnected with that of the heart.

The muscular substance of the heart, in many of these cases, looks whitish, as if it had been macerated. Corvisart, and many others, suppose this loss of colour, particularly, when attended by softening, to be a sign of inflammation in the substance of the heart itself; but I feel disposed to join Laennec in doubting the correctness of this opinion. He states, that we can never be sure of the existence of inflammation in a muscular organ, unless we find a deposition of pus, or lymph among its fibres.

[Adhesions of the two surfaces of the pericardium are a frequent result of their inflammation; and we would, à priori, infer that this

condition in so vital an organ, would tend to cripple and rapidly to extinguish the motions of the heart. Extensive observations made by the pathologists of Europe, prove this not to be the case; and such, also, is the result of my own experience. I attended a woman in the lower walks of life who died of protracted phthisis. On examining the heart, it presented continuous adhesions over nearly the whole anterior surface, not less than three inches in diameter; yet there was no remaining disease, nor had the patient during her illness complained of pain or uneasiness in that region. The pericarditis had probably occurred a long time previous, and its results had in no appreciable way impaired the subsequent actions of the heart itself.

Granulations not unfrequently follow pericarditis. They may occupy or cover either surface of the pericardium, and sometimes attain a magnitude and abundance which would seem wholly incompatible with the heart's motions. A very remarkable case of this kind occurred a few years since in the practice of Dr. Spackman, of this city, in the person of a negro of forty years of age. Having been invited to examine the diseased parts, I made drawings of them which, together with Dr. Spackman's account of the appearances on dissection, were subsequently published.* The entire internal surface of the pericardium, as well the reflected portion as that covering the heart, was covered by a preternatural deposit, in some places constituted of small, irregular, granular masses, extremely vascular, and varying in size from a pin's head to a small bean. These caruncles were, in some places, so grouped as to form pendulous excrescences, especially towards the base and apex of the heart, and on the reflected pericardium; and some of these were as large as an almond. The pulmonary artery was contracted at its exit from the right ventricle from similar excrescences, and the pericardium was enormously distended with water; but the heart itself, excepting a partial dilatation, showed no evidence of disease.]

Treatment.—If the disease be detected early, there can be no doubt of the propriety of general bleeding, carried to the utmost extent the patient can bear, and repeated or not, according to circumstances. Leeches are to be had recourse to, when necessary; and it must be recollected, in treating an inflammation of a vital organ, that decision and promptness are of the utmost consequence to the patient. Antimony is to be used, together with contra-irritation. Purgatives must be occasionally employed, together with the strict antiphlogistic regimen.

If called late to a case, and when general blood-letting would be, perhaps, attended with immediate danger, we must have recourse to local abstraction of blood, by means of leeches, and throw mercury into the system as quickly as possible. I am disposed to attribute the recovery of the last of the two cases already quoted, (at page 27,) in which the pericardium was found attached to the heart, to the action of the mercury, which was administered for the supposed hepatitis.

[* Philad. Journal of the Med. & Phys. Sciences, vol. 3, N. S.]

CARDITIS.

Inflammation of the proper or muscular substance of the heart is a very rare disease: I have seen only one case of it, which was treated for the affection commonly known by the term *angina pectoris*. The symptoms were unusually acute, and continued for four or five weeks, the patient never passing a night without fever, and never two days without having several severe paroxysms of suffering.

In general, however, the symptoms are represented as being similar to those which arise from inflammation of the pericardium, and it appears probable that the two diseases have been often confounded. [No stethoscopic sounds have yet been discovered which enable us to detect the inflammation of the heart, not even when ulcers and abscesses have formed.]

Appearances on dissection.—Redness, and even injection of the capillaries, are equivocal signs of inflammation of the heart; so is some degree of softening of that organ, which, although sometimes observed after symptoms which indicated disease of the heart, yet is oftener seen when such signs did not exist; and I am convinced that the state which is usually noted down in reports of dissections, as softening of the heart, is frequently nothing more than the natural progress towards decay. Laennec states, that he has met with only one instance of an abscess in the walls of the heart. The subject was a child twelve years old; the abscess was situated in the parietes of the left ventricle, and might have contained a filbert. [Partial carditis, however, has been often met with by the later pathologists, connected with ulceration and abscess, sometimes perforating the inter-ventricular or the inter-auricular septum; and it is this state of disease that usually precedes rupture of the heart. Even this frightful lesion is not always immediately fatal, for a solid coagulum, or fibrinous concretion, has been known to arrest the hæmorrhage for several hours.] In another case of a man of sixty years old, he found albuminous exudation, of the consistence of boiled white of egg, and of the colour of pus, deposited among the muscular fibres of the left ventricle. "The patient had presented symptoms of an acute inflammation of some of the thoracic viscera, without precisely indicating its site. Orthopnœa, and a feeling of inexpressible anguish, had been the chief symptoms." (Page 621.) In the case to which I have already alluded, a deposition of a matter, whether pus or lymph could not be determined, was found near the apex of the heart, in the substance of the left ventricle. I would particularly refer the reader to Dr. Gairdner's interesting case of carditis, recorded in the 2d vol. of the "Medico-Chirurgical Transactions of Edinburgh." The subject of it died of another disease, eight months after the original attack, and the following is an abstract of the appearances in the heart: "Near to the apex of the heart, we found a layer of dense, organized lymph, closely investing a part of the parietes of both ventricles. On attempting to separate a portion of this layer, it was found to be firmly united to the substance of the organ, dipping between its muscular fibres, in the form of

dense cellular tissue." (Page 241.) The symptoms in this case were, preternaturally violent and rapid action of the heart, and a sensation of throbbing in the temples, with headache.

Ulcerations of the heart, according to Laennec, have been more frequently observed than abscess, but it would seem they are more common on the internal surfaces of the heart, than on the external. Dr. Baillie observes, that although authors have mentioned cases of abscesses and ulcers of the heart, he is persuaded they are extremely rare.* He also states that mortification still more rarely takes place. Lieutaud, however, notices it, and Dr. James Kennedy, lately of Glasgow, has published a most interesting paper upon this subject, in illustration of a case of acute carditis, terminating in gangrene of the heart, in the "Medical Repository" for April, 1824, which is well worthy of perusal. It contains sufficient proof, not only of the author's skill in pathological inquiries, but of his critical acumen. On dissection, it is stated, that "twenty ounces of turbid serum were taken from the chest; it had an impure orange colour, and a fetid smell. The pericardium inclosed four ounces of a fluid in all respects similar. On the internal surface of this capsule, was much vascular net-work, dark, as if composed of injected veins. All parts of the heart, external and internal, exhibited distinct marks of having been the seat of gangrenous inflammation. They were preternaturally flaccid, and dark as the darkest coagulated venous blood; they could be easily perforated by the finger. When thus torn, they exhaled a putrid odour, but no blood exuded from their ruptured vessels. The left ventricle, in particular, was quite livid, and destitute of its muscular tenacity; it was a little firmer than cerebral structure. When lacerated, it threw out a most offensive smell, similar to the odour of putrescent animal substance. All the cavities of the heart were empty; but the large veins, especially the abdominal, were loaded with grumous blood." (Page 279.)

Treatment.—A similar mode of treatment as that recommended in pericarditis is to be followed. The result of Dr. Gairdner's case is a strong proof in favour of large bleeding, which prevented the diseased action from spreading, and preserved life, even after extensive disorganization had taken place. He took thirty ounces of blood from a vein in the arm, on the 16th March; on the 17th, it was repeated in the same quantity; and again on the 18th, the doctor states, he "ventured" on another equally "copious" abstraction of blood. During that night, from the shifting of the bandage, the patient lost several ounces more, and subsequently had leeches applied.

* Morbid Anatomy, p. 20.

[ENDOCARDITIS.]

[This disease is an inflammation of the internal lining membrane of the heart; and we are indebted for our first knowledge of it to M. Bouillaud. It is characterized, in its early stages, by a variable and preternatural red colour, which is sometimes mottled with bluish or brown spots. Sometimes the whole surface is of a uniform scarlet tint, but the capillaries are not obviously injected. Again, the whole or part of the surface exhibits a violet tint; and these and the other appearances we have mentioned even extend into the muscular structure of the heart. That these signs do accompany the incipient stage of endocarditis there can be no question; but it is also certain that they may exist without the presence of inflammation; whence Laennec long ago declared them of no pathological value unless they were accompanied by some collateral evidence of an inflamed state, such as thickening of the membrane, or injection of its vessels; and the mere redness of the membrane, however intense, may be and often is nothing more than a *stain* of blood, which may be readily imitated by artificial processes, and is of itself not a positive test of inflammation.*

The next stage of the disease presents unequivocal characters; such as the thickening and puffiness of the membrane, and effusion of lymph; the latter becomes rapidly semi-organized, and assumes the form of vegetations or granulations. The false membranes form to a greater or less extent, either lining the cavity of the heart or even forming partial septa within it. Ulceration is another but very unfrequent attendant on endocarditis; and Bouillaud thinks the disease sometimes terminates in mortification itself.

The prolonged duration of endocarditis produces the whole chain of morbid structures so familiar in adhesion, cartilaginous degeneration and ossification of the valves, especially in the left side of the heart, with consequent contraction and displacement of those structures. The effused lymph is the original nucleus, which first appears as a simple false membrane, and this finally passes through the several stages we have indicated, until it assumes the hardness of bone. The base and edges of the valves are most subject to these changes, of which more will be said in a succeeding section of this work.†

The *symptoms* of acute endocarditis are inflammatory fever; little or no pain, but rather a peculiar distress in the region of the heart, which sometimes becomes extreme and intolerable. The heart's action is violent and tumultuous, as is evident in the frequent, strong, bounding pulse, which sometimes imparts a jerking sensation to the finger. As the disease advances, these symptoms increase; the pulse becomes very quick and irregular, the breathing difficult, the countenance anxious, and the whole frame restless and tossing, with a livid complexion and constant tendency to syncope.

[* Laennec.] [† Chap. vi. Diseases of the Valves.]

In fact, all the characteristics of an extremely impeded and embarrassed circulation of blood through the heart are seen in strong relief.

Physical signs.—Independently of the dulness on percussion over a large surface, (and which is distinguished from that which occurs in hydro-pericardium by the obviously more superficial action of the heart,) we find the *bellows sound* strongly developed, which is sometimes accompanied by a peculiar tinkling or ringing. This is in the acute stage; but as the disease advances, as it rapidly does, to a more chronic stage, auscultation still detects some modification of the bellows murmur, or the rasping, sawing or musical sound. But as these signs are also present in other diseases of the heart, and are even present, as we have shown, in a mere anæmial condition of the circulatory system, it requires often-repeated examinations considered in reference to the external symptoms already described, to enable us to establish an unequivocal diagnosis. When the valves, however, become changed in tissue and position, as hereafter to be described, very little uncertainty remains; and yet, under these circumstances, the disease has become a secondary, and, in a great measure, an intractable affection.

Treatment.—Nothing can be more obvious than the necessity for prompt and active depletion in acute endocarditis; not only to prevent fatal consequences for the present, but to ward off organic changes for the future. It is unnecessary to repeat the best means of attaining these objects, excepting to impress the importance of repeated leeching or cupping over the præcordial region, conjoined with a succession of blisters on the interscapular space. Perfect rest, the avoidance of all excitement and a very light regimen, need hardly be insisted on when they are so obviously indispensable.

Dr. Hope states that in chronic endocarditis he has experienced the most satisfactory results from prolonging the mild use of mercury, so as to maintain a barely sensible effect upon the gums, for three, four, five or six weeks; simultaneously employing a succession of small blisters in different parts of the præcordial region, restricting the patient to a farinaceous and light broth diet, and confining him to his bed for the purpose of ensuring the utmost possible corporeal tranquillity.*]

[* Diseases of the Heart, p. 220.]

CHAPTER IV.

HYPERTROPHY OF THE HEART.

By hypertrophy of the heart is understood, a thickening or increase in the muscular substance of one or more of its cavities. This may, perhaps, be considered rather as an increase of nutrition than a real organic disease; that is to say, in its simplest state, it may continue for an indefinite period; it is seldom fatal of itself, and proves so, either from the causes which have given rise to it, or from the diseases which it may induce in other organs.

Hypertrophy frequently exists without complication; at other times, we meet with it combined with dilatation and contraction of the cavities of the heart, as well as ossification of the valves. In this class of diseases, as well as in most others, we are constantly to bear in mind, that when one organ labours under disease, others in a short time give evidence of participation.

I shall describe this disease in its most simple state, and point out the leading symptoms which attend it; but young practitioners should be aware, that they must not invariably expect to meet the disease under the precise form in which it may be delineated. After due deliberation, with regard to the different arrangements which have been adopted in treating of hypertrophy, I give a decided preference to that of Bertin, who describes it under three forms: 1. Simple hypertrophy, without change in the capacity of the cavities of the heart; 2. With the increase in the capacity of the cavities of the heart—the *active aneurism* of Corvisart—the *hypertrophy with dilatation* of Laennec, which is the most common form of the disease; 3. Hypertrophy with diminution in the capacity of the cavities of the heart.

Hypertrophy is more common in the left ventricle than in the right, and is occasionally met with in the auricles. When the whole heart is affected, it sometimes attains an enormous size, appearing, when the thorax is opened, to fill both sides of the chest.

In the natural state, the heart is about the size of the closed fist of the subject, not tightly clenched. The thickness of the walls of the left ventricle is more than double that of the right, and of sufficient firmness not to collapse when cut into. The right ventricle collapses when divided; it is a little more capacious than the left, and the columnæ carnæ are of a larger size.

In the diseased state, we sometimes find the heart three or four times the above-mentioned size; and when the left ventricle is af-

fected, its walls are frequently more than an inch, or even an inch and a half in thickness; the greatest increase is at the base of the heart, decreasing towards the apex, although this rule is occasionally reversed. The columnæ carneæ also require a proportionate enlargement, and even the septum between the ventricles participates in the disease.

The capacity of the ventricle is sometimes so much diminished, that Laennec informs us, in a heart double its natural size, he has seen it so small as scarcely to contain an almond in the shell. In such cases, the apex of the heart is blunted, and formed entirely by the left ventricle, which appears to constitute the whole of the heart, the right looking more like a process of it.

In hypertrophy of the right ventricle, the thickening is never so great as in the left, and it is more uniform.

The causes of the disease have been already alluded to. The increase of the nutrition of the heart has been compared to that of the muscles of the arm of the blacksmith: and all causes capable of increasing the action of the heart have been assigned as the sources of hypertrophy; such are all affections of the lungs, impeding or retarding the circulation between the right and left cavities of the heart; and there can be no doubt, that individuals of a sanguine and plethoric temperament are most subject to this disease.

Signs of hypertrophy of the left ventricle.—The general symptoms have been already mentioned. In this disease the patient is less subject to violent and sudden attacks of palpitation than in dilatation, but he is more sensible of the constant action of the heart. On applying the hand to the chest, it is met by a strong and extended pulsation, sometimes as if the whole heart were raised against the hand, at other times only its apex. The pulse is generally full, strong, and vibrating, appearing as if the artery were constantly distended. The raising of the ribs is quite visible, and in hypertrophy with increase of capacity, the action of the heart can be heard at some distance from the patient.

The sound on percussion is dull, and on applying the stethoscope between the cartilages of the fifth and sixth ribs, a very strong impulse is felt, sufficient to raise the head of the observer, and accompanied with a duller sound than natural—it is more prolonged in proportion as the thickening is more considerable. The contraction of the ventricle is very short, and productive of little sound, unless the disease be complicated with considerable dilatation.

We must, therefore, distinguish between simple hypertrophy and hypertrophy with increase in the capacity of the cavity. In the former, the sound is confined to a very limited space; it is scarcely perceptible under the left clavicle, and forms a remarkable contrast to the force of the shock. In the latter, the intensity of the sound is increased—we have the strong impulse as in hypertrophy, and the loud sound as in dilatation. The sound is sometimes so great, as to be heard over every part of the chest. The pulsations of the carotid and other arteries are frequently visible.

Signs of hypertrophy of the right ventricle.—The signs are precisely the same as already described: that is to say, the heart, as ex-

plored by the cylinder, gives similar results, with this difference: that the shock of the heart's action is greater at the bottom of the sternum than between the cartilages of the fifth and seventh ribs, which is the reverse of what takes place when the disease is in the left side of the organ. This sign, drawn from the place where the heart is heard beating with most force, according to Laennec, is infallible. Lancisi described a swelling and pulsation of the jugular, as a sign of aneurism of the right ventricle. This symptom was rejected by Corvisart, who says he has seen it when hypertrophy existed on the left side. Laennec differs with Lancisi, and informs us, that he never met with it in hypertrophy of the left ventricle, unless there existed at the same time a similar affection of the right; while he has uniformly seen it whenever the right side was affected in a severe degree. We may, therefore, regard this as a pretty certain sign.

Hypertrophy of the auricles, considered as a disease, is not of frequent occurrence, and therefore is not of so much importance—it appears to be always consecutive to some other affection—either to a disease of the valves, or some obstacle to the circulation. If Laennec's notions respecting the sounds produced by the heart's action be incorrect, it follows that many of his stethoscopic indications must also be erroneous. It is believed by some, that violent impulse of the heart depends upon hypertrophy of the auricles; I have no doubt that occasionally this is the case, but I am inclined to attribute this phenomenon to the increased bulk of the left ventricle.

Hypertrophy is sometimes primitive, but is, perhaps, more frequently consecutive to some other disease. It commonly proves fatal by the effects produced on other organs, more especially the brain and lungs.

No fact is better ascertained than the influence which hypertrophy exerts in producing apoplexy, as well as softening of the brain. The attention of practitioners has been particularly called to this, by Le Gallois, Richerand, Bricheteau, Lallemand and Bertin; and it is somewhat surprising to find a learned editor of the Edinburgh Medical Journal, informing us, in 1828, that "*no pathologist has particularly examined those effects to which the diseases of circulation give rise in the cerebral organ,*" appearing to claim this as a discovery of his own, as well as the making of incisions in whittloes! There never were individuals who better understood the mystery "*of hanging great weights to small wires*" than the editors of this *debilitated and puffing* periodical.

Treatment.—Whether the analogy between hypertrophy of the heart and the muscles of the blacksmith's arm, be true in a pathological sense or not, I could quote a number of cases in which it is supported by the result of medical treatment; viz.: venesection, the strict antiphlogistic regimen and perfect rest. Of all diseases of the heart, hypertrophy is that in which the starving treatment of Valsalva will, in general, be found most advantageous, even when complicated with some degree of dilatation.

The lancet is necessary in those cases only in which we are obliged to diminish plethora more quickly than can be done by diet and

purgative medicines, and reduce the violent action of the heart, when danger is threatened to the brain or lungs. It is necessary to keep the patient quiet, with respect to bodily and mental exertion, and to prevent him from speaking. Great benefit is frequently obtained from the occasional use of a weak solution of antimony, so as to produce a slight degree of nausea. He should sleep in a well-aired apartment, remote from every noise, and under as few bed-clothes as possible. With respect to his diet, it will be sufficient to say that it ought to consist of biscuit or toasted bread, in such quantity as will barely keep soul and body together. The quantity of fluid should also be regulated, and must at once be considerably reduced. Should he complain of hunger, or be inclined to take liberties with himself, he may be readily enough controlled by two or three additional doses of antimony, which for that purpose should be given in different forms—sometimes in solution, to which substances may be added to change the colour—sometimes in powder, and sometimes in the form of pill. If there be any pain in the region of the heart, the occasional application of leeches is advisable. The length of time necessary to persevere in the use of this restricted regimen and treatment, must entirely depend on the severity of the symptoms, the nature of the disease, and the prospect we may have of being able, ultimately, to cure the affection. I have seen this plan beneficial within a few hours, particularly in two cases. The subject of one was a physician whose complaints had been gradually stealing on for many months; his hair dropped out; he became emaciated; he felt considerable debility, with impaired appetite; his nights were restless; but I was not sent for till dyspnœa and oppression in the chest were so great as to threaten speedy death. I found the impulse of the heart very violent, probably the organ was in a state of hypertrophy, and he was threatened with hæmoptysis. After bleeding him to sufficient extent, he was put under the antimonial treatment, and starved; notwithstanding which, he began to increase in flesh and strength as soon as the antimony was omitted, and he had perseverance enough to live for a considerable time on two biscuits a day, taking only as much fluid as was sufficient to enable his stomach to digest them. In the course of some time, he was allowed to take a little fruit, which disagreed with his stomach, produced indigestion and flatulent distension, and occasioned a temporary return of the former symptoms, proving, in a remarkable manner, the necessity of keeping the state of the stomach and bowels constantly in view, when treating diseases of the heart; and I so heartily coincide with the excellent remarks of Dr. Forbes on this subject, that I cannot forbear quoting his words. "One great principle," says he, note, p. 687, "is of paramount importance; it is the removal of all disorders in other organs, which can act as a source of irritation to the heart; I would here add, that from its powerful influence (gastric irritation) in stimulating the organs of circulation to increased action, its previous cure becomes essential to the success of our measures for remedying the disease of the heart."

This gentleman gradually recovered, and in nine months was able to accept a medical appointment in India—at the period of his departure he appeared in perfect health, had recovered his flesh and

appetite; he lived like other people, and there was no unusual impulse in the region of the heart. I received two letters from him after his arrival in Calcutta, but the event happened which was much to be apprehended. The excitement produced by the heat of climate and mode of living soon made an impression upon his frame. He was at length obliged to leave India, and died on the homeward passage.

The other case to which I have alluded, occurred in the person of a gentleman who had been indisposed for six months; and although the case was complicated with dilatation, and perhaps disease of the valves, he felt the benefit of the treatment in a few hours, and enjoyed sound sleep that very night, for the first time since his illness. He increased in strength and flesh; the impulse of the heart daily declined; the agony which he felt in the chest, and outwards to the arms, ceased; cough, dyspnœa and expectoration with which he had been affected from the commencement of his illness, disappeared after the third day from the beginning of the treatment. This gentleman was able, in the course of a few months, to undertake a long journey to the southwest of England. This he performed without inconvenience. He was distinctly told, however, that he could not be completely cured, but might expect to be greatly relieved, and his life preserved for many years, provided he attended to his diet, and used proper precautions. Soon after his arrival in England, he fell under the care of one of those medical men who practise by routine, who have no pathological knowledge, but are never at a loss to give a name and local habitation to every disease that comes before them, who have a nostrum to cure every symptom, and who furnish their patients with eighteen draughts, three dinner pills, and a red mixture for three days' consumption!! Upon a first visit, he denounced the opinion of the "Scotch doctor," and declared that the patient's only complaint was "bile." He removed all my restrictions, told the patient to move about: to walk up the hills, which would *open his chest* and to eat beef-steaks and drink porter. All this was mighty pleasant news to the poor patient, who was very fond of the pleasures of the table. But he was in the first place put under a course of mercury, during which he was confined to the house on account of the severity of the weather. Under this treatment, considerable amendment took place, and the most positive assurances were given of a speedy and a permanent cure. The most flattering accounts were received by the patient's friends in Scotland, who are people in the highest class of society; but my invariable answer was, that the amendment could not be permanent. Some months passed over, and still favourable reports were made. At length, having occasion to be in London on business, my desire to see the patient was so great, that I undertook two long days' journey solely for that purpose. On my arrival at his house, (at half-past ten o'clock at night,) I found he was out at supper. When he came home, he said he was pretty well, but felt the "old sensation always in his chest." On applying my ear to the thorax, I perceived a strong throbbing impulse over every part, with a loud rushing or blowing sound. It was a painful duty to be obliged to open the eyes of his affectionate wife to the

dangerous state of her husband's health, and the uncertainty of his surviving even a week. Fortunately for her future peace of mind, she believed me; and, to shorten a long story, he died in less than three months. The correctness of my opinion was afterwards ascertained, and admitted by all parties.

By degrees we are to allow the patient to return to an animal diet, which is better, when used in moderate quantity, than having his stomach filled with farinaceous food; and in order to prevent either a wilful or an accidental error, the exact quantity of food allowed in twenty-four hours should be given by weight, and liquids by measure.

The antimonial ointment is to be rubbed over the region of the heart, and irritation on the surface should be supported for a few weeks, every now and then, while the cure is going on. I think it best not to have recourse to it, however, till such time as the restrictions of diet are about to be relaxed.

CHAPTER V.

DILATATION OF THE HEART.

Dilatation of the heart consists in an enlargement of the capacity of one or more of its cavities. Dilatation, complicated with hypertrophy, has already been described. In the morbid alteration now to be mentioned, the walls are much thinner than natural, commonly conjoined with a degree of softening of the muscular substance, and some change in the colour, which is either more purple or paler than natural. This disease is the "*passive aneurism*" of Corvisart. According to Bertin, who has written a valuable work on diseases of the heart, there are three forms of dilatation; 1*st*. Dilatation with the thickening of the walls of the heart, which has already been treated of, under the title "Hypertrophy;"—2*d*. Dilatation with thinness of the walls;—and 3*d*. Dilatation without any change in the walls. Bertin has truly observed, that the orifices of the heart frequently partake of the dilatation of the cavities, insomuch that the valves become insufficient to close them.

Dilatation is sometimes confined to one ventricle, though it more commonly affects both. The heart is more dilated in breadth than in length, and therefore assumes more of a rounded form than natural.

The causes of this disease are ascribed by Bertin to some obstacle in the course of the blood, such as disease of the valves: this must be admitted; but probably the most frequent cause is, as stated by Laennec, a congenital disproportion in the parts of the heart. In some cases, the *foramen ovale* is found open to a considerable extent.

Symptoms.—Patients affected with dilatation are more liable to sudden attacks of palpitation and dyspnœa, on any violent emotion, than those with hypertrophy; the pulse is commonly soft, weak and undulating. Weak action of the heart, whether owing to dilatation or not, frequently produces alarming symptoms, such as vertigo, loss of memory, syncope; together with nausea, vomiting, and constipation.

J. M., aged 29, a medical student, very tall, stooping in his gait, of a fair complexion and light hair, had been affected for about a year with symptoms which he attributed to disorder of the stomach. He complained of a feeling of distension and weight in the epigastrium. Occasionally, he was troubled with a short, dry cough, and palpitation of the heart, excited generally by any sudden or unusual exertion. The pulse was naturally slow and full.

These symptoms gradually became more constant and trouble-

some. In July and August, 1823, he had occasion to exert himself considerably in his professional pursuits, and the feeling of uneasiness in the epigastrium and palpitation at the heart, proportionally increased, but appeared to him to be constantly relieved, when his bowels, which were generally costive, became relaxed by the use of medicine.

In September, his complaints were much aggravated; towards evening, the short tickling cough became exceedingly troublesome, and, when he placed himself in the recumbent posture, he was frequently seized with feelings of suffocation, which forced him to sit up. The difficulty of breathing, accompanied by a sensation of constriction in the breast, was at times considerable; and the paroxysms which seized him during the nights, he compared to asthmatic fits. He was frequently obliged to rise during the night; and when he did sleep, was often suddenly awakened by a sense of suffocation. Towards morning, he became easier, and enjoyed some rest. During the day, he was comparatively well. He was thin and pale, but complained little, except of want of rest. He went about his medical studies with ardour and assiduity; but on making any unusual exertions, he was immediately seized with the short cough, and, on mounting a flight of steps, or an ascent of any kind, he was often obliged to stop suddenly. On walking quickly, his strength failed, and he complained that his limbs refused to perform their office. On examining the pulsation of the heart at this period, it appeared to be placed immediately under the hand; instead of the usual quick and hard stroke, a prolonged pulsatory throb was distinguishable, extending over a larger than usual surface. To the stethoscope both the left auricle and ventricle gave a clear, sharp sound, distinctly observable, also, under the clavicle of the right side.

In October and November he became gradually worse. The paroxysms at night were more frequent and more troublesome; and he was generally obliged to sleep in the sitting posture. He sometimes, however, passed days and nights pretty comfortably, and he believed that this was principally the case when his bowels were freely opened.

In December, the oppression and sense of fulness in the epigastrium increased to so great a degree as to render the slightest pressure on the part insufferable. The veins of the neck were observed, at this time, to be full, and a strong pulsatory motion was given to them above the clavicle. He still continued his studies with ardour, and refused to confine himself; but on mounting stairs, or walking quicker than usual, he became completely exhausted, and was often obliged to rest himself. On the 12th December, he felt much worse, and weaker. On the 14th, a material change for the worse had taken place; his face was pale and anxious, the lips bluish, and the ankles œdematous;—still he conversed cheerfully, and without the least alarm. The pulse was small, and about 120. On applying the hand to the region of the heart, the usual quick, hard beat, was not to be felt; but there was a kind of violent pulsatory struggle perceptible over a considerable space. A physician saw him, and the medicines he recommended were employed with great apparent bene-

fit. Mr. M. thought himself better; the œdema of the legs disappeared, and the cough became less troublesome;—the palpitation at the heart had subsided; and he complained only of a sense of weight in the epigastrium. During the day, he was tolerably well, but about ten at night, he became hot and exceedingly restless, continually shifting his posture in the vain hope of repose. This continued for some hours, when he generally sunk into a slumber, and continued till morning bathed in a copious perspiration. On Friday 26th, he was much worse. At 4 P. M. he was sitting up and conversing cheerfully; but his legs were more swollen; his pulse irregular; the pulsation of the heart could not be felt in the usual place, and an undulatory pulsatory feel was communicated to the hand, when placed on the epigastrium. About 8 o'clock, his breathing became oppressed, he sunk into slumber, and died without a struggle.

The body was examined about sixty hours after death. A great quantity of bloody serum seemed to have escaped, and still continued to flow from the mouth and nostrils. The body was much swollen, and the cellular membrane was distended with air; a quantity of serum flowed out on making the several incisions. About a pound and a half of bloody serum was found in each cavity of the thorax. The pericardium contained about three ounces of fluid. The heart was more than three times its usual size. It was of a deep brown colour, and destitute of fat. On examination, the right auricle was greatly increased in capacity, and extremely thin in its walls. The *foramen ovale* was sufficiently open to admit the point of the little finger into the left auricle. The right ventricle was nearly natural, as was also the left auricle. The left ventricle was of an enormous magnitude, and more resembled a large bag than a ventricle of the heart. It was more than three times its natural size, its walls of extreme thinness, and the fleshy columns widely separated from each other. The lungs were more than usually congested with blood; but they, as well as the viscera of the abdomen, were perfectly healthy.

The above case is interesting in many respects, and among others, in having the *foramen ovale* open, which was, in all probability, produced by the enormous dilatation of the right auricle; it is worthy of remark, that the communication between the right and left auricle existed without producing the diseases termed cyanosis or blue skin.

Signs of dilatation.—The only certain sign is the clear sound of the heart with deficient impulse. Laennec says, the degree of distinctness of the sound and its extent over the chest are the measure of dilatation; thus, when the sound of the contraction of the ventricles is as clear as that of the contraction of the auricles, and if it be at the same time perceptible on the right side of the back, the dilatation must be extreme.

Signs of dilatation of the left ventricle.—A clear and sonorous sound between the fifth and seventh ribs of the left side.

Signs of dilatation of the right ventricle.—The sound is heard somewhat better towards the bottom of the sternum than in the region of the heart; to which may be added, in the language of Corvisart, a "greater degree of oppression, more marked serous diathe-

sis, more frequent hæmoptysis, and a more livid state of the countenance," than in affections of the left ventricle.

According to Laennec, the most constant and characteristic of the equivocal signs of this affection, is, an habitually swollen state of the jugular veins without pulsation.

The following statements are extracted from the work of Senac (Traité du Cœur, tom. 2.)—"*Il est certain que les dilatations des diverses cavités (du cœur) peuvent être distinguées. En genéral les battements du cœur ne sont pas violents quand le ventricle droit, ou le sac de ce ventricle, sont extremement dilatées; a peine les dilatations produisent elles des palpitations; dans beaucoup de cas, les malades sentent seulement un grand poid dans la region du cœur,*" page 327. And again, "*Les dilatations du ventricle droit et de son oreillette, produisent toujours des battements dans les veines du col——*" "*L' absence de ces battements, lorsqu'une dilatation du cœur est constatée, établit cette dilatation dans le ventricle gauche,*" &c. Page 328.

My attention has been frequently attracted to dilatation of the auricles, since the publication of the first edition. In several instances, the auricles, instead of forming a small part of the whole organ, were of equal size with the ventricles; in others, the proportions between auricles and ventricles were reversed—the former being by far the largest part of the heart. I have occasionally found the walls of the auricles much thickened, not only with respect to the muscular structure, but the lining membrane also. In a healthy heart, the lining member of the auricles is considerably thicker and stronger than that of the ventricles; but in the condition of which I am now treating, the contrast is very remarkable.

In concluding this part of the subject, it may be observed, that we have frequently combinations of different diseased states; thus we occasionally meet with dilatation of one ventricle, and hypertrophy of the other; but the comparative exploration of the two sides of the heart will enable us to detect this, after some practice with the stethoscope. In other cases, we have dilatation of one ventricle and the opposite auricle. We also meet with cases in which the parietes of the dilated cavity are thickened in certain points of their extent—thinned in others—and in the remaining parts exhibiting their natural structure.

TUBERCULOUS AND OSSIFIC FORMATION IN THE SUBSTANCE OF THE HEART.

Various kinds of accidental productions have been found in the substance of the heart. I shall merely mention the enormous collections of fat which have been discovered about the pericardium and heart, because I have seen this condition frequently in subjects who have died of other diseases, and in whom no affection of the heart had been suspected; at the same time, there are cases on record, in

which the muscular structure was so much weakened, and the fibres so much separated by the interposition of fat, that it has appeared to be the cause of impeded action, and occasionally of rupture of the organ.

Ossific depositions in the walls of the heart are avowedly rare. Laennec met with two instances of this formation between the layers of the pericardium; the history of one of the cases, along with the dissection, (at p. 670 of the translation,) is well worthy of perusal. Baillie notices instances of this nature; one case fell under his own observation, in which the ossification had spread over a considerable portion of the pericardium, (p. 13.) He also says, (at p. 49,) "When a part of the heart is converted into an earthy matter or bone, no morbid symptoms whatever have in some cases been observed; and in others, there has been palpitation of the heart, with difficulty of breathing." But the author does not say that he had ever seen such cases.

I have seen one instance only of tubercular formation in the substance of the heart; Laennec states that he has seen it three or four times. In the year 1826, some of my pupils were called upon to examine the body of a young woman, who dropt down dead without any previous indisposition. No diseased appearance was found anywhere but in the heart. On opening the pericardium, it was observed to contain a little serum. The surface of the heart was vascular, and there was some watery effusion beneath the serous membrane at several points. There were also two considerable projections, the largest at the apex of the heart, the other about the centre of the left ventricle; on making incisions at those parts, tuberculous masses were found occupying the whole thickness of the organ, of a soft cheesy consistence, at the apex, to the extent of an inch and a half in diameter, and at the left ventricle to that of an inch.

Upon inquiry, it was found that this individual had led a very irregular life, but had always enjoyed a good state of health.

In my museum there is a preparation obtained from a cholera subject, in which a considerable portion of the right auricle and ventricle, together with the coronary arteries, is ossified. The previous history of the patient is not known.

ATROPHY OF THE HEART.

Diminution of size is mentioned by most authors who have written upon diseases of the heart. Laennec states, that "the heart like the muscles of voluntary motion, is clearly susceptible of diminution of size." The hearts of individuals who die of phthisis are observed to be uncommonly small: Laennec says, that he has thought he "could recognize a sort of withering of the organ indicative of its loss of volume." On examining the body of a young woman, who died from the effects of a tumour, weighing above fifty pounds, which grew from the fundus of the uterus, and extended upwards,

encroaching so much upon the thorax, that the diaphragm on the right side was pushed up as high as the first rib, the heart was found little above half its usual size, and was very much flattened by the pressure of the tumour. Its action had been so much impeded, that the pulse could be scarcely felt in any artery of the body for a considerable time before death. I have another heart in my possession, taken from an adult male, which is not larger than that of a child of six years old. Both coronary arteries were found much ossified. In this case there could be no doubt that the small size of the heart depended upon the diminution of the nutritive process; the pulse at the wrist was exceedingly small for five or six months previously to death, and during the last two months, it was so weak that it could scarcely be counted. Laennec says, that he has never observed any symptom peculiar to atrophy of the heart. "I may remark, however," he adds, "that several hypochondriacs, who are liable to faintings from very slight causes, gave, under the stethoscope, signs of a very small heart; and we know, moreover, that women, who are much more liable to these attacks than men, have, in general, smaller hearts." (Page 614.)

RUPTURE OF THE HEART.

We are assured by those who have had the best means of knowing, that this accident is very rare. Laennec thinks that these ruptures are generally produced by previous ulceration of the ventricular parietes, and Bertin is of the same opinion. Laennec states, that it is surprising rupture of the heart does not more frequently happen in those cases of great accumulation of fat, reducing the walls of the ventricles to extreme thinness. According to Meckel, rupture of the heart most frequently takes place at the point of junction between the aorta and left ventricle; but this does not seem to accord with the observations of others. Bayle assures us, that in nineteen cases of rupture of the heart, fourteen took place in the left ventricle, principally on its anterior side near the apex; three in the right ventricle. In most of the subjects, the heart was remarkably soft, and the substance around the perforation was of a brown colour. Baillie's observations upon this subject are very vague, and not worthy of quotation. I have seen two cases of sudden death, in which the pericardium was found to contain a large quantity of coagulated blood. In one of these, the perforation through which the blood had issued, could not be discovered for some time, and when on the point of giving up the examination, a small rent, just capable of admitting the head of a pin, was found at the root of the aorta, which vessel was somewhat dilated, and its texture injured by incipient ossification.—The subject of the other case was a woman about fifty years of age, who had previously enjoyed a good state of health. The night before her death she had walked from the south-west extremity of the Old Town of Edinburgh to New Haven, and

back again, a distance of about six miles, and had gone to bed without making any complaint. After a good night's rest, she got up in the morning, and fell down dead soon afterwards, whilst cleaning her shoes. On dissection, the pericardium was found greatly distended with coagulated blood; the aorta, much injured by ossification, was seen greatly dilated near its origin, where a small rupture existed, not above two lines in length.

Bertin mentions two instances of rupture of the auricles, which is more rare than that of the ventricles: in one of these, the rupture was produced by a fall; in the other, it occurred without any perceptible cause, and the heart was enormously loaded with fat.

We are assured by Laennec, that rupture of the auricles, ventricles, and large vessels within the pericardium, is not always followed by sudden death. In several cases, the blood accumulated in the pericardium formed a solid coagulum, and checked for a time the hæmorrhage.

CHAPTER VI.

DISEASES OF THE VALVES.

The valves of the heart are liable to depositions of fleshy, cartilaginous, and osseous matter, which increase their thickness, alter their shape, and obstruct the orifices in which they are placed. They are sometimes so much altered in structure, as to be unfit to perform their chief function, viz.: to prevent the regurgitation of the blood. The valves at the origin of the pulmonary artery, have a remarkable immunity from these diseases, while they are frequently met with in those at the aorta. The mitral valves are, perhaps, more frequently diseased than the tricuspid.*

Appearances on dissection.—Sometimes the points only of the semilunar valves are affected; at others, their bases; when they are affected throughout, they are deformed, and often coiled upon themselves; and when in this condition, they have frequently a red fleshy-looking appearance, smooth, and polished. Very often a small cartilaginous concretion is observed in the points of the semilunar valves, which may be considered as enlarged corpora sesamoidea, but which can scarcely impede the circulation, until they become of considerable size. Sometimes these valves seem, as it were, to be encrusted with osseous matter; and I have seen instances in which it was impossible to trace the inner membrane over the osseous projections. We sometimes find small fleshy vegetations resembling warts.

The cartilaginous induration of the auriculo-ventricular valves is sometimes confined to the fibrous bands found in its base. In this case, it has the appearance of a very smooth, though unequal ring, diminishing the size of the orifice; it is sometimes of a semi-cartilaginous consistence; at others, it is formed of perfect cartilage. The same kind of appearances is occasionally met with in other parts of these valves, but those situated at the bases and points are usually the thickest.

The osseous productions are found in the same situations, and are very unequal as to thickness. Like those already described in the semilunar valves of the aorta, they are often found projecting from the valve, denuded and very rough. We are assured by Laennec, that they are not perfect bone, being whiter, more opaque, more fragile, evidently containing a greater proportion of phosphate of lime. They are sometimes situated on the free margins of this valve,

[* The pathology of the morbid changes have been explained in the section on Endocarditis.]

diminishing greatly the size of the orifice; indeed, sometimes to so great an extent, as scarcely to admit the blade of a pen-knife, of which there are examples in my museum. Sometimes, though rarely, the tendinous chords of the mitral valve are affected in a similar manner. In one case, Dr. Forbes found three of the pillars of the mitral valve completely ossified through their whole extent, with the exception of a minute portion at each extremity.*

The auriculo-ventricular valves are likewise found studded with fleshy excrescences like warts; they are, in general, soft, and with difficulty preserved.

When ossification is confined to the free margins of the sigmoid valves, or when the base is affected, if still slightly thickened, the valve may perform its functions, provided the middle portion be still sound; but when the disease is extensive, the valves, according to Laennec, grow together, and get incurvated either towards their concave or convex side, in which state they are immovable, being either fixed on the side of the aorta, or in the orifice of the ventricle.

Symptoms.—These are palpitations and dyspnœa, often to such a degree as to be called asthma; both these symptoms are increased by quick exercise, or any unusual exertion or emotion. When the disorganization advances to a certain pitch, the palpitation and dyspnœa increase in frequency and violence; the pulse is weak, small and thready, and occasionally intermits, which corresponds with intermissions in the contractions of the heart; the feet are observed to become œdematous towards evening. At last the symptoms denoting impeded circulation, augment, the face and extremities become discoloured, the œdema extends to the legs, dropsical effusions take place into the different cavities, and the dyspnœa increases to such a degree, that the patient is obliged to remain in a sitting posture, or bent upon the edge of the bed, in a kneeling position.

According to Laennec, the following stethoscopic signs are observed: "The symptoms of ossification of the mitral valve are little different from those attending the same affection of the sigmoid. According to M. Corvisart, the principal sign of the former lesion is 'a peculiar rustling sensation, (*bruissement*,) perceived on the application of the hand to the region of the heart.' This peculiar sensation is nothing else than the *purring thrill* already described. It is assuredly very frequently observed in the case of ossification of the mitral or sigmoid valves, when this exists in a high degree; but, as I formerly stated, it may exist when these valves are perfectly sound, and it is almost always absent when the induration is not so extensive as materially to obstruct the orifices. The bellows sound is a much more constant sign; it accompanies the contraction of the left auricle, when the mitral valve is affected, and that of the ventricle, when the induration is in the sigmoid. But even this is wanting when the alteration is not extensive; and as it is, moreover, very common when the heart is perfectly sound, we must lay no stress upon it as a sign, unless it be combined with other circumstances calculated to confirm the diagnosis. Accordingly, when the sound

* Original cases, p. 133.

of the bellows, rasp or file, persists in the left auricle, either continuously or interruptedly, for several months; when it is found only then, and exists even in the greatest quietude; when it is scarcely lessened by venesection, or when lessened, if it still leave behind it a degree of roughness in the sound of the auricle—or, yet more, when the purring thrill coexists with this, we may be assured that the auriculo-ventricular opening is contracted. If the same phenomenon occur under similar circumstances in the left ventricle, we may be equally certain that the aortal orifice is contracted." Three or four times, during the last four years, I have discovered this lesion by means of these signs. Three similar examples, equally verified by dissection, are recorded in M. Bertin's work,* and a fourth is given in the collection of cases published by Dr. Forbes; (Case vii.) "But," continues Laennec, "if these phenomena exist only for a time, although as much as two or three months; if they accompany the increase of any other nervous or organic disease of the heart, we must not depend upon them as indications of the lesions now in question, since all the facts formerly recounted, prove that these sounds are not produced (as might be imagined at first) by the passage of the blood over a rough or rugged surface, but to the spasmodic energy requisite in the muscular contraction, to overcome the obstacles opposed to it. It follows, therefore, that any other cause besides diminution of the orifices, which occasions contraction of the heart, is equally capable of giving occasion to the bellows sound and purring thrill; and it is fair to admit, that in the first edition of this work, I laid too much stress upon these two phenomena, as signs of valvular disease. A slight degree of cartilaginous or bony induration of the valves may exist for a long time without any visible alteration of the heart; or even by proper measures of precaution, and by seasonable bleedings, we may frequently preserve, for a long time, the life of individuals, who present every sign of considerable contraction of the orifices."—(Forbes's Translation, page 634.)

Laennec appears to have laid too much stress upon the effects of nervous affections of the heart; and in the latter period of his life he became timid and doubtful with respect to his own powers of observation, which enables us to account for the tenour of the above quotation. I believe, however, that these sounds, and more particularly the blowing or rushing sound, may be occasioned by a large quantity of blood rushing with violence through the orifices, even when the valves are sound.

Within these few years, several cases of sudden death have taken place, even in young persons, and the only morbid appearance discovered upon dissection was disease of the valvular apparatus.

Treatment.—A similar treatment to that formerly recommended in other diseases of the heart is necessary; viz.: to reduce and obviate plethora, to enjoin rest, and to avoid every cause which can increase the quantity of blood, and hurry the circulation; and lastly, to moderate violent symptoms by applying leeches, producing contra-irritation, and administering an occasional opiate.

* Observations, 49, 58, 51.

CHAPTER VII.

DISEASES OF THE BLOOD-VESSELS.

The first disease of this class which I shall notice, is inflammation of the internal membrane of the heart* and large vessels near it. Since the last edition was printed, I have had much opportunity of examining this part of the morbid anatomy. Previous to this, I thought inflammation of the internal membrane of the arteries "*a very rare disease*," but am now convinced it is by no means uncommon. I have seen false membrane in every stage, from the commencement of a deposition of lymph, to its complete organization. There are many specimens of this in my museum. It appears to me that the artheromatous deposit, so often found in the arteries, particularly in the aorta, is frequently produced in this false membrane, and not so uniformly in the middle coat as has been hitherto supposed. Bertin has written to prove that inflammation of this membrane is a common affection. The lining membrane of the heart, and of the large blood-vessels, is sometimes found of a brown or violet colour, and also a bright scarlet. It is a subject of controversy at this moment, whether this colouring is the effect of disease, or of imbibition of blood after death. From my own observations, I am led to conclude, that it is sometimes from the one cause, and sometimes from the other; and I think our conclusions must depend upon three circumstances: *1st.* Whether any blood is found near the discoloured portion? *2d.* Does blood found in the aorta, always impart a colour to its lining membrane? *3d.* Upon the texture of the part so affected. I have frequently found the aorta of a red, brown, or violet colour, when neither it nor the left ventricle contained any blood; and, on the contrary, I have seen the aorta almost filled with blood, partly fluid, partly coagulated, when the inner membrane presented its usual straw colour. When the aorta was discoloured, I have occasionally found the inner membrane soft and pulpy, and readily removed with the fingers; and I scarcely remember to have seen incipient ossification of the aorta, without observing a vivid redness of its internal membrane. This subject ought to be held as being open to future investigation. The next point which has attracted the attention of pathologists, is the exudation of coagulable lymph. It is stated, that this has actually been found; Burns, for instance, distinctly describes it: Laennec says, that he has observed false membranes of small extent, strongly attached to the walls of the auricles. The next subject worthy of attention is ulceration. Laennec seems

[* Vide Endocarditis.]

very much inclined to doubt the existence of ulcerations in this delicate membrane; he supposes the parts, left by the separation of the bony incrustations of the aorta, to have been mistaken for ulceration; he states, however, that small pustules have been sometimes met with beneath the inner membrane of the aorta, and which have discharged their contents into its cavity; and he asserts, that it is probable that what are called ulcers of the aorta, are formed in this manner, being the consequence of inflammation of the middle coat of the arteries, or of the fine cellular substance which unites this to the inner coat. In quoting these statements, I have to remark, that Laennec appears to be determined not to admit that inflammation of these parts can exist, and that he has manifested too much of the spirit of a special pleader. The last point which some individuals suppose indicative of inflammation of the inner membrane of the heart and blood-vessels, is the formation of concretions, well known by the name of *polypi*. One set of pathologists maintains, that they are the result of previous inflammatory action, which another denies. It is a most interesting question in pathology, and therefore deserves minute investigation.

Since the publication of the first edition, two dissections have taken place in Edinburgh, which set this question at rest for ever—several polypi, organized and partially ossified, having been found in the right auricle in one case, and several polypi containing pus in the other. I am well aware that polypi, which have been termed "*organized*," have been frequently observed, and that injections have been thrown into the vessels; but doubts have been entertained on the subject, and the appearance of vascularity has been variously accounted for. The following is a short sketch of the first case above alluded to, and the appearances on dissection:—A young woman, of amiable disposition, and regular, industrious habits, died after several years' illness. I was requested to visit her some years before her death; she was then labouring under cough, quick and anxious breathing, palpitation, emaciation and hectic fever. One or both lower extremities were affected in a similar manner to that observed in phlegmasia dolens. Her appearance was so unpromising, that I thought she could not long survive; but she rallied, and for a time became better, but soon relapsed again; in fact she became better and worse at times, occasionally much distressed with dyspnœa, cough, pain and distension of the lower extremities, and febrile symptoms. It was thought that her lungs were affected, as the sound of respiration, during a severe paroxysm, was not audible in some parts of the chest. This opinion was subsequently abandoned, when it was supposed that the functions of the lungs were embarrassed in consequence of some impediment in the circulation. The action of the heart appeared natural, but the sounds and impulse were weak. There was no irregularity of pulse. Nothing afforded her any relief but venesection; and during her illness, I am informed she was bled above one hundred times. The uneasiness produced by the tense and swollen condition of the lower extremities, was greatly eased by repeated punctures, when a quantity of serous fluid was discharged.

On dissection.—The lungs were somewhat œdematous, but appeared otherwise sound. The heart did not appear to be above the

natural size; the right auricle was found almost filled by a large hard mass, which adhered by a broad margin to the superior part of the auricle, while its inferior portion projected into the corresponding ventricle; it was tightly held in this position by the tricuspid valve. The superior and inferior portions of this mass were converted into osseous matter, and felt hard to the touch. The centre part was in appearance like a hardened coagulum of blood; and when the preparation was recent, there were thin ossific scales seen running in a longitudinal direction everywhere over the surface. In the same auricle, there were three other, but smaller masses. One was like a coagulum of blood, and adhered to the superior part of the auricle, between the orifices of the pulmonary artery and superior cava; another was small and carneous, attached to about the centre of the auricle, but which was broken off, and lost during maceration; its base, however, is still to be seen in the preparation; the third mass has not been examined. It lies deep in the auricle below the large ossified polypus, and we were fearful of destroying the attachments of the latter to the heart. The inguinal veins and the vena cava were found distended with hard coagulated blood; on minute examination the coats were found in a healthy state, perhaps somewhat thickened, but the contents adhered firmly to the sides of the vessels. In some parts, particularly on the right side, the contents of the veins were organized, completely obliterating the vessels.

It does not appear that this condition of the lining membrane of the heart and arteries is indicated by any particular symptoms, although some assert that it is the cause of inflammatory fever.

OSSIFICATION OF THE ARTERIES.

The morbid condition which goes by this name belongs to the class of imperfect ossifications. These seem to be produced in two ways;—1*st*, By soft cartilaginous depositions, which are gradually converted into ossifications by the deposition of small calcareous spots, which gradually extend. 2*d*. By the deposition of a soft powdery substance, without any cartilaginous formation; this substance becomes gradually converted into ossific incrustations. Occasionally ossified spots are found only here and there, although sometimes the whole vessel is affected. Some pathologists imagine, that this formation invariably takes place between the inner and middle coats, and is not connected with inflammation—this appears to be Laennec's opinion; others maintain, that it is the consequence of inflammation. After careful observation, I have reason to believe, that artheromatous and osseous deposits are the product of inflammation, and that occasionally they are formed in the situation mentioned; but that they are sometimes found in a false membrane, thrown out by inflammatory action of the internal coat of the arteries, admits of no doubt. When these depositions take place between the proper coats of an artery, the inner membrane in many parts is often eventually removed, by exposing the bare ossified surface. This formation is frequently the cause of aneurism. All arteries do not seem

equally disposed to take on this diseased action. The aorta, at its origin from the heart, is most frequently found affected; then the arch, and the descending aorta, the disease attacking the angle at which the vessels branch off, in preference to other parts. The arteries of the brain are very frequently found diseased in cases of apoplexy. I have seen the most minute vessel that could be traced in the brain, in this condition; and on one occasion, the circulation on one side of the circle of Willis was completely obstructed from the ossification of the vessel. The pulmonary artery, and the arteries of the superior extremities, would seem to enjoy a singular immunity, whilst those of the lower extremities are often affected. Ossification of the blood-vessels must influence the functions of various organs. I possess a beautiful preparation, showing its effects upon the kidney—one emulgent being almost obstructed by ossification, while the corresponding kidney is in a state of atrophy.

ANEURISM.

THERE is no disease which shows the absurdity of the division of medicine into physic and surgery more than this. When an aneurism is within reach of the knife, then it is called a surgical case; if otherwise, it is handed over to the physician. All writers describe aneurisms of two kinds—the true and the false. I can join Laennec in stating that "true aneurism of the ascending portion and arch of the aorta is very common." I have seen it more frequently in such a situation than the false aneurism; indeed, Laennec is of opinion, that false aneurism of the ascending aorta, or its arch, rarely, if ever, exists, unless formed by a rupture of the inner coat of a true aneurism, after it has acquired a certain size; at least he states that he had never met with any other species of false aneurism in that situation, but that consequent to the true or simple dilatation of the part. The abdominal aorta is also the seat of aneurism: and the arteries of the brain are not exempt. Aneurisms of the aorta exist in various degrees, from slight dilatation, up to the size of the head of a full grown fœtus. The vessel is found in one of three states:—1*st*. The walls more or less converted into ossific matter, looking scabrous and irregular, portions, in scales, being easily separated; in many instances these scales are found loose, and already more or less detached:—2*d*. That in which the whole of the coats of the aneurism are entire, much thickened and cut under the knife like fibro-cartilage, having very much the same appearance:—3*d*. That in which a natural cure has been effected by the deposition of thick layers of coagulable lymph, filling up the aneurismal sac, leaving sufficient space for the passage of the blood:—4*th*. That in which a portion of the aneurismal sac is entirely wanting, in consequence of long-continued pressure on surrounding parts; so that sometimes a portion of the lungs, and even the spine itself, have formed a part of the aneurismal tumour.

Aneurisms of the aorta produce various effects on the neighbouring parts, according to their size and situation. Laennec assures us,

that simple dilatation, when in a moderate degree, hardly produces any effect; but that the most inconsiderable false aneurisms may give rise to very serious disorder. The first and most common of these effects is compression of the heart and lungs, by impeding the circulation and respiration. When the aneurism is in contact with the lungs, it most commonly merely compresses them; sometimes, however, the substance of these organs gives way, and the aneurism, when it bursts, pours its blood directly into the air-cells; three remarkable cases of which I have already related when treating of hæmoptysis. Frequently the aneurism compresses the trachea, or one of the bronchial trunks, which it flattens and eventually destroys, and death ensues by a species of hæmoptysis from the rupture of the tumour. The same occasionally, but not so frequently happens to the œsophagus. Sometimes the aneurism bursts into the pericardium; two cases of this are also quoted, (page 50.) Laennec states that he never met with an example of it. The left cavity of the pleura, however, is stated to be by far the most frequent situation into which the rupture takes place. Laennec quotes a case recorded in the Bulletin de la Faculté de Medicine, in which an aneurism of the aorta burst into the pulmonary artery. He mentions a case where the thoracic duct was compressed and destroyed; and Corvisart notices a fatal instance from compression of the superior vena cava. I have seen a preparation of aneurism of the abdominal aorta, which communicated freely with the vena cava. A preparation is in my museum, in which the splanchnic nerve is involved in the aneurismal tumour. This might account for the violent epigastric pain, nausea, and want of appetite, experienced for a series of years by the unfortunate man. Aneurisms often destroy a large portion of the vertebral column, and there can be no doubt that this destruction is the effect of interstitial absorption, not of caries. On the side next the vertebræ the sac is occasionally completely destroyed, and to use the words of Laennec—"the circulating blood is bounded by the naked bone:" several instances of which have occurred in my practice.

Aneurisms of the ascending aorta and arch sometimes destroy portions of the sternum by their pressure, so as to be at length covered only by the integuments. Aneurisms of the arch of the aorta and of the innominata occasionally project above the sternum.

There is no complaint more insidious than the one under consideration; and many a sufferer has been supposed to be nervous, or hypochondriacal and fanciful, who was found, upon dissection, to have been affected with ossification of the arteries, or perhaps an internal aneurism. Laennec states, that aneurisms of the aorta cannot be detected till they show themselves externally, and often the first indication of such an affection is the instantaneous death of the individual, from the effusion of blood into surrounding parts. The symptoms which are sometimes observed, are oppression in the chest, dissimilarity of the pulse at the wrists; a loud whizzing or rushing at the top of the sternum, perceptible to the hand; obscure sound on percussion; rattling in the throat; and dragging down of the larynx, when the tumour compresses the trachea. In noticing

these symptoms, he observes: "In the present state of our knowledge, there assuredly exist no certain means of ascertaining the existence of this disease, until it shows itself externally. Even when the aneurismal tumour has made its way through the parietes of the chest, it is not always distinguishable from tumours of a different kind." And in another place, he distinctly asserts that his experience has been insufficient to enable him "to say how far the difficulty of diagnosis is likely to be removed by the use of the stethoscope." From my limited experience on this subject, it behoves me to speak with very great diffidence; but the little knowledge I do possess induces me to join M. Bertin who conceives that Laennec has undervalued the stethoscope in detecting aneurisms of the aorta. Along with the symptoms stated above, it may be mentioned, that persons labouring under diseases of this description are generally observed to be very restless and impatient.

The symptoms must vary considerably according to the size, shape and situation of the aneurismal tumour. It may press upon the spine, and occasion violent pain in the back, with weakness and anomalous nervous affections:—it may press upon a principal bronchial tube, and create dyspnœa, or produce, by pressure, absorption of a portion of the lungs, and occasion dyspnœa, cough and even hæmorrhage. Or it may compress the œsophagus, and produce difficulty in swallowing. All these circumstances are well illustrated by dried preparations in my museum.

Stethoscopic signs.—Strong beatings, synchronous with the pulse; in general, a single pulsation is felt, which Laennec terms "simple," in contradistinction to the pulsation of the heart, which is double. There is a greater impulse and a louder sound, than the mere contraction of the ventricles produces. The single pulsation is generally accompanied by the bellows sound, "*bruit de soufflet;*" these vary in situation, according to the site of the tumour. If the aneurism press upon the air-passages, a peculiar hissing sound will also be observed during the act of respiration or speaking. When the tumour is large, the chest at that part will sound dull upon percussion, and sometimes even the hand, placed upon the part, will convey a vibrating sensation to the observer. Still, however, we must be cautious in pronouncing a diagnosis, for I have lately seen several cases in which, from other causes, one pulsation only was heard; which appears to me to be produced by the long-continued action of one set of cavities masking the sound of the other. Laennec speaks very confidently with respect to one point, which I shall give in his own words:—"If we find under the sternum, or below the right clavicle, the impulse of the circulatory organ isochronous with the pulse, and perceptibly greater than that of the ventricles examined in the region of the heart, we have reason to suspect dilatation of the ascending aorta, or arch—the more so, as it is extremely rare to feel the impulses of the organ of circulation beyond the region of the heart, even in cases of the most marked hypertrophy. If this phenomenon be found constant, after repeated examinations, we may consider the diagnosis as certain." Bertin, in his work on diseases of the heart, states, that it is not by the pulsations that an

aneurismal tumour is to be detected, but by the great noise which accompanies them.

Treatment.—It is very difficult to give any general directions for the treatment of internal aneurism further than that quietness of body and mind should be enjoined, together with attention to the bowels, and a light and rather dry spare diet. If there be signs of plethora, it should be diminished by a moderate bleeding; if there be any local pain, we are to consider whether it will be most advisable to subdue it by the application of leeches, a contra-irritant, or by the exhibition of an opiate. From the situation of an aneurism of the aorta, and its connection with neighbouring parts, we see at once how the function of the lungs may be impeded by mechanical pressure, independent entirely of the obstruction in the circulation; —how the brain may be affected by impeding the return of blood from the head;—and also how deglutition may be rendered difficult and even painful.

It would appear that we are as yet very much in the dark respecting the functions which the venous system performs, independently of returning the blood to the heart; and I feel convinced that we have as yet no idea of the large share which inflammation of arteries and veins has, and particularly the latter, in different acute and chronic diseases. Many surgeons have yet to learn that much of the want of success attending surgical operations depends on inflammation of veins, which they too frequently and unnecessarily tie.

Phlebitis or inflammation of the veins may be produced by external injuries and surgical operations, even by the slight operation of phlebotomy. When saline injection into the veins was first proposed in cholera, one of the objections that naturally suggested itself, was the danger of inducing phlebitis. But it is remarkable that, with the exception of two or three slight cases, our fears were proved to be groundless, although very considerable liberties were taken with the veins. Some forms of rheumatism are nothing more than inflammation of veins; and I believe the great majority of cases which are supposed to be inflammation of absorbents, will, if properly investigated, prove to be inflammation of veins. The great danger appears to depend on the tendency which the inflammation has to extend itself towards the heart.

Symptoms.—Pain in the course of the vein increased on pressure; tension; swelling and inflammation of the cellulur tissue in the neighbourhood, which at last involves the whole limb, when the disease frequently goes by the name of erysipelas, or diffuse cellular inflammation. When the vessel is near the surface, a red line follows its course, which feels knotty here and there; the limb cannot be moved without intolerable pain; abscesses frequently form in various parts, when the affection is often called phlegmonous erysipelas. I do not assert that erysipelas is always produced by inflammation of the venous system, or that inflammation of a vein will always extend to the surrounding parts, and produce erysipelas: but morbid dissections have convinced me, that these circumstances not unfrequently take place.

The combination of symptoms denominated fever, takes place, and increases with the disease, and it is too often termed typhus; the circulation is seriously affected; the head suffers, and early delirium often occurs.

Inflammation of veins terminates in what is called resolution; that is to say, it is cured without injury to their structure, or to that of surrounding parts. Suppuration is said to be the most common result of inflammation of veins; but it does not appear to me quite certain that pathologists have always been able to discriminate between pus and lymphy effusion. Sometimes the vein becomes obliterated by the thickening of its coats, either with or without adhesions, which form in the canal itself by means of coagulated blood, which becomes organized, or of lymph, which is thrown out, or, as some allege, of pus, which concretes. When the principal trunk of a limb becomes impervious, infiltration into the cellular membrane takes place, producing a great enlargement of the extremity; and Dr. D. D. Davis, professor of midwifery in the London University, has the great merit of being the first who discovered this to be the cause of the disease denominated *phlegmasia dolens;* a discovery which has not only thrown light upon the disease in question, but also upon surgical pathology.

Inflammation of veins sometimes, though rarely, terminates in ulceration and gangrene, involving the surrounding soft parts. Ossification of veins is rarely observed; I have seen only one instance of it, and that was in the crural vein. The arterial system was very much disorganized from the same cause. The preparation is in my museum.

Treatment.—General bleeding is sometimes necessary in this disease, but in general the application of leeches, and incisions with the knife, are more frequently demanded, to diminish tension. Fomentations and poultices are required to the part, and the exhibition of calomel and opium seems indispensable. This disease, being generally considered "surgical;" is not fully treated of here; but I cannot lose this opportunity of referring the reader to an excellent practical paper on inflammation of veins, by Dr. Dumbreck, fellow of the Royal College of Surgeons of Edinburgh, published in his inaugural dissertation when he graduated in the year 1822.

PHLEGMASIA DOLENS.

Symptoms.—Some time after delivery, (within the fourth or fifth week,) pain, or some degree of uneasiness, is complained of in the hypogastric, lumbar, or inguinal region, with slight fulness at the upper part of the thigh, which soon increases, and extends downwards, affecting the labium on the same side. The progress of the tumefaction varies in different cases. In some, the enlargement takes place rapidly; thus, I have seen the limb attain nearly twice the size of the other in the course of thirty hours from the time the person first began to complain. Generally, however, the disease is more slow in its march, the swelling increasing to its greatest size

in the space of from forty-eight to seventy hours. On examining the limb, it will be found to be tense, somewhat elastic, white, shining and hot, extremely painful, particularly upon pressure or motion. The patient is unable to move it herself, and experiences a sensation as if it were considerably larger than it actually is. Most frequently the disease is confined to one side—both limbs are rarely affected at once; but it sometimes happens that as it declines in one leg it attacks the other.

Occasionally the pain is first felt in the calf of the leg, or the inner condyle of the knee, darting upwards and downwards; but in either case, the tumefaction goes on rapidly. The pulse is frequent; the skin hot; and the thirst urgent, with great restlessness. The lochial discharge cannot be taken into account, as the disease seldom comes on till it has disappeared.

The phenomena above described are frequently preceded by decided marks of uterine irritation, and often by rigors; indeed, the worst form of this complaint is that which succeeds to peritonitis, and to symptoms indicating considerable irritation or inflammation of the membranes of the brain; and I have seen three instances in which women were attacked with phlegmasia dolens succeeding to affections of the brain; which had been preceded by severe peritonitis.

The peculiarities of this disease are, that the limb is hot, white, and although swollen, the parts preserve nearly their relative proportions; in anasarca, the limb is generally cold; the swelling is greatest at the most depending part; and it pits on pressure, which does not happen in the first stages, at least of phlegmasia dolens.

The duration of this curious affection is very various, depending much upon the constitution of the patient, the severity of the attack, and the mode of treatment in the early stage. In bad cases, which have been allowed to go on too long without applying the proper means, it is tedious and intractable, occupying weeks, and even months, leaving the patient, even then, feeble and in a dangerous situation. Under such circumstances, the limb will rarely recover its former small size, and will be for a long period stiff and powerless.

It will be found that Mr. White's description of the symptoms varies from that of Mr. Brandon Trye, and both somewhat from that of Dr. Hull; and Dr. Dickson states, that the march of the disease in the same woman varied in different attacks, which is exactly what I have myself noticed. In the 2d vol. of the "London Medico-Chirurgical Journal," it will be found that Dr. Belcombe mentions the case of a lady, the mother of four children, who experienced three violent attacks of this disease, after giving birth to the first, third and fourth child—her labours having always been easy and natural, and her general health good, except a decided tendency to constipation. The first attack commenced with pain in the right groin; the second commenced with pain in the calf of the left leg; the third was the most severe of all, and commenced about four days after delivery, again with pain in the right groin, and after violently affecting that limb, attacked with equal, if not greater severity, the left; no lameness or enlargement followed, but there was a tendency

to swell in the evening, and a feeling of stiffness upon the least exertion.

Phlegmasia dolens occurs also during pregnancy. In the same volume of the work above quoted, Dr. Dickson mentions having seen one case during pregnancy, and relates another, which occurred to Mr. Henderson, a surgeon in Bristol. He further states, that he is indebted to the same gentleman for an interesting example of this affection in the unmarried and unimpregnated female. Puzos relates three cases which occurred during pregnancy. In Thomas's "Practice of Physic," mention is made of an instance of this affection happening in an aged woman. I have myself seen it under all these circumstances; and it now appears, as I shall subsequently show, that it is not confined to the female sex.

Pathological observations.—Some obscure hints are to be found in the works of Hippocrates, which would lead us to suppose that he had seen the disease. Rodericus a Castro, a Spanish author, makes some pointed remarks in the third book of his work,* respecting swellings of the legs after parturition. The celebrated Wiseman notices a case, in the fifth chapter of the first book of his surgical works. Mauriceau, however, is the first author, as far as I know, who has given a tolerable account of its symptoms. The twentieth chapter of the first part of his works, is entitled, "Of the swelling of the limbs and thighs of women recently delivered." Puzos and Leveret also mention it, and suppose it to be produced by a translation of milk, which they imagine to be infiltrated into the limb. Mr. White, of Manchester, was of the opinion, that the disease is owing to the bursting of the lymphatics, from the pressure of the child's head, and the retention of the lymph, in the lymphatic vessels and glands of the limb. Mr. Brandon Trye supposed the disease to be seated in the lymphatic glands themselves, which are obstructed by the pressure of the uterus and its contents. Dr. Hull, who wrote a very learned treatise upon this disease, conceives that it "consists in an inflammatory affection, producing suddenly a considerable effusion of serum and coagulating lymph from the exhalents into the cellular membrane of the limb." (P. 204.) He considers that the pyrexia proves, beyond all doubt, the existence of a general inflammatory diathesis; the excruciating pain, tenderness, heat and swelling of the leg, equally evince the presence of topical inflammation; the seat of the disease he believes to be in the muscles, cellular membrane, and inferior surface of the cutis; and in some cases, perhaps, the inflammation may be communicated from these parts to the large blood-vessels, nerves, lymphatics and glands. An attempt has been made to identify this disease with diffuse inflammation of the cellular membrane; but in the disease I am now describing, there are no marks of inflammation of the cellular substance, whether subcutaneous or intermuscular, or of the muscular fibre itself, and the external aspect of the affected part is very different. Dr. D. D. Davis, professor of midwifery in the London University, to whose ingenuity operative midwifery stands so much indebted, being dissatisfied with all the

* "De Universa Muliebrium Morborum."

pathological opinions that had been laid before the profession, set about the investigation with a mind unfettered by any particular doctrine; and so determined was he to be guided by the appearances displayed on dissection, that he resolved to employ a distinguished anatomist, who was to draw up his own report. The first fatal case which occurred in Dr. Davis's practice was that of a poor woman in St. Giles's, in the year 1819, and Mr. Laurence was requested to conduct the dissection. No distended lymphatics were observed, nor diseased lymphatic glands; but the crural vein was found diseased and thickened in its coats, and its cavity obliterated by an organized coagulum, and a matter which appeared like pus. Dr. Davis made public the result of this dissection in his class-room, and it became the subject of discussion at the medical society of St. Bartholomew's hospital; and perhaps it is fortunate for Dr. Davis's fame that that discussion took place, as very daring attempts have been made to deprive him of the merit which is so justly due to him. Subsequently to this period, Dr. Davis and others have had several opportunities of examining fatal cases, and in every instance, as far as I am aware, either the crural or the iliac veins were found affected in a similar manner.* After lecturing upon this subject in December, 1824, the late Dr. Dease, surgeon to the forces, who did me the honour of attending my class, told me that he had produced such a disease in the person of a sergeant of an Irish militia regiment, by tying the saphena vein to cure a variax. All the phenomena of *phlegmasia dolens* took place; the inflammation of the vein seemed to extend into the abdomen. The disease was subdued by copious depletion, but the man had a narrow escape. It would appear that the same circumstance has happened in the hands of Sir Astley Cooper, by tying the same vein. A case occurred, in the lower extremity, after amputation, in a male patient operated on in the Westminster hospital; *phlegmasia dolens* took place in the other limb, and after death the disease was traced from the vein of the stump, which became inflamed soon after the operation. The disease ascended along the vessels, so as to affect the iliac portion of it; after reaching the bifurcation of the *vena cava*, the inflammation extended down the iliac vein on the opposite side, which was found thickened, and contained the same kind of plug observed in Dr. Davis's cases.†

In the present state of our knowledge, I am far from alleging that inflammation of the veins is the only cause of this affection; but I conceive that no reasonable mind can reject Dr. Davis's pathology.

Treatment.—It would appear that Puzos was among the first who recommended blood-letting in this disease; and Leveret followed his footsteps; but topical bleeding was not used until recommended by Mr. Trye. If the pulse be strong, and the patient robust, it may be found advisable to take blood from the arm in considerable quantity; but should *phlegmasia dolens* succeed any other acute disorder, which has left the patient much weakened, either by dis-

* Vide Vol. xii: part 2, Med. Chir. Trans. of London.

† The reader is referred to the dissection recorded at pp. 52, 53, of this volume. The appearance of the veins is described in a young woman, who survived an attack of the disease for some years.

eased action, or the remedies employed to reduce it, the lancet is inadmissible. We must then rely upon topical bleeding by leeches, purging, fomentations and blisters; in all cases, large doses of calomel and opium are necessary. As soon as fulness, with pain increased on pressure, is observed in the inguinal region, we shall have reason to dread an attack of this disease, and therefore must be on our guard; and should there be the least appearance of its becoming worse or extending, ten, twenty, or thirty leeches should be applied over the part affected, and repeated in increased numbers, again and again, if necessary. The great point to be attended to is to arrest the disease before the swelling takes palce in the extremity. In this way, I think I have been able, during the last ten years, to check it several times in its first stage. If not called till the whole limb has become swollen, we must have recourse to leeches in such numbers as the strength of the patient will admit. Antimony is to be used as a contra-stimulant: in all cases it is a powerful means of enabling us to save blood. I cannot agree with Dr. Davis respecting the administration of digitalis, when we have a more powerful and certain remedy in antimony. In the latter stages of the disease, blisters are to be applied, so as to occupy the lower part of the belly, as well as the upper part of the thigh of the patient. I have seen good effects, in one case, from the application of ice to the limb in the early stage of the disease, but it might prove a dangerous remedy after the swelling has taken place. During recovery, frictions and bandages will be found very beneficial.

With respect to the general treatment of inflammation of veins, it may be shortly stated, that it must be conducted upon the same principles as recommended in other severe inflammatory complaints. But I would strongly urge the free and early administration of calomel and opium, which is represented to have been so beneficial in inflammation of veins in the ordinary state of the system.

CHAPTER VIII.

PLETHORA, AND EXSANGUINITY.

PLETHORA.

I WISH to restrict the term plethora to express an undue quantity of blood in the system. Although it can scarcely be ranked as a disease, yet it deserves to be treated of in a course of the Principles and Practice of Physic, as a powerful predisposing cause of many serious affections.*

Where there is such a redundancy of blood in the system as to threaten mischief, some of the following symptoms will be observed:—an overpowering sense of heat and fulness; flushed face; oppression in the chest, and more or less difficulty in breathing; weight at the præcordia; a sense of uneasiness or fulness in the head; a full strong pulse; occasional vertigo; a difficulty in keeping awake, particularly after a hearty meal; disturbed nights, from heat of surface and disagreeable dreams; and appearance of debility, which is not real but which induces many people to take more food and more wine, even when the pulse is full and bounding. The bowels will be found to be out of order, and the tongue, in general, loaded. To a person so affected, the least accident, as a fright, or exposure to cold, or drinking a cold fluid, or eating any thing indigestible, deranges the balance of the circulation, and simple apoplexy may be produced, or accumulation of blood in some other internal organ, terminating in inflammation; or the combinations of symptoms denominated fever, may take place.

Causes.—In youth, generally speaking, the constitution is plethoric, the demand for blood being great to meet the wants of the system, to supply the means of growth, and the development of the various organs and functions of the body. At the age of puberty, the system is very active; and it is sometimes matter of wonder, how quickly the various parts of the body take on the appearance of manhood. This period, therefore, is well known, even to the vulgar, as a critical period of life.

The plethora necessary to effect all these changes, subsequently becomes less and less requisite; and its continuance is the cause of many serious maladies which are known to take place at this age,

[* See the section on Diseases of the Blood, page 459.]

in the shape of fever, inflammation and consumption. Indolence and sedentary habits are also causes of plethora.

Some people make blood quickly; feed them on the lowest diet; but give them liquids, and they will still be plethoric: but there are others, who daily feed upon the richest articles of food, and yet can never be said to be in that state.

Treatment.—It is fortunate for mankind that diarrhœa so frequently takes place, and assists the constitution when struggling for her very existence; that profuse perspirations are so easily excited; and that the kidneys act occasionally so as to produce an increased flow of urine—all of which circumstances tend, in a remarkable manner, to deplete the system. It will be observed, that eruptions of various kinds appear on the face, back, breast and shoulders, at the age of puberty, acting the part of good contra-irritants, to the relief of internal organs; these eruptions, which are generally of the slow suppurating kind, produce considerable local irritation. Sometimes I have seen urticaria appear very generally over the surface of the body, when the system was to all appearance in great jeopardy. Epistaxis, or bleeding from the nose, is known to take place frequently in plethoric subjects, and is often productive of the greatest benefit.

The buoyancy of spirits, so peculiar to young men, urges them to athletic and manly exercises, and does good, not only by strengthening the frame, but also by preventing plethora. In females, the menstrual discharge appears to operate in preventing a redundancy of blood.

The consideration of these circumstances leads us at once to the proper plan of treatment, not only for the purpose of preventing plethora, but of reducing it when it does exist, and threatens danger. Blood-letting occasionally saves life; but it is very far from being necessary in the majority of cases, unless some important organ is threatened with inflammation. At first, the bowels should be very freely acted upon, and subsequently kept regular, so that the patient shall have one or two free evacuations daily. Regular exercise; early rising; moderate indulgence at table; avoiding slops; and sleeping in a well-aired room, are all points of the greatest consequence.

EXSANGUINITY.—ANÆMIA.

This disease is characterized by a deadly paleness over the surface of the body, particularly of the face and lips. The pulse is quick and feeble, easily excited, and there are frequently palpitations; the appetite is impaired and fastidious; the bowels are disordered; there are languor, general debility and emaciation.

There is considerable approach to this affection in chlorosis; and it is sometimes produced by the actual loss of blood. This is an affection which has been noticed by the older writers, but we are not yet acquainted with the pathological condition of the body on which this bloodless state depends, when it is not occasioned by hæmorrhage. I have seen the affection occur at all ages, and in indi-

viduals of apparently very different habits and occupations. The most unsophisticated example of exsanguinity on record, with which I am acquainted, is that related by Dr. Combe of Leith.*

This disease affected a considerable number of workmen, who were employed in a coal mine at the village of Anzin, in the immediate vicinity of Valenciennes, in which neighbourhood I resided for upwards of two years, and had frequent opportunities of satisfying myself of the correctness of the statements given in the 9th vol. of the "Journal de Medecine," by Professor Halle, of Paris. Although the disease attacked the men severely, who were employed in a particular mine, yet I observed that a considerable number of others were pale and emaciated, and very few of the colliers looked strong and ruddy. The pit in which the disease occurred, was one hundred and twenty fathoms below ground, excavated in the same manner as the others, only from being longer, it admitted fresh air less readily; its temperature was 64°, and it exhaled an odour of sulphuretted hydrogen gas, and respiration in it is described to have been difficult. The workmen affirmed, that the water which filters across the mine, on touching their hands, or the naked parts of their bodies, produced blisters and boils. Nevertheless, they had the imprudence to use it occasionally for the purpose of allaying thirst. A description of the symptoms was sent to the school of Medicine in Paris, by which it appears, that the disease commenced with violent colics, pains in the intestines and stomach, dyspnœa, palpitations, diminution of strength, distension of the abdomen, and stools of a black and green colour. The patients continued in this state for ten or twelve days, or more, when the abdominal pains ceased, but the pulse remained feeble and contracted; the skin lost its colour, and became of a yellow tinge; locomotion was performed with difficulty, and accompanied by great fatigue; frequent palpitations caused an extremely painful state of anxiety; the face became swollen, and copious perspiration took place. This state is represented to have continued even for more than a year, attended by wasting and emaciation. At length, the symptoms recurred with violent headaches; frequent attacks of syncope; intolerance of light and sound; tympanitic distension, pain in the belly, and purulent stools; and death soon closed the scene.

When these details were transmitted to the Society of the School of Medicine in Paris, out of fifty attacked with it, three died, and none were perfectly cured. Upon an earnest request on the part of the Society, four pitmen were sent to Paris, on purpose that the phenomena of the disease might be more carefully watched—the treatment more efficiently directed—and in case any of the patients died, that the appearances on dissection might be minutely recorded. Two of these men recovered perfectly, one imperfectly, and one died. The following appearances were found on dissection. "The abdomen contained no serous exudation. The intestines, and especially the colon, were very much distended; and the fat, both subcutaneous, and in the omentum and mesentery, was very yellow. The liver

* Medico-Chirurg. Trans. of Edinburgh, vol. i.

was small, and did not project beyond the ribs; it was soft and pliable in every part; it was of a pale yellow colour, both externally, and in its substance, which was soft and unctuous to the touch. The gall-bladder was half full of bile, of a colour like the yolk of an egg; and when analyzed, was found to contain much coagulable albumen. The spleen was small and softer than ordinary; and the liquid which flowed from it, as it generally is, was red, like the dregs of red wine.

The stomach, when opened, was found half full of a liquid coloured like the dregs of wine. The duodenum and the jejunum were lined with a mucus of a similar colour: and when that mucus was removed, the membrane, both in the stomach and intestines in all their extent, appeared white and sound. The matter contained in the rectum was thick and figured, and of a greenish brown colour. All the other abdominal viscera were sound.

In the cavity of the thorax, the right lung adhered almost everywhere to the pleura, and especially on its anterior part, but the left lung was almost entirely free. In neither was there any remarkable quantity of serosity; both were light, crepitated under the fingers, and there was no congestion. They were externally white, and mottled with dark blue spots; and on incision, a frothy yellowish serosity issued from all points of these substances, but not from any preternatural collection. The heart was of an ordinary size, and its flesh as pale as that of muscles which have been washed and macerated. Its parietes were soft, and the columnæ carnæ small. Its structure was not at all affected. Not a drop of red blood escaped from any of its cavities; but in the left ventricle, a coagulum, as pale as the flesh of the heart itself, was observed which contained no perceptible portion of colouring matter; the pericardium contained no serosity.

The brain was white, the cineritious substance pale, and little distinguished from the medullary substance. Two or three scruples of serosity only were found in the posterior part of the left ventricle, and the choroid plexus was very pale.

In the three cavities, all the vessels, both arteries and veins, were destitute of coloured blood, and contained only a small quantity of a serous liquid. No blood was found in the aorta, as far as its crural subdivisions, nor in the axillaries, as far as the brachial subdivision, nor in the accompanying veins, nor in the system of the hepatic vessels, nor in any of the sinuses of the brain. Upon making a deep incision into the flesh of the thigh, there flowed out a small quantity of liquid and black blood, but from no other part did any flow. The flesh of the muscles which cover the thorax was exceedingly red; but that of the extremities not much so.

With respect to the appearances observed in Dr. Combe's patient, it may be briefly stated that they were similar.

Treatment.—Mercury has been tried, but the result does not afford much hope of its being pre-eminently useful; and, in some cases, it was decidedly injurious, by producing febrile excitement. The most favourite remedies are stimulant and tonic medicines, with occasional opiates, when required to relieve the griping pains in the bowels, together with the employment of gentle laxatives. Professor Halle

speaks highly of chalybeates. I have seen several children, who suffered much from the draining of blood after being leeched; but all of them recovered under light nourishing food, ass's milk, and a small quantity of brandy three or four times a-day, together with warm clothing; the patients being kept as much as possible in the open air. I am induced to believe, from reflecting on many circumstances connected with cases that fell under my notice in the West Indies, many years ago, which were forcibly brought to my recollection when perusing Mr. Twining's valuable observations on diseases of the spleen, in his work already quoted, that disorders of the spleen may be found to produce all the appearances of exsanguinity. I cannot speak with much confidence on the subject, but I have found much benefit from the use of Mr. Twining's spleen mixture in several cases.*

[* See section on Diseases of the Blood, p. 459.]

CHAPTER IX.

CYANOSIS, OR BLUE SKIN.

This affection is also known by the term *"Morbus Cæruleus."*

Symptoms.—Discoloration of the skin, which is sometimes blue; at others, livid or violet; the whole surface is in this state, even the mucous membrane lining the mouth. There are cough, palpitation, sometimes syncope. In some cases dyspnœa is a constant attendant, which is increased by exercise, a loaded stomach, constipation and mental emotions, together with the application of cold and damp.

Pathological opinions.—This disease is usually attributed to a communication between the right and left sides of the heart, or to some other malformation of that organ, by which means a considerable portion of venous blood is circulated in the arteries without having previously passed through the lungs. The passage of blood from the right side of the heart to the left may take place in consequence of the *foramen ovale* or *ductus arteriosus*, continuing pervious after birth, or by a communication between the right and left ventricle.

Dr. Gintrac, Professor of Anatomy and Physiology in the School of Medicine, at Bordeaux, published a work on this subject in 1824,* and he has collected the results of fifty-three dissections, of which the following is an abstract.

In 22 cases the aorta was found to rise from both ventricles.
— 33 — the *foramen ovale* was open.
— 14 — the *ductus arteriosus* was open.
— 4 — a single heart, of one auricle and ventricle.
— 5 — the ventricular septum was imperfect.
— 22 — the pulmonary artery was contracted.
— 5 — the pulmonary artery was obliterated.
— 1 — the aorta was obliterated.
— 4 — the aorta was seen rising from the right ventricle, the pulmonary artery from the left.

The above table is very interesting in many respects: it proves that the disease upon which the colour of the skin depends, is generally congenital, when it either very soon proves fatal, or perhaps not till the child suffers from teething, or begins to walk alone. But, as

* Observations et Recherches sur la Cyanose, ou Maladie Bleue.

Bertin remarks, many of these lesions have existed without the appearance of this affection of the skin. It is well known that a disease presenting similar external characters has been produced by the action of the nitrate of silver. I have seen two cases in which the disease followed the exhibition of this remedy; in both it was prescribed by the late Dr. Baillie for the cure of epilepsy, and in neither of the subjects were there any symptoms of organic affection of the heart. It is probable that in such cases the nitrate of silver produces a change either in the condition of the blood, or in that tissue which gives the colour to the surface of the negro. Bertin supposes that the disease depends upon a retardation of the blood in the whole venous system, and not upon the admixture of black and red blood, as has been alleged by others. [An elaborate inquiry by Dr. Moreton Stillé has led him to a similar conclusion; or, to use his own language, no *one* lesion is entitled to be considered as the anatomical character of cyanosis; but it may depend simply upon any cause which, acting at the centre of the circulation, produces general venous congestion.*]

Treatment.—Should the disease depend upon any of the malformations of the heart, already noticed, a cure cannot be expected; but something may be done to mitigate violent symptoms, and prolong life, by avoiding exercise, as well as every other circumstance which can tend to hurry the circulation, and quicken respiration. In the two cases already quoted, in which the discoloration of the skin was produced by the action of the nitrate of silver, every possible remedy was had recourse to, first by Dr. Baillie, and afterwards by myself, without success.

[* American Journ. of Medical Sciences, July, 1844.]

PART V.

DISEASES OF THE NERVOUS SYSTEM.

CHAPTER I.

GENERAL REMARKS ON THE DISEASES OF THE BRAIN, &c.

Hitherto a description of the disorganizing effects of diseased action on the matter of which the body is composed, has more particularly occupied our attention; now, however, a more difficult task has to be attempted, as the inquiries here commenced involve the consideration of the functions of the brain, including the investigation of that class of affections commonly, but perhaps erroneously, termed the "*diseases of the mind.*" There are great difficulties to be encountered at every step; one of these relates to the nature of that which is called "*nervous energy,*" and the manner in which it is propagated and conveyed to the different parts and organs of the body. Many important discoveries must be made by anatomists and physiologists before pathologists can be expected to explain fully and satisfactorily the true nature and seat of the numerous and complicated diseases of the brain and nervous system. Another obstacle, which too often thwarts us in our investigations, proceeds from the speedy manner in which the functions of the brain become so much affected as to render the sick unable to give a correct account of their feelings and symptoms. The first step to improvement is to acknowledge our ignorance; but in doing so, it must not be supposed that these branches of medical science have been allowed to stand neglected. On the contrary, there are many able and industrious cultivators in the field, both at home and abroad, and much substantial advancement has been already effected by their investigations.

"*Universa Arabum scholæ mansiones multas, in cerebro statuit et singulis facultatibus singulas sedes assignat.*" So says Laurentius, and, from the experiments of Rolando, Flourens, Serres, Magendie, Sir Charles Bell and others, it would appear to be incontestable, that different parts of the brain and spinal marrow perform essentially different functions. It is, indeed, true, that there is a want of complete agreement in the results of the experiments of some of these distinguished physiologists, and that these discrepancies must be decided by subsequent experiment before the precise value of the statements already laid before the public can be accurately determined. In the mean time, however, it must be held that the grand and leading fact is already proved, that the brain performs some actions essentially different from those emanating from the cere-

bellum; and both of these parts from the medulla oblongata and spinal marrow: and that the ganglionic system is, in some measure, independent of the brain, and is engaged in performing peculiar functions.

The brain has been divided by those distinguished anatomists and physiologists, Gall and Spurzheim, into a number of organs, which they conceive to be separate ganglions; and although I must confess that I have had neither time nor opportunity to examine their system with that care and attention which the importance of the subject demands, and which might enable me to give a decided opinion respecting the truth of all its parts, yet experience and observation oblige me to state, that much of their doctrines appears to be true, and that science owes a great deal to the labours of the gentlemen who have been engaged in phrenological inquiry.

It would seem that the superiority of man to animals, and of one man to another, does not depend on the absolute size of the head, or even on the relative size of the brain; for it has been proved that the brain of a sparrow bears as large a proportion to its body as that of a man, and that of the canary bird a still larger proportion. Man owes his superiority over the rest of the animal creation to a larger development of the anterior lobes and hemispheres of the brain, and to the number and depth of the convolutions.* One man would seem to excel another in intellectual and moral worth, not from the absolute size of the head, but from a difference in the proportion of certain parts in the cerebral mass. Upon the repeated observation of these facts the phrenological doctrines have been founded.

It appears to be established by experiment that there are nerves devoted solely to sensation, and others to muscular motion, while there are nerves combining both these properties.

In a work published by Flourens, in the year 1824,† the results are given of a great many experiments performed on the lower animals, which prove that different parts of the nervous system perform different functions. When the two lobes of the cerebrum were simultaneously removed from fowls, deafness and blindness were produced; the animals fell into profound torpor; they appeared to have lost all sensation; could neither eat nor drink, except when food was put into the throat; but when irritated and roused, they could walk, jump or fly. When the experimenter removed one lobe of the cerebrum only, the animals became deaf and blind on the opposite side of the body; the sensibility was only partially destroyed, and the lethargy was not so profound.

When he removed the cerebellum from a number of animals, they did not lose their sensibility, neither did they become deaf, blind nor comatose. The animals still possessed the power of muscular motion, but they were unable to control it. They could not balance their bodies; their movements were tottering, like those of a person in a state of inebriation.

* Magendie first observed a connection between the number and size of the convolutions, and the vigour of the intellectual faculties.

† Récherches Experimentales sur les Propriétés et les Fonctions du Système Nerveux, dans les Animaux Vertébres.

In a third set of experiments, he removed the *corpora quadrigemina* in some of the animals, and total blindness of both eyes, with immobility of the iris, were the consequence. When the right was removed, blindness of the left eye took place. When the left was removed, blindness of the right eye was produced. When the *corpora quadrigemina* were wounded, contraction of the iris and weakness of vision occurred on the opposite side. Partial removal weakened the action of the iris, and produced partial blindness on the opposite side. Deep wounds of the *corpora quadrigemina* produced partial blindness; but as the parts healed, vision was restored. The organ of vision seems to be the only part affected by injury or removal of the *corpora quadrigemina* in the lower animals.

Flourens next performed a series of experiments to ascertain the functions of the medulla oblongata. He found that injuries and wounds of this organ produced convulsive movements in the parts supplied by nerves issuing from it: and he draws the following conclusions.—1*st.* That the lobes of the brain, which neither regulate nor excite voluntary motion, are the seat of intellect, volition and sensation. 2*d.* That, if the lobes of the brain or cerebellum are irritated or wounded, contractions of the muscles never follow; but he has proved by experiment, that the spinal marrow is the immediate agent of all the muscular movements and contractions; but it is not the seat of volition, nor does it possess the power of regulating the muscular action. 3*d.* That the cerebellum possesses the power of regulating the muscular action. 4*th.* That in the lower animals the power of vision depends upon the *corpora quadrigemina.* 5*th.* That the medulla oblongata is the centre of the involuntary movements. 6*th.* Another important result is ascertained, that deep wounds may be made into the substance of different organs of the brain, and considerable portions removed, without destroying the functions of the parts. And further, that complete recovery of their functions may take place as the brain heals, after they have been for a time partially or totally lost.

From these and other statements in his work, it will be observed, that Flourens believes there are three distinct phenomena in every voluntary motion; first, volition, which depends on the hemispheres; secondly, co-ordination, or regulation of movement, which depends on the *cerebellum;* and thirdly, irritation, or that power which excites muscular contraction, which depends on the *medulla oblongata,* the *medulla spinalis* and nerves. He has been led to believe that volition, sensation and perception constitute but one faculty, which is a function of the hemispheres of the brain. It may be briefly mentioned, that Rolando, from experiments performed previously to those of Flourens, came to similar conclusions, but with this exception, that while the latter makes the cerebellum the regulator of voluntary movement, the former considers it the source whence the motion proceeds.

Flourens next performed experiments on many animals, to ascertain the precise effects of opium, belladonna and alcohol. He concludes that opium acts more particularly upon the functions performed by the lobes of the cerebrum; belladonna on those performed

by the *corpora quadrigemina;* and alcohol on the cerebellum. It must be confessed, however, that these experiments are not worthy of so much attention as the former.

It would appear, by a report made to the Academy of Sciences, upon the memoir of Flourens, by Portal, Count Berthollet, Pinel, Dumeril and Baron Cuvier—that these experiments were performed with the greatest care and circumspection; that Flourens repeated the principal ones before these philosophers; and that they appeared correct. It would be difficult to find five men better qualified to decide upon a scientific subject.

In the work published by Professor Serres* in 1826, it is asserted, at page 662, of vol. ii., that when an instrument is plunged into the lobes of the brain, or into the cerebrum, to a certain depth, severe pain and great sensibility are manifested; although he alleges, that the *medulla oblongata* is the principal seat of sensibility. At page 664, this author assures us, that disease of the *tuber annulare* and *medulla oblongata* produces paralysis, equally in the superior as in the inferior extremities; whereas disease of the lobes of the cerebellum affects principally the sacral extremities; and disease of the lobes of the cerebrum, the superior. He thinks that disease of the *corpora striata* is shown, by effects being produced on the inferior extremities; that of the *thalami nervorum opticorum* on the superior. He also alleges, at page 687, that disease affecting the radiations of the *thalami nervorum opticorum* impedes respiration more than that of the radiations of the *corpora striata;* and that disease of both affects the voice, speech and pronunciation. The same author also asserts, at page 689, that the lobes of the brain exercise a very powerful influence over the voluntary muscles; and that injuries of these lobes are followed by paralysis on opposite sides of the body.

Flourens contends, that when the medulla oblongata is injured, convulsions are produced on the same side of the body, which Serres thinks deceptive, and asserts that the same law holds good with respect to the medulla oblongata as with other parts of the brain, viz.: that injuries on one side produce paralysis on the opposite side of the body.

Serres believes, that the cerebellum is the seat of sexual desire; and has brought forward facts which appear to show a remarkable coincidence between great and long-continued excitement of the sexual organs in both sexes, and marks of irritation and disease in the lobes of the cerebellum.

The experiments of Magendie appear, in some respects, to confirm, but in the majority of points to refute, those of the individuals already mentioned. He states, that it is not in the brain proper, nor in the cerebellum, that the principal seat of sensibility or of the *special senses* is placed. The hemispheres of the brain and cerebellum may be removed in a mammiferous animal, and it will continue to experience sensations, odours, sounds and sapid impressions. Vision, however, is abolished. Injury of the *thalamus opticus* is

* Anatomie Comparée du Cerveau, dans les Quatre Classes des Animaux Vértebrés appliquée a la Pathologie et à la Pathologie du Système Nerveux.

also followed by loss of vision in the opposite eye: for the exercise of sight, "the integrity of the hemispheres, of the *thalami*, and perhaps of the *anterior corpora quadrigemina*, and finally, of the fifth pair, is necessary."* The parts of the nervous system, he continues, which appear to be more particularly destined to motion, are "the *corpora striata;* the *optic thalami* in the inferior parts; the *crura cerebri;* the *pons variolii;* the *peduncles of the cerebellum;* the lateral parts of the *medulla oblongata*, and the anterior fasciculi of the *medulla spinalis.*"† Magendie's experiments on the cerebellum and its appendages have been followed by results of the most interesting nature, more particularly as to the agitated and prominent appearance of the eyeballs, and the movements of the animals; but I must refer my readers, for further information, to Dr. Milligan's excellent and condensed translation of the work.

It appears, from the investigations and experiments of Sir Charles Bell and Magendie, that the old notion respecting the existence of two distinct powers possessed by the nerves, is correct: but the former gentleman goes still farther. According to him, each side or half of the spinal marrow consists of three columns, each column performing peculiar functions. All the nerves which arise from its posterior column, are devoted to sensation; those which arise from its anterior column, to muscular contraction; while the middle column gives origin to the respiratory nerves.

The only part of the nervous system which it remains for me to notice, is that of the nerve called the great sympathetic, which, together with its numerous ganglia, are in communication with the brain through the medium of the 5th and 6th pairs of nerves, and the spinal marrow through its whole course on each side of the spine. It is provided with numerous ganglia, which are for the most part deeply seated along the sides of the spine. The nerves of this system are smaller, with more of a reddish colour than the cerebro-spinal nerves, and are distributed in a peculiar manner, not only to organs not under the control of the will, viz.: lungs, heart, stomach, intestines, bladder, uterus, &c., but are also arranged in plexuses around the arteries and vena portæ. They would seem to possess no exquisite degree of sensibility; indeed, Magendie denies that they possess it in the least degree. There are different opinions respecting the structure and functions of this, as well as other parts of the nervous system, and the whole subject stands much in need of revision. It would be well for science if an association of physiologists were formed for the purpose of repeating the experiments which have been already made upon this subject.‡ I hope there are few who will agree to the singular assertion made by Dr. George

* Magendie's Physiology, by E. Milligan, M. D., p. 112.

† Ibid., p. 120.

‡ This statement was made in the first edition, and I have lived to see such a plan carried into practice by the British Association. It is to be hoped, however, that although nothing can be done in Edinburgh, without a practical illustration of a system of jobbing, which has long been a disgrace to her Medical School, that the Association will not again be led into such gross errors as happened in 1834, in the appointment to committees of men whose names are not known out of the street in which they reside.

Gregory, who, alluding to these experiments, states, "that no reasonable hope exists of deriving from them, even if considerably improved, any practical advantage."*

For the purpose of preventing frequent repetition hereafter, it is essential to lay before the reader, in this introductory chapter, a short sketch of the principal symptoms which are supposed to indicate disease of the brain. It is also desirable to notice, in this place, the nature and causes of those symptoms, which are usually ranked in other works as diseases—viz.: headache, vertigo, convulsions, rigidity of the extremities, coma, delirium, paralysis, &c.

1. *Headache.*—Exclusively considered, headache is, perhaps, less frequently a symptom of disease within the head than of disordered action of the stomach and bowels. We sometimes meet with violent pains in the head in cases the terminations of which show that there has been no degree of inflammation going on; while, on the other hand, instances are not rare of great destruction of parts where headache has not been a prominent symptom. Headache may be produced by determination of blood to the head, and is occasionally very much complained of after excessive depletion; some individuals never partake of certain articles of food, without being severely afflicted; and with many, long fasting has also the same tendency. The common effects of intoxication, more particularly when produced by champagne, are too well known as a cause of headache to require being here insisted on. There can be no doubt, that loss of balance between the arterial and venous systems in the head, produces this symptom. Persons who are frequently afflicted with headaches, when these are preceded by rigors, attended by giddiness and drowsiness, and especially when produced by every slight exertion; by exposure to cold during the course of ordinary occupations, entering a heated apartment, or taking any stimulant, become objects of serious attention, and require medical treatment. The most efficacious plan is to enjoin rest and quietness, to open the bowels, apply cold to the head, and to bathe the feet in very warm water. Some cases will be relieved by a stimulant, a nourishing meal, or an opiate, while others will require general or local depletion.

2. *Vertigo.*—This is a more important symptom than the former, and is produced by various and opposite causes, viz.: by determination of blood to the head, as in inflammation of the brain; by the want of a proper supply of blood in the head, as in hæmorrhage, or after considerable depletion; by loss of balance in the circulation between the arterial and venous systems; by extravasation within the skull; by ossifications of the arteries of the brain; or by the growth of tumours and other disorganizations which may occur either on the surface or within the substance of the brain itself. Vertigo is one of the well-known effects of drunkenness; it is also occasionally produced by indigestible substances in the stomach and bowels—by the motion of a ship, a carriage, or a swing—by looking over a precipice, or climbing a ladder—or by running round in a circle; and it is rather a curious fact, that vertigo shall take place

* Practice of Physic, p. 331.

upon rising out of the recumbent posture after confinement to bed only for a day or two. Vertigo is likewise produced by dilatation of the cavities of the heart, and disease of the valvular tissue.

3. *Convulsions.*—Convulsions sometimes indicate disease of the brain. They frequently attend inflammation, and there can be no doubt that they occasionally depend on organic lesions. It would appear that convulsions are occasionally produced by too much blood in the head, and there can be no doubt that they are frequently occasioned by too little blood, as after excessive depletion, particularly when the body is brought into the erect posture. They sometimes take place from the loss of balance in the cerebral circulation. Indigestible substances in the stomach and bowels, and worms, together with the excessive use of stimuli, opium, &c., are well-known causes of convulsions. But I shall speak more at length upon this symptom when treating of epilepsy.

4. *Rigidity of the extremities.* The occurrence of this symptom, combined with paralysis, according to some French authors, is never wanting in the state called *ramollissement* of the brain. My experience is in general confirmatory of their opinion, that it takes place in a great majority of such cases; but I shall speak more fully on this point when treating of ramollissement of the brain.

5. *Coma.*—Coma, or even a tendency to it, is a very alarming symptom, more so than any of those already mentioned. It may be produced by various and even opposite conditions of the brain; by inflammatory action, or the growth of tumours; but it is, perhaps, more frequently occasioned by the state which has been denominated venous congestion of the vessels of the brain, than by any other cause; in fact, this would appear to be the condition of the brain in simple apoplexy. An opinion, too, generally prevails, that coma always occurs in consequence of compression of the brain by effusion; but this is not the fact, as effusion, if it take place very slowly, may exist in great quantity without having such an effect. Coma is a frequent and a very alarming symptom in the fevers of this country, and it is difficult to discriminate the different states of the brain which give rise to this evidence of disease. He who shall be able to point out a sure method of discriminating between the coma produced by the advancement of diseased action, which will terminate, if not subdued, in disorganizations of the brain, and that occasioned by lost balance of the circulation, or by other causes capable of being removed, will confer a lasting boon upon society, and hand down his own name to posterity. One class of cases requires depletion, the antiphlogistic regimen and the application of cold to the head; while another sometimes requires the most potent stimulants, and will be injured rather than benefited by the application of cold.

6. *Fever.*—Febrile symptoms are produced by inflammation of any organ or tissue of the body, including, of course, the brain and its membranes. Yet it must be stated, that inflammation may exist in the brain, producing the most extensive disorganizations, without causing those symptoms which, when combined, are termed fever. For example, the pulse, instead of being frequent, may be reduced in point of number and strength much below the natural standard—to

sixty, fifty, or even forty pulsations in the minute. It may be slow at the first onset of the disease, become quick, and continue so for a day or two, then sink below the natural standard, and rise again to one hundred and forty or even higher, during a subsequent period of the disease. During the course of one hour, great variations of the pulse may be discovered in affections of the brain; sometimes it is very rapid and intermitting, then slow and irregular; oftentimes becoming so weak as scarcely to be felt, and soon again recovering its strength. The character of the pulse must depend upon the constitution of the patient, as well as upon the treatment pursued; and I am acquainted with no disease in which the pulse becomes so quick after considerable depletion.

A hot skin does not always accompany inflammatory action. There can be no doubt that very generally it does, but experience proves that the exceptions are numerous. The effects of extensive inflammatory action have been frequently discovered in the brain after death, in cases where the heat of skin during life had been below the natural standard, and where the face was deadly pale rather than flushed.

Restlessness and thirst generally attend inflammatory action; sometimes they occur in inflammation of the brain; but a tendency to lethargy, and even to coma, is perhaps more common than restlessness.

7. *Delirium* is no doubt a very general consequence of inflammation of the brain. But the young practitioner should be aware that it does not occur in all cases, and that delirium may exist without any inflammatory action; nay, that delirium may take place from the want of sufficient circulation through the vessels of the head, particularly when there is a determination of blood to some other organ, as in inflammation of the liver, bowels, and even in small circumscribed inflammations of the skin and cellular tissue. A slight external irritation, such as that produced by a blister, will, in some constitutions, occasion temporary delirium. The French practitioners, who have devoted much attention to the subject of arachnitis, allege, that inflammation of the arachnoid which covers the convexity of the hemispheres of the brain, always produces delirium; but Lallemand, who is one of their best writers, states,* that he does not think that the arachnoid is the seat of delirium, but that inflammation of the arachnoid produces that symptom by affecting the *functions* of the brain in the same manner as inflammation of the pleura will produce functional derangement of the lungs, as evinced by the occurrence of cough and dyspnœa.

8. *Paralysis.*—This is a very frequent result of inflammatory diseases within the skull, and of tumours and apoplexy. In paralysis the muscular or motive powers of the part affected may be weakened, or entirely destroyed, while sensation may continue unimpaired, slightly diminished, or entirely destroyed. In some instances, sensation is partially or completely destroyed, while the motive powers continue nearly in the natural state. There is another condition

* In his Second Letter, p. 246.

which is worthy of notice—a limb may preserve its powers of motion and sensation, but the person may have lost *control* over muscular action; and I have seen instances of this condition in the upper as well as in the lower extremities. I have observed it also very often in the hind legs of dogs affected with the disease called "the distemper." Paralysis has been very properly divided into three varieties; hemiplegia, paraplegia, and palsy affecting a particular limb or part.

Hemiplegia sometimes follows an acute affection of the brain, and very frequently succeeds to an attack of apoplexy; it does occur, however, without being so preceded, when it is said by many to depend upon disease of the liver.

Paraplegia is very frequently produced by disease of the spinal marrow; but the best pathologists believe that it may sometimes be produced by disease of the brain. Paralysis of one limb may, I believe, be produced by disease of its own nerves; I have seen cases of paraplegia, and of great muscular debility of the lower extremities, occasioned by noxious sexual habits; and it is in these cases where local application and nux vomica, or its active principle, strychnia, appear to be of so much use. Two instances have fallen under my notice, of general debility of the whole of the voluntary muscles with paralysis of the superior extremities, which were attended by rigidity of the flexor muscles of the fingers, while the intellectual faculties remain entire. The disease, in both instances, was produced by the action of mercury. The individuals stood in the relation of uncle and nephew.

Paralysis is sometimes sudden in its attack; at other times it is slow and insidious. The recovery is sometimes complete; more frequently it is only partial, and occasionally the patient remains in the same state for life.

The short sketch now given of these leading symptoms is intended to show how difficult it is to understand the diseases of the brain and nervous system; and it is to be hoped, will stimulate practitioners to be minute in the observation and comparison of phenomena, and unwearied in the prosecution of examinations after death. Notwithstanding all that has been so ably written on diseases of the brain, a great deal of error and ignorance yet prevails on the subject. This is not much to be wondered at, when we consider how slowly mankind throw off the effects of long-cherished opinions. Nevertheless, it is surprising to meet with the most decided affections of the brain, which have been allowed to go on to a fatal termination unsuspected, because the symptoms did not tally, either in point of number or severity, with those laid down in Cullen's erroneous definitions.

It was a favourite speculation of the late Dr. Monro, that the vessels of the brain cannot contain more blood at one time than another. Dr. Abercrombie entertains the same opinion; and as he is the most recent writer on the pathology of the brain, and, moreover, as the point involves important practical results, I shall lay before my readers a short examination of his statements and reasoning.* Dr.

* Pathological and Practical Researches on Diseases of the Brain and the Spinal Cord. 2d ed., p. 315.

Abercrombie thinks he may assume, "that in the ordinary state of the parts, no material change can take place in the absolute quantity of blood circulating in the vessels of the brain. But the blood circulating in these vessels must be divided in a certain ratio betwixt the arteries and veins of the brain; and it is probable that the healthy state of this organ will depend upon the nice adjustment of the circulation in these two systems." This gives, in my opinion, too arbitrary an influence to the circulation. It is the general belief, that all the organs of the body are liable to be affected in their functions, sometimes with, at others without any alteration in the circulation; and why should this be denied to the brain? Dr. Abercrombie thinks that the brain is not compressible, "because, (says he,) we may safely assert, that it is not compressible by any such force as can be conveyed to it from the heart through the carotid and vertebral arteries." This appears to be rather a hasty assertion; the state of the respiration must have a great influence, not only on the quality or condition of the blood, which I believe to be a source of many cerebral derangements, but on the quantity of blood in any given organ, and more particularly in the brain. In proof of the force with which the heart may act on the cerebral circulation, the following case may be mentioned. A young lady fell down suddenly and died on the spot. On dissection, and aneurism about the size of a hazelnut, situated at the origin of the sylvian artery, was found, which had been ruptured with such force as to break down the substance of the brain, so that a large quantity of blood found its way into the ventricles.

Dr. Abercrombie endeavours to trace the various ways by which, in such an organ as the brain, derangements of the circulation may be supposed to take place. In a plethoric state of the body, he admits that "the arteries going to the head will partake of this general condition, and there will be an effort or impulse which tends to propel an undue quantity of blood into the arteries of the brain. Though no addition to the whole quantity of blood in the brain can actually take place, because the vessels of the brain are already full, the constant impulse will be such as tends to introduce an additional quantity, and consequently, tends to derange the healthy relation betwixt the arterial and venous systems; for any increase of quantity in the one system, if such actually took place, would lead to a corresponding diminution of the quantity in the other. Let us say, for example, that the whole blood circulating in the brain is as ten, and that it is divided between the arteries and veins as five to five. In the loaded state of the system now referred to, we can suppose a case, in which, by some sudden impulse from the general circulation, the arteries of the brain are, at a particular moment, distended by a quantity as six. In any other part of the body this will be followed by similar distension of the corresponding veins, and the healthy balance of the circulation would be speedily restored; but in the brain the very reverse would happen: for as the whole mass of blood must continue at ten, if the arteries were distended by a quantity as six, the quantity in the veins must be diminished to four; because the increased capacity

in the one system of vessels can only be gained by a corresponding diminution of capacity in the other."

Dr. Abercrombie here asserts, that the quantity of blood in the head can undergo no variation; it must be always the same; but he admits that a derangement may take place in its distribution between the arteries and veins; the former may sometimes contain too much, which necessarily leads to a diminution in the latter, and *vice versâ*. Let us follow out Dr. Abercrombie's example, assuming the whole blood circulating in the brain to be as ten, and that it is divided between the two systems as five to five. Now, whether we begin by adding or by diminishing, it allows an addition or diminution to the whole quantity of blood in the head, which Dr. Abercrombie believes cannot take place. An increase in the arterial system of the head cannot take place before a diminution occurs in the veins, nor in the veins before a diminution takes place in the arteries; so that if Dr. Abercrombie's position were correct, no loss of balance could by any possibility occur in the vessels of the head.

In tracing the various ways by which derangements of circulation may be supposed to take place in the brain, and in following out the same line of argument, Dr. Abercrombie states that "if a depression has been produced of a portion of bone, so as considerably to encroach upon the cavity of the cranium, or if a coagulum of blood has been deposited, so as to occupy a considerable space upon the surface of the brain, the diminution of space thus produced would probably affect chiefly or entirely the venous system of the brain. It would not diminish the quantity of blood which tends to enter the arteries of the head, but it would diminish, in proportion to its extent, the capacity of the veins, and thus derange the relations betwixt the two systems of vessels, in a different manner from that which has been supposed under the former heads, but analogous in its effects upon the circulation in the brain."

We are entitled to ask, why the arteries should have such a remarkable exemption? Why should the veins be more affected by the pressure than the arteries, unless the depression or coagulum be in the course of the longitudinal or lateral sinuses? If the skull be completely filled during life, and if a piece of bone be depressed or a coagulum be deposited, every part of the brain, and all the vessels, arteries as well as veins, ought to feel it, and not one set of vessels alone.

From all the facts referred to by Dr. Abercrombie, in his work, he arrives at last to an important practical conclusion, that we cannot diminish by treatment the quantity of blood in the head, for, however guardedly Dr. Abercrombie has surrounded himself by cautious expressions, and more particularly in the second than in the first edition, that seems to be his decided opinion. But he shall speak for himself: "Upon the grounds already referred to, there is reason to believe that we cannot, by our evacuations, diminish, in any material degree, the quantity of blood in the head." But the effect of evacuations, he supposes, will be to take off the excessive impulse from the circulation.

The experiments of my lamented friend, the late Dr. Kellie of

Leith,* and the mechanism of the skull, show, not as Dr. Abercrombie supposes, that the quantity of blood in the vessels of the head cannot be diminished, but rather, how difficult it is to deplete the brain altogether, or so much as to render it cognizable to our senses on dissection, even in animals purposely bled to death. Certainly we are not entitled to conclude, from any known facts or experiments, that the brain must always and in all circumstances contain the same quantity of blood. When blood is taken from the arm, the brain sooner or later becomes affected, as is shown by the occurrence of giddiness, singing in the ears, impaired vision, &c.; and if the operation be still continued, syncope, perhaps convulsions, will follow. We then favour the flow of blood to the head, and do all we can to impede its return, by placing the body in the horizontal posture, allowing the head, in severe cases, even to hang lower than the rest of the body. Were Dr. Abercrombie's hypothesis correct, the circulation in the head, and consequently, the functions of the brain, ought not to be materially affected by position; it ought to be nearly the same whether the body were supported upon the crown of the head, or on the tuberosities of the ischia. In a practical point of view, then, both experience and common sense loudly rebel at the bare idea of such notions as those entertained by this author; for if it were wished to subdue a true inflammatory action in the arterial system of the brain, a vein must not on any account be opened, and more particularly the jugular, because, by emptying the venous system within the skull, or doing any thing which has a tendency to empty it, as a matter of course it must follow that the quantum of blood in the arteries will be increased in the same ratio, because the vessels of the brain must always contain the same quantity;—if there be too little in the veins, a proportional accumulation must take place in the arteries. Upon the same hypothesis, the converse must also hold good, viz.: that when there is great accumulation of blood in the veins of the head, acute action ought to be an impossibility; and the most effectual method of extinguishing inflammation in the brain would be to place ligatures on the jugulars, or by some other means to impede the return of blood from the head. Cupping, leeching, and the application of ice to the head ought also, upon this principle, to be injurious rather than beneficial, and the head and shoulders should be placed in a depending rather than an elevated position.

In conducting this important critical examination of Dr. Abercrombie's doctrines, I have not availed myself of the arguments which could be fairly drawn from the experiments of Drs. Carson and Barry, by which it would appear that the heart exerts a *sucking*, as well as a *propelling* power, and according to which Dr. Abercrombie would have still greater difficulties to contend with. Neither have I taken advantage of certain anatomical facts respecting the cavities in the brain—the free communication between the ventricles of the brain and the bony canal which contains the spinal marrow nor of the serous fluid which is known to exist in and about the brain and

* In Dr. Kellie's death, the world has lost an accomplished physician; and I have to regret the loss of an able friend, to whose advice and assistance I had often to apply when in difficulty:

spinal marrow, and which is found on dissection to vary so much in quantity. I have seen many dissections made with a view to ascertain whether there existed a communication between the ventricles of the brain and the spinal marrow. The subjects being placed on the face, the slightest pressure made on the surface of one of the hemispheres, caused a wave of fluid to ascend beneath the arachnoid of spinal marrow as high as the 4th rib. Pressure applied on both sides of the brain caused the fluid to mount over the convexity of the back, and find its way to the inferior part of the spinal canal.

[Recent pathological investigations have fully confirmed the fact already adverted to, that various diseases of the brain are mainly owing to or dependent on morbid conditions of the heart. Among these is ramollissement; which is often consequent, not as has been generally supposed, to excess of blood in the brain, but to a deficiency of that fluid from disease of the aortic or mitral valves; whence the importance of inquiring into the state of this apparatus in all chronic cerebral affections.]

CHAPTER II.

INFLAMMATION OF THE BRAIN AND ITS MEMBRANES.

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1. *Inflammation of the membranes of the brain as the disease occurs in adults.**—It must be carefully kept in recollection, that in all inflammations there may be not only several degrees of the diseased action, as the acute, subacute, and chronic, but there may also be a congestive variety, giving various shades of symptoms. The extent and duration of the disease, the age, sex and constitution of the patient, must also necessarily give to the symptoms a wide range of character. Hence, a person who has enjoyed robust health up to the period of an attack of inflammation of the membranes of the brain, will generally be affected in a different manner from another who, for months before, had been daily losing blood in consequence of hæmorrhage from the nose, the uterus or the bowels. Inflammation of the membranes of the brain may also be complicated with diseases of the lungs, heart, kidneys, or some other organ, producing endless modifications: therefore it is impossible to convey a correct notion of a disease, by means of a definition containing an enumeration of a few of the symptoms.

Cullen has classed all the acute, subacute, and chronic diseases of the brain and its membranes under one head, which he has termed phrenitis; and the following is his definition:

"*Pyrexia vehemens; dolor capitis; rubor faciei et oculorum; lucis et sonæ intolerantia; pervigilium: delirium ferox, vel typhomania.*"

This definition will neither suit inflammation of the membranes of the brain nor of its substance. It represents a case of very rare occurrence, indeed, and one which is therefore an exception to the rule. Those who have studied nature, will join me in stating, that we rarely, if ever, see the combination of symptoms as above described; and that a patient may show them all, without the existence of *inflammatory action.* On the other hand, we often meet with

* Under this head, I shall treat of inflammation of the arachnoid and pia mater; because there are no diagnostic symptoms by which we can distinguish inflammation of the one membrane from that of the other; but as this distinction is interesting in the present state of our knowledge with reference to morbid anatomy only, I shall defer for the present the further consideration of the subject. I believe that all pathologists, especially the French, have attributed too many of the phenomena of inflammation of the membranes to the arachnoid, and have overlooked the influence of diseased action in the pia mater.

inflammations within the skull without symptoms of fever, the face being decidedly pale, instead of red: and the pain of head is not always a prominent feature of the disease.

Vogel had probably similar views in his mind when he declared that "all the acknowledged symptoms of inflammation of the brain are equivocal, not only as to a distinction of one morbid part from another, but as indications of inflammation in any part."

Phenomena of inflammation of the membranes of the brain. —1. This disease sometimes attacks a patient in the following manner: There is a well-marked rigor followed by pyrexia, intense headache, redness of face and eyes, intolerance of light and sound, violent delirium, pulse at first considerably above 100. In a day or two coma steals on the patient, followed by partial or general convulsions, terminating in death. This, as has been already hinted, is the rarest case to be seen in practice; and it is unaccountable to me how Cullen should have been led, in drawing out a description of the disease, to choose it as his model.

2. Cases are sometimes met with, in which the first prominent symptom is convulsions; but upon making minute inquiry we shall generally find that the patient had been for some days out of his usual state of health; that he appeared drowsy, and rather inactive. There may be only one severe convulsion followed by paralysis, coma and death; or there may be repeated convulsions for days, with intervals of sense, till the fatal termination, which is generally preceded by paralysis and coma.

3. At other times the disease comes on with severe headache; violent terror producing loud and long screaming, attended with considerable disturbance in the intellectual functions, so that the patient can scarcely give any account of his sensations; and coma soon makes its appearance.

4. Occasionally a patient complains, for perhaps a week, of slight feverish symptoms, and tinnitus aurium, but does not suffer much from headache; nor is he observed to have more intolerance of light or sound than most patients labouring under fever, in which the brain is not peculiarly affected. He may complain most of giddiness, and a feeling of weight on the crown of his head; his bowels are observed to resist the action of laxative medicine much more than usual; his pulse may be about 100, without any characters indicating a serious affection: the heat of skin may be somewhat increased at night. At length restlessness gives way to what is thought to be drowsiness; the patient does not answer readily when spoken to, which is attributed to deafness; and as this is neither an uncommon nor a bad symptom in fever, it is not much regarded, particularly as, when roused, the patient appears quite sensible, and will take any thing which is offered him. But, at last, the coma becomes profound, the pupils dilated; he will sometimes grind his teeth; squinting will be observed, with partial or total blindness; paralysis of one side of the body sometimes follows; and the patient will gradually sink after repeated convulsions, which in most cases are in the first instance general, but by degrees become more partial, till at last they only affect the muscles of the face, and some of those connected with

respiration. Occasionally, however, the convulsions are partial from the first, affecting the muscles of one superior extremity; perhaps only some of the muscles, in which case the hand will probably be found to be twisted during the paroxysm.

A fifth form occurs without much fever, but with some degree of headache, intolerance of light and sound and considerable giddiness. The patient may complain very much of nausea and pain in the stomach, which being the most prominent symptoms, together with constipation, the disease may be attributed to disorder of the digestive organs. Vomiting sometimes takes place, and becomes intractable; every thing taken into the stomach being quickly rejected. The cerebral disease goes on advancing, but in such a manner as to avoid notice, till at last the patient becomes drowsy and comatose, or convulsions appear, and death sooner or later follows.

6. Another form under which the disease advances, is: a patient, after being affected with some acute disease for two or three weeks, during which he may have been bled and otherwise properly treated, the original disease appearing to be quite subdued, may complain, while in a state of collapse, of passing restless nights, being disturbed and agitated by frightful dreams. His strength suddenly becomes increased so as to require restraint to keep him in bed; his pulse is weak, perhaps quick, so weak and quick as scarcely to be counted; the extremities are cold, and cannot, by the most assiduous attention, be kept warm; one or both cheeks present a flush, the size of a shilling, the rest of the face being deadly pale. The raving is constant. There may be *subsultus tendinum;* picking or twisting the bedclothes, or one or both hands may constantly be in motion, wiping the angles of the mouth and eyes, or engaged as if drawing hairs, either from the fingers of the opposite hand, or from some parts of the face. The tongue, as in the progress of most of these cases, becomes parched and brown; paralysis takes place, with convulsions or coma; and as death approaches, respiration becomes difficult, and the pulse gradually weaker.

7. A person may complain of passing restless and uneasy nights; he cannot lie long in one posture. When about to fall asleep, he is annoyed by some unpleasant thought or frightful dream; the feet, perhaps cold when he went to bed, become very hot; and he has some uneasiness in his head. Towards morning, a slight relieving perspiration takes place; he sleeps a little; and awakes with some degree of headache, which is attributed to bile, or to the bad position of his pillow. His urine may be very scanty and high-coloured; the mouth clammy and the tongue foul; but after being washed and dressed, and taking his breakfast, he feels better, and proceeds to attend to his business. During the course of the day, he is weak, and experiences a difficulty in applying his mind to the affairs which usually occupy him. Every thing he does costs him a struggle; his feet are cold; he feels chilly, and every exposure produces a tendency to rigor. He is observed to be impatient and irritable, even about trifles; and he longs for the hour when his business is to terminate; but he retires from it with increasing headache. When he goes home, his family attribute his complaints to cold, or to over-

exertion, or to weakness, and he is pressed to take nourishment, and even wine or spirits and water. These symptoms may be relieved or may continue, the patient getting better and worse for many days, till at last symptoms of a more urgent nature take place, which unequivocally announce the progress of some serious disease; and when a physician is sent for, he finds symptoms denoting a very dangerous affection of the brain, or a complicated case which suits his notion of typhus fever. The case may be now beyond the reach of remedies, and coma soon becomes profound.

In the general remarks, it has been observed how very variable is the pulse in diseases of the brain, even in the course of the same day. The same remarks are peculiarly applicable to inflammation of the membranes of the brain. The pulse may be quick—140, 150, or 160, and weak, for in general, when the pulse is so very rapid, it is also very weak; or it may be above 100, and rather strong; it may be at the natural standard, or a little above it, and either strong or weak; or it may be much below 70, very strong, or only of the proper strength; and under all these conditions, the pulse may be irregular, intermitting, and varying very much in strength. Upon the whole, a very slow or a very quick pulse indicates danger; perhaps the former is a more dangerous symptom than the latter, as a pulse often becomes very quick in irritable constitutions under the application of the usual remedies employed for the cure of inflammation.

The observations already made in the general remarks respecting the heat of the skin, and the other symptoms usually denominated febrile, equally apply to this part of the subject, and therefore need not be repeated.

From a careful examination of the eyes and general expression of the countenance, the experienced physician gathers much assistance in forming an opinion whether the brain is or is not affected. The pupils, in the first stage, are generally found more or less contracted; as the disease advances, they often become dilated. One pupil may be dilated, while the other is contracted. An immovable pupil, whether dilated or contracted, is an important symptom. In almost all cases of inflammation of the brain, the conjunctiva is very vascular; in the worst cases, I have observed an angular patch, having more or less of a bloodshot appearance, situated near the inner canthus, the apex pointing towards the cornea, the latter part appearing usually dry and slight muddy. When there is wild delirium, the eyes have a very brilliant, animated expression; when there is coma, or a tendency to it, they look stupid, and are sometimes void of all expression. There may be squinting of one or both eyes, or they may roll in a frightful manner; may appear as if fixed in their sockets; or one or both may be turned up, giving the expression denominated pathetic. The eyelids are generally kept closed in the commencement of affections of the cerebrum, perhaps to avoid the light; as the disease goes on, however, one or both are observed to be half opened; and there may be partial or total blindness of one or both eyes. This, it may be remarked, is always a more unfavourable symptom than deafness. With respect to the expression of

countenance, it is sometimes animated, bold and even audacious; at others, the expression is subdued; in some instances, there is a total want of animation, with an expression of stupidity, as if the mind were not acting at all; and sometimes there is an appearance exactly resembling that of a man considerably advanced in a state of inebriation. Occasionally the teeth are observed to be clenched, approaching to the state of locked jaw. Sometimes there is an expression as if the patient were labouring under violent pain; at others, it gives the idea of passive suffering.

The speech is variously affected. Patients sometimes show great volubility; at other times they are taciturn. In cases where there are marks of considerable oppression of the brain, the words hang, as it were, in the mouth; the patient forgets the names of his nearest relatives even before he is observed to confound one individual with another, and he frequently falls asleep before he has half finished a sentence. The tongue may be paralyzed partially or completely: in general, when the patient shows it, it appears in a tremor; or it may be in constant and violent motion, pushing out the cheeks, or protruded out of the mouth. It may be either moist and loaded, or dry and covered with sordes.

Respiration is not necessarily affected in inflammation of the brain or membranes; sometimes, however, it is very much so; but dissection has yet to reveal upon what lesions this depends. Occasionally, particularly in young persons, the respiration has a crowing sound resembling that in the back draft of hooping-cough, of which I shall speak more fully under the head of hydrocephalus. Before a convulsive paroxysm the respiration sometimes becomes very much hurried, and after it subsides it is so slow as to appear altogether suspended.

Causes of inflammation of the membranes of the brain.—Experience teaches us that some individuals, from peculiarity of constitution, or from hereditary conformation, are more liable to inflammation of particular organs than others. Whatever cause disturbs the balance of the circulation between the venous and arterial systems may cause inflammation of the brain and its membranes. In the fevers which prevail in this country, and which are called typhoid, there are symptoms decidedly indicating disease of the brain from venous congestion; and it is a nice matter to discriminate between a case purely of this nature and one of inflammation; and still more difficult if the two are united. In the one case, stimulants may be used with advantage, and in the other, they may do irreparable injury. Cold; fright; external injury; suppression of any of the exertions; the sudden disappearance of an old discharge or eruption, or the healing of an old ulcer; exposure to a vertical sun with the head uncovered, are all causes of inflammation of the brain. But constipation of the bowels in a plethoric habit, in addition to some of the causes just enumerated, most frequently, I believe, occasions this disease. Infants are more liable to inflammation of the membranes of the brain than adults, particularly during the period of dentition. This appears to be owing to determination of blood towards the head, caused by the irritation of the gums. Although

men are more frequently attacked than women, yet it is a mistake to suppose that thinking men are more liable than others to diseases of the brain. It requires something more than the continued exercise of thought and ardent study; there must be conjoined long-continued anxiety of mind, high living, abuse of stimulants, want of exercise, cold feet, or inattention to the bowels. All these circumstances predispose to this affection.

Appearances on dissection.—A person may die in the first stage of inflammation of the brain, when the balance of the circulation in the vessels of the head is disturbed; and the patient is said to owe his death to simple apoplexy. On dissection, the only diseased appearances discovered, will be considerable engorgement of the cerebral vessels, with more or less effusion of limpid serum. In inflammatory affections of the brain, we must not always expect to meet with effusion, because the patient may die before this result has taken place, and death may be owing to what is called the shock of the disease, or that produced by the remedies.

We sometimes meet with considerable venous engorgement, not only of the great sinuses, but of the trunks of the veins running into them, and very small vessels containing red blood will be seen arborescing with each other in every direction. In many decidedly congestive cases, I have seen the carotid and vertebral arteries distended with dark-coloured blood; occasionally ecchymosed spots are discovered here and there on the surface of the brain.

Pure *arachnitis* must be a rare disease. The arachnoid, in a state of health, is not a very vascular membrane; at least its vessels do not convey red blood. In my whole experience, I have not met with above six cases of inflammation of the arachnoid membrane. In ninety-five cases out of the hundred, the effusion is situated, not on the serous surface of the arachnoid, but between it and the *pia mater*. In general, if the least effusion be discovered between the membranes of the brain and in the ventricles, it is noted down without farther examination as the result of inflammation; but I believe there is always some fluid between the two membranes in a state of health. The same remark equally applies to the ventricles; besides which, it must be recollected that venous congestion, or any other cause tending to impede the circulation in the veins, will speedily give rise to a great increase of the quantity of fluid in the brain; and this is what Cullen and others have called serous apoplexy. If, however, there have been febrile symptoms during life, and a considerable effusion found after death, and particularly if conjoined with vascularity, the appearances may be attributed to inflammatory action. This is rendered more certain if the effusion look turbid, or contain flakes of coagulable lymph; if the convolutions of the brain be glued together by lymph, extending either from convolution to convolution, or dipping down between them; if the arachnoid which lines the *dura mater* adhere to the proper arachnoid coat; if the arachnoid coat be ulcerated, or capable of being separated from the subjacent membrane in tolerably large flakes. In inflammation of the membranes of the brain, portions of the cerebral mass are occasionally found to adhere very firmly to the surface of the *pia mater*,

such portions appearing softer and of a redder colour than the rest of the brain. There is one appearance of the arachnoid, to which my attention was first directed upwards of twenty years ago by my lamented friend the late Dr. Gordon, as indicative of deep-seated inflammation. This is a dry, unshining appearance of the membranes of the brain; but I believe it is more frequently observed in inflammation of the substances of the brain than in that of the membranes.

The membranes of the brain are sometimes found to be much thickened by a deposition of coagulable lymph between them, both surfaces exhibiting considerable vascularity.

There are small white bodies found on the arachnoid membrane in the close neighbourhood, and in the course of the longitudinal sinus, which are called *glandulæ Pacchioni.* When large clusters are discovered, they are sometimes, perhaps erroneously, attributed to inflammation. Small granular tubercles are occasionally seen on the arachnoid; these generally exist in connection with the same kind of degeneration in the lungs. On slicing the hemispheres of the brain to reach the lateral ventricles, the brain is observed to present many red points, which, if examined for a few minutes, will be seen to yield a little blood, and eventually to become small drops. The ventricles are sometimes found greatly distended with a serous fluid; and when much distended, the communications between them will be seen much enlarged; perhaps a part, or the whole of the *septum lucidum*, may be soft, broken down and ragged. Effusion is rarely, if ever, seen in one lateral ventricle without being found in the other. I should not be inclined to attribute two or three drachms of serum in the ventricles to inflammatory action; and should be still less inclined to attribute the death of the patient to the efforts of such an effusion, because I believe there is always some fluid in these cavities. The lining membrane of the ventricles occasionally shows a considerable number of red vessels, particularly if the disease have been of long continuance; the membrane itself may be softened or thickened; but this appearance shall be more particularly spoken of under the head of hydrocephalus. The choroid plexus consists of a congeries of small blood-vessels connected together by a very loose cellular membrane. I have seen large flakes of yellow lymph adhering to this plexus, the *corpora striata* and *thalami.* The plexus is sometimes thickened, granular and occasionally vesicular. The vesicles are often mistaken for hydatids; but they appear to me to have no resemblance to these bodies, and to be nothing more than an effusion of serum into different parts of the cellular tissue. I attribute much of the effusion found in the ventricles to diseased action of the choroid plexus, as well as to that of the membrane lining the ventricles.

On removing the brain from the skull, considerable vascularity will, in general, be discovered in the membranes at the base of the brain, and when there is any effusion, it will be found generally about the central parts, involving the origin of all the nerves, with the exception, perhaps, of the olfactory. The effusion may consist of a colourless fluid, but in general it is turbid; lymph of considerable thickness and consistence is very often found extending directly back-

wards from the point of decussation of the optic nerves to the termination of the *medulla oblongata;* and there are several preparations and drawings in my museum, in which the effusion is in such quantity, and the membranes so thickened, that the origins of the nerves, the circle of Willis, the basilar, and even the vertebral arteries, are all conglomerated in one confused mass, and some of the parts, particularly the basilar artery, and the vertebrals, are twisted out of their natural situation. In some instances, I have seen the lobes of the brain adhering by an interposition of lymph. I have also observed the same appearance in the hemispheres, and, in two or three instances, the adhesions were old and extensive—no doubt the result of a former inflammatory attack.

Treatment of inflammatory affections of the brain.—There are two difficulties to be encountered in practice. The first is to ascertain whether inflammatory action be actually going on in the brain; and secondly, if it be going on, whether the disease is not already too far advanced to admit of the application of the most potent remedy for the cure of acute disease—general blood-letting. The most experienced physicians are sometimes at a loss to determine these two points.

The remedies necessary are—bleeding, general and local; purgatives; antimony; cold applications to the head, and warm to the extremities; blisters and antiphlogistic regimen.

There can be no doubt of the propriety, nay, the necessity of opening a vein in the arm, and abstracting a sufficient quantity of blood, if the inflammatory action be acute, if there be marks of venous congestion in the head, and if there are none of the usual signs of extensive organic lesions present. Even should these exist, if the pulse preserve some degree of strength, if the respiration be natural, the heat of surface considerable, the tongue not parched, and the teeth not covered with sordes, bleeding may be tried. But in all cases of inflammation, of whatever organ, the lancet should be cautiously used, if used at all, when the tongue is dry and parched, when the pulse is exceedingly rapid, and more particularly if it be irregular. It appears to me, that bleeding from the arm, in cerebral affections, has advantages over opening the temporal artery, independently altogether of the disagreeable consequences which sometimes happen from the latter operation. By opening a vein in the arm, a very considerable determination of blood is necessarily produced towards the extremity operated upon, and the blood flows more rapidly. The right side of the heart itself is, perhaps, more immediately relieved by preventing the usual quantity of blood from returning to it, which will, in all probability, favour the return of blood from the head, particularly if the shoulders be considerably raised, or if the patient be bled in the erect or half-erect posture.

No physician, however wise and experienced, can tell what quantity of blood ought to be taken in any given case. To bleed in a quantity much under that which is required to subdue a disease completely, is almost worse practice than not to bleed at all; because the patient is robbed of much strength without destroying or decidedly

mitigating the diseased action, and thereby the subsequent treatment is embarrassed.

When bleeding a patient late in a disease, and in doubt whether the application of this remedy may not do harm, the practitioner should be watchful of the expression of the countenance, the state of the respiration and the pulse. If the countenance become pale and haggard; if the respiration should be either quicker or slower, or more laborious; and if the pulse flag, or become weaker and quicker, then we may be certain that general bleeding should not be pushed further, and our hopes of safety must depend upon other means. Even in the most favourable cases for bleeding, it behoves physicians either to use the lancet themselves, or to see the operation properly performed. I am persuaded that valuable lives are often lost in acute diseases from neglecting these points, and particularly in the class of diseases now under consideration. It is of great consequence to watch the effects as the operation is going on, and to be particularly observant after a large quantity, say 30 or 35 ounces, have been abstracted. The finger should then be constantly upon the radial artery of the opposite arm, to notice the pulse; and when in doubt about proceeding further, it is by far the wiser plan to tie up the arm, reconsider all the features of the case, and, in the course of an hour or two, to renew the bleeding or not, according to circumstances. But in order to show the success of a bold measure, judiciously employed, very late in a bad case, the following short history is quoted. A young gentleman, aged ten years, after an attack of scarlatina, became dropsical. Every part of the cellular tissue was infiltrated; even the scrotum was enormously distended. All the usual remedies were employed, except venesection; and I was induced to avoid taking blood, from an idea that the patient was too weak to bear the remedy, and because the urine coagulated on the application of heat, and contained a very large quantity of albumen, the specific gravity being 1008°. One forenoon, when under the action of mercury, he appeared to labour under nervous symptoms. Smart laxatives were ordered; but, in a few hours afterwards, violent tonic convulsions took place. My friend Dr. Lewins, of Leith, was sent for; he opened a vein, and bled till relief was obtained. I weighed the blood next day, and found that two pounds avoirdupois had been abstracted. The boy had no return of the convulsions, the dropsical effusion diminished daily, and from that time his recovery went on rapidly.

I have endeavoured to impress upon my youthful readers the necessity of perfect devotion to the exercise of their profession; and that they will be successful in the means they employ for the cure and alleviation of diseases, exactly in proportion to the attention they pay to their patients. In inflammatory diseases of the viscera, and more especially of the viscus now under consideration, an hour's delay in the application of an important remedy may cost a patient his life; the visits of practitioners should, therefore, be frequent, and I would not allow a longer interval to take place between the visits than two or three hours.

Leeches to the temples in considerable numbers are very serviceable; but the bleeding should not be allowed to go on long if the

patient be much reduced. Warm water should not be used; and before the application of the leeches, it will be highly proper to have the head shaved.

Sufficiently powerful purgatives must be used. This is almost the only class of diseases in which drastic medicines should be administered, because the bowels are not only difficult to be moved, but experience has taught us, that considerable advantage is gained, not only by the evacuations, but by keeping up a constant irritation along the whole alimentary canal. I am in the habit of giving, in very severe cases, large and repeated doses of calomel or croton oil, or both conjoined. Three or four scruples of calomel may be administered in divided doses to patients, in such circumstances, without producing ptyalism. Should a sore mouth take place, it may be regarded as a very slight evil if the patient's life be saved. My reason for giving calomel in cases of inflammation of the brain is simply this: many eminent practical men have written so strongly in its favour, that I do not think myself justifiable in withholding it, although I place less confidence in its action than many others. But in no case do I relax in the employment of other, and, as I think, more potent remedies. The doses of laxatives should be repeated at intervals of three or four hours; and many cases, which appear to be hopeless, and too far advanced in their progress to admit of depletion, have recovered under their free and constant use. But care must be taken that the purging be not continued too long. In proportion as the disease gives way, the doses are to be diminished, and the intervals between their administration lengthened.

The application of cold to the head is a most important part of the treatment, and the physician should see that the remedy is properly applied. It has been already mentioned, that the head should be shaved before leeches are put on; the mere removal of the hair will sometimes produce a considerable change upon the temperature of the head, and perhaps nothing further may be necessary; but if otherwise, iced water may be applied. A very good plan, and one which saves a great deal of trouble, is to put pounded ice or snow, mixed with salt, into a large ox's bladder, till it is about half filled, and use as a pillow. A small bladder filled in the same manner may be laid across the crown of the head; a cloth dipped in ice water may be placed over the forehead. If these means cannot be obtained, the best plan is to bring the head over the edge of the bed, keeping it at the same time elevated, and to pour a small stream of cold water out of a jug or tea-kettle upon the head for five or six minutes at a time, taking care to have a basin properly placed underneath, to avoid wetting the bed or the floor. I have seen patients roused out of deep coma, and violent delirium subdued, by cold properly applied to the head, when bleeding had been unsuccessful. At the same time, we are to be careful not to continue the cold application for too great a length of time, particularly after the patient's strength has been much exhausted, either by the long continuance of the disease, or the application of the more important antiphlogistic means. It is of very great importance to support the heat of the extremities, and more particularly in severe cases, which is to be done by frictions,

hot fomentations, heated bricks, small flannel bags filled with hot sand, or bottles filled with boiling water.

Antimony, used in small doses as a contra-stimulant, is a powerful remedy in controlling the circulation after bleeding. It is a remedy which is of great assistance during recovery, and may be given from time to time when the patient's appetite is likely to be too much indulged, or when he is disposed to be too loquacious.

I beg to enter my strongest protest against the application of blisters to the head, or even to the upper part of the neck, in the acute stage of inflammation of the brain. They ought to be applied to the lower extremities. I urge this recommendation from the result of long and attentive observation; and independently of the disputed theory, as to whether the vessels of the head can contain more blood at one time than at another. Mustard poultices may be applied to the feet. That these remedies may fail, however, and that advantage may be derived from more powerful means, the following case will strongly illustrate:

Cornelius Hervey was attacked with fever in the beginning of winter, 1823. In the course of the disease, he required several general and local bleedings, for the removal of slight local inflammations. On the 21st day of the fever, when perfectly sensible, and being in a state of very great weakness, he told me he had passed a confused, restless night, and that he had had some headache, which he attributed to repeated errors of diet, and having overloaded his stomach. He was relieved by the exhibition of laxative medicines. On the 23d day, when he was reduced to a state of great debility, he became quite delirious, and so furious, that it required two men to hold him down in bed. The extremities were cold; pulse weak at the wrist, of thready smallness, and beating 160 in the minute; his head was hot, and there was a small flushed spot upon each cheek. During the two following days, four leeches were applied to the head, and afterwards ten, without any mitigation of the symptoms, and he was thought to be too weak to bear any further loss of blood. Ice was assiduously applied to the head from the commencement; hot fomentations to the legs; sinapisms to the feet; and hot bricks were placed round the extremities. Still his legs and feet were cold; the sinapisms, although frequently renewed, had not produced the least redness; the pulse had become more feeble; he raved incessantly; there was subsultus tendinum to a great degree; the tongue was hard, dry, fissured, and of a dark colour. As neither coma, convulsions nor paralysis had taken place, and as the pupils still contracted upon the application of light, it was thought that no organic mischief had as yet taken place; and as the usual means had failed to produce heat in the extremities, hot spirits of turpentine, both separately and conjoined with *aqua ammoniæ*, was applied to the legs and feet, but without producing the slightest redness. Blisters had been applied to each leg and thigh the night before, but they produced no effect. As a last resource, a towel was dipped in boiling water, and applied to each foot. This measure succeeded in producing a considerable degree of redness; but it is remarkable, that there was only

one very small vesication, about the size of a sixpence, produced on the left instep.

At the moment of the application of the boiling water, he became calm and sensible, looked about him as if he had awakened out of a sleep, and knew every person in the room, which he had not done for several days, and he complained of great pain in his feet. The pulse soon became more distinct, less frequent; and the tongue moist. Blisters were again applied to the thighs. Towards the afternoon he became worse, and at night I found him delirious and insensible, with *subsultus tendinum*, a dry tongue, and a small quick pulse. The extremities, and particularly the feet, were quite cold, although warm fomentations and hot bricks had been alternately applied, and although the scalded feet were dressed frequently with hot spirit of turpentine to keep up the action which had been excited in these parts. The blisters which had been renewed on the thighs had not risen. Boiling water was again applied to both legs from the knees to the ankles. The relief was as instantaneous and decided as had been produced by the same means in the morning, but it was permanent, and from this time his recovery went on without a bad symptom. A superficial slough separated from each leg in the course of ten days, and there was some constitutional irritation produced during the course of that process; but the ulcerations healed kindly. He was for several months very lame, not from the immediate effects of the ulcerations, but from the contraction of the flexor muscles of the leg, which inconvenience arose from the bent position in which he kept his limbs during his illness, but he gradually recovered the free use of them; and the last accounts I heard six years afterwards informed me that he was in the enjoyment of perfect health and strength, and able to earn a livelihood for his family by manual labour.

To conclude what I have here to say of the treatment of inflammatory affections of the brain, it is necessary to mention that the diet should be strictly antiphlogistic for the first few days; it ought chiefly to consist of drinks, such as thin gruel and arrow-root; and during recovery, great care should be taken to avoid bringing up the patient's strength too suddenly. The utmost quietness is absolutely necessary in all severe diseases; but it is more particularly essential in those of the brain; and for a considerable period, patients who have recovered from a severe attack of this kind, should be kept in a very tranquil state both of mind and body. Application to business must be strictly forbidden, sometimes for several months, and great attention must be paid to diet, bowels, clothing, and keeping regular hours.

Immediately after the severity of the disease is subdued, and more frequently during recovery, opiates are often productive of great benefit, by allaying irritation both of body and mind, and producing sleep.

In many cases of inflammation of the brain, the secretion of urine is either suspended or suppressed; but in every case practitioners should examine very carefully into the state of the bladder, as sometimes the secretion of urine is rather increased in quantity than di-

minished, and I have seen much distress occasioned by its retention in the bladder.

INFLAMMATION OF THE SUBSTANCE OF THE BRAIN.

The profession is much indebted to Lallemand, Rostan, Georget and others in France, and to Dr. Abercrombie in this country, for many important facts concerning inflammation of the substance of the brain, and the peculiar softened condition into which the organ is reduced by diseased action.

Symptoms of inflammation of the substance of the brain.—Inflammation of the substance of the brain seldom exists uncomplicated; it is often the result of congestion in the vessels of the head, and is always marked by loss of balance of the circulation. Like inflammation of the membranes, there may be different shades between the acute and chronic forms; the attack being sometimes sudden, but for the most part insidious. The precursory symptoms are generally similar to those which precede inflammation of the membranes.

The functions of the brain are impaired; the patient complains of *vertigo* or *tinnitus aurium;* a feeling of weight in the head; headache; indeed, Dr. Abercrombie describes this last symptom as being very severe, and as giving to the disease a peculiar character, but I cannot say that this consists with my experience. There are optical delusions, strabismus, contraction or dilatation of the pupil; difficulty is sometimes experienced in articulating words; the patient's temper is observed to be much altered and easily irritated; the pulse may be quite natural. Through the day, the patient does not appear to be very ill, but in the night the symptoms become much aggravated. Perhaps no alarm is yet taken, till weakness is observed to affect one side of the body, or convulsions take place; and when a medical man arrives, he finds the patient affected with paralysis, and more or less coma.

Inflammation of the substance of the brain sometimes attacks a patient more insidiously. He may complain of *lumbago* and rheumatic pains in the limbs, or may be affected with vomiting or purging; the true disease is, perhaps, not detected till coma is decidedly marked.

Inflammation of the substance of the brain occurs in the progress of the simplest as well as the most severe form of fever in this country; it may also take place when the body is much weakened by the long continuance of hæmorrhage. In fact, this disease occurs under circumstances as different as those already so fully described in inflammation of the membranes of the brain.

When the disease is somewhat advanced, there is considerable stupor, and more or less insensibility, without violent delirium. The power of speech is lost early, perhaps before intelligence is destroyed. The pupil still contracts, showing sensibility of the retina. The countenance varies a little in appearance; sometimes there is an expression of severity with a frowning brow; at others, it looks stupid and vacant. The patient is observed to be deaf, and vision

imperfect. At length paralysis takes place on one side of the body, but the superior extremities are more frequently affected than the inferior, and the flexor muscles of the paralyzed limb are in a state of morbid contraction. It would appear also that the limb preserves a degree of sensibility, for the moment the arm is touched to count the pulse, or any attempt is made to extend the forearm, the contraction becomes more violent; but towards the fatal termination of the disease, it becomes flaccid and insensible.

Lallemand thinks it important and highly characteristic, that the pain and the disease of the brain be on one side of the head, and this peculiar affection of the limb on the opposite side of the body. Convulsions frequently take place, and during these attacks, the muscles of the paralyzed limb are affected. The rigidity of the flexor muscles is not always permanent, but takes place occasionally, sometimes alternating with general convulsions.

A urinous smell is also said to be characteristic; but this is probably a mistake, owing to a neglected state of the bladder, or to a constant dribbling of urine which soils the bed. Constipation is a very general symptom, although occasionally an opposite state of the bowels exists. Respiration is not necessarily affected till towards the last. The pulse is seldom much altered till towards the termination: the French writers say it is never affected till that period, unless some other organ is diseased, but this appears to me to be a too arbitrary statement; indeed, the pulse is frequently slower than natural. French authors also allege, that when there is violent delirium and a quick pulse, inflammation of some other organ or tissue has taken place; although Rostan states that delirium sometimes shows itself in the first period of ramollissement. The common position of the patient is upon the back.

The characteristic symptoms are, an absence of violent delirium; speedy insensibility; paralysis, accompanied by morbid involuntary contraction of the flexor muscles; a urinous smell. Cases occasionally occur in which there is a different train of symptoms, and in which paralysis and rigidity do not coexist. Indeed, Lallemand observes, that in some cases there is no paralysis of the voluntary muscles, in which circumstances, he alleges that the inflammation has always its seat in parts of the brain which have no direct communication with the spinal marrow, viz.: the *corpus callosum*, the *septum lucidum* and the *fornix*. It is alleged, that when the paralysis is general, the inflammation occupies the *tuber annulare*, or is so extensive as to occupy a whole hemisphere: so much so, that the other side of the brain becomes greatly compressed by the tumefaction of the diseased parts.

An interesting and very fatal affection of the brain and its membranes, connected with disease of the petrous portion of the temporal bone, and a discharge from the ear, has attracted the attention of many distinguished medical authors. The disease is frequently very slow in its progress: often no suspicion of disease in the brain is entertained prior to dissection, when considerable portions of its substance have been found either in a state of softening, or converted

into pus; the membranes being partially destroyed, or very much inflamed and thickened.

Acute inflammation of the substance of the brain often terminates fatally in seven or eight days, frequently in a shorter period, but is sometimes prolonged till the third week. There is no doubt that it is a very fatal disease; but not so deadly, under proper treatment, and in persons not too aged, as is generally represented. I have seen several recoveries take place in circumstances which were at first sight most unpromising; and in five instances in particular, where all the characteristics and all the bad symptoms described by Lallemand and Rostan, were present. In two of these cases, Dr. Kellie was conjoined with me in consultation. In a third, I had the able assistance of Dr. Abercrombie. A fourth I was requested to see by Dr. Moffit, surgeon of the 70th regiment; and a fifth I attended with my friend Dr. Lewins.

I shall here subjoin the particulars of the fourth mentioned case:

J. S., aged 34. His complaints began with nausea and purging, which continued for several days, during which time he frequently complained of slight headache. On the 5th of August, 1827, after appearing to be convalescent, he complained, towards evening, of considerable headache and general debility; pulse 80; face rather flushed; tongue white; pupils dilated. The head was shaved, and 36 leeches applied; and he took a laxative medicine. In a few hours he appeared to be gradually sinking into a state of insensibility; the face flushed, and the expression of the countenance anxious; pulse 85; tongue white. Next morning he was found in a state of coma, lying on his back, with general paralysis; but the flexor muscles of both arms were rigidly contracted, the fingers seemed to be in constant spasmodic action, and his jaws were clenched; pulse 85, rather weak and intermitting. A vein was opened in the arm, and 36 ounces of blood were abstracted; a blister was applied between the shoulders; cold lotion to the head.

7th. Passed a disturbed night; no improvement in the symptoms; insensibility continues, and the state of the extremities is the same; urine and fæces passed involuntarily; countenance has a severe expression; eyes fixed; pupils dilated, and he appears to be perfectly blind; pulse 85, and of natural strength. Ice and 30 leeches were applied to his head. *Vespere;* he has derived some benefit from the leeches, which bled profusely; the countenance has lost the expression described in the morning; he opens his eyes occasionally, and takes drink when offered to him; pulse 90, and soft. The application of ice to be continued to the head.

8th. Had a better night, and appears rather improved; the countenance has a milder expression; but the pupils are dilated, the eyes fixed, and to all appearance blind; the paralysis of the superior extremities, with rigidity of the flexor muscles of the arms, still continue, together with the involuntary action of the fingers; the lower extremities are still paralyzed, but not rigid; passes urine and fæces involuntarily; pulse 95. Venesection xii oz., and a fresh blister applied between the shoulders, the former one not having risen. The evening report states, that the symptoms have progressively improved

since the bleeding in the morning, and he is so far sensible as to ask for drink, which he appears to relish; pupils more natural; tongue white; the blister is now beginning to rise. The ice to be continued to the head.

9th. Appears better, and has in part recovered his speech, recollection and vision; blister rose well. In the evening he was found gradually improving; had one stool since the morning, of which he gave previous notice. The cold applications omitted.

10th. Had some good refreshing sleep during the night; countenance natural; pulse soft, and although quick it is regular; asked for food, and got up without assistance to the close stool. From this time his improvement went on rapidly. In five or six days he was able to sit up in bed for two or three hours at a time; all the functions were natural; and in a short time he was able to walk about. His ultimate recovery was complete and permanent.

In the case which I saw with Dr. Abercrombie, the appearances were fully more unpromising, and the diseased state of the brain of longer continuance. For ten days or a fortnight, this patient had had symptoms which resembled the regular paroxysm of an intermittent; and it was supposed he was affected with that disease. During each attack, the functions of the brain were observed by his friends to be considerably embarrassed, and coma followed the last. In this case there was also remarkable rigidity of the flexor muscles of one of the arms, with paralysis of the extremity. The practice employed was very active, and although employed late, it was successful, but the patient's recovery was more tedious.

Causes of inflammation of the substance of the brain.—The causes of inflammation of the substance of the brain are the same as those in inflammation of the membranes, and need not be here repeated. But it may be mentioned, that the disease is frequently produced in the substance of the brain around tumours and tubercles which may have existed for years, without occasioning much annoyance to the patient, till some accidental circumstance rendered them a source of irritation to the surrounding parts. This class of cases generally terminates fatally. I have a number of drawings and preparations which show these appearances; and it is strange that Rostan should never have met with a case of this kind; but at page 70 of his work, he says he has no doubt that such a complication may exist. Inflammation of the substance of the brain, terminating in ramollissement, also frequently takes place round apoplectic depositions, whether small or large. I have seen it round an effusion of about four ounces of blood; in these cases the symptoms are, in general, rapid in their progress to a fatal termination.

Appearances on dissection.—When the structure destroyed is extensive, and particularly when situated in the central parts of the brain, the arachnoid coat sometimes looks dry, having lost its usual shining appearance. On making slices of the brain, more particularly in the neighbourhood of the diseased part, its substance will show many red points, out of which blood will ooze: the white substance of the brain presents a somewhat reddish colour; sometimes

it is as red as if a penful of red ink were splattered over it; occasionally there is a deep mulberry spot of larger or smaller size.

The central parts of the brain are most frequently the seat of ramollissement, viz.: the walls of the lateral ventricles, the septum lucidum, and the fornix. These parts are sometimes wholly converted into a white liquid matter like cream, showing the septum lucidum ragged and broken down, with some effusion into the ventricles. This appearance is sometimes very extensive; at others it is confined to the walls of one ventricle, or it affects the septum lucidum and the fornix. When the disease is not far advanced, the degree of softening is so slight, that it is impossible to determine whether the part has been diseased or not; but in this case we are sometimes assisted by discovering very considerable redness in the surrounding cerebral mass; at other times the softened part is of a red colour, as if blood had been mingled with the substance of the brain itself. Some suppose that inflammation of the substance of the brain is more frequently met with in the white substance than in the cortical. Andral thinks not. I have seen it in both, but am disposed to think it is more frequent in the white substance.

Perhaps the white liquefaction, which is most frequently seen in the *corpus callosum*, the *septum lucidum* and *fornix*, may be produced by a somewhat different cause from the red softening, which is most frequently seen, according to my observation, in the *corpora striata, thalami optici* and *tuber annulare.*

Pathologists are much divided in opinion as to whether *ramollissement* of the brain is or is not the effect of inflammation. Rostan admits it is sometimes the effect of inflammation; but asserts that more generally it is a peculiar degeneration of the brain, unconnected with inflammation, which has its own signs and proper characters. He appears to have three reasons for considering that it is not generally a product of inflammation:—1*st.* In the cases which terminate in this softening, the patients have not been affected with the headache; 2*d.* Febrile symptoms have not existed; 3*d.* The colour of the substance of the brain often appears not to be in the least changed. Rostan's subjects were all old; he never saw the disease in a very young person, and only once in an individual under 30 years of age; but in that case there was no dissection.

Dr. Abercrombie, with a view of reconciling the opposite opinions which prevail on this interesting subject, throws it out as a probable conjecture, that there may be two causes, each of which may produce ramollissement; the first is inflammation, and takes place in young people; the second is in consequence of a failure of the circulation depending upon diseases of the arterial system, and this occurs in old subjects. He supposes that this degeneration of the brain has a close resemblance to mortification in other tissues; but this appears to be a forced analogy. The effect, upon all tissues, of inflammation in its first stage, is to soften them—at least this is the case with the lungs, the liver and the spleen; and why not with the brain?

Sometimes inflammation of the substance of the brain terminates in the formation of one or more abscesses; and we frequently observe the same effort of nature to circumscribe and confine pus in the brain,

which takes place in other tissues, viz.: the formation of a false membrane round the diseased part.

A medical friend lately presented me with a brain, where there were innumerable small abscesses resembling so many phlegmons, dispersed in every direction through the cerebrum and cerebellum. Some were situated on the surface of the brain and cerebellum contiguously to the membranes; others in the very centre of its substance. Some were in the white, others in the gray portion.

The pus found in abscesses of the brain resembles the same matter found in other tissues of the body; sometimes it is quite inodorous; at others very fetid. I am not aware that any symptoms have been remarked as indicating the formation of pus in the brain, which discriminate it from other organic lesions.

Treatment of inflammation of the substance of the brain.—The treatment already so fully detailed under inflammation of the membranes, is equally applicable to inflammation of the substance of the brain; but with a view of impressing upon young practitioners the danger of delay, the following case and dissection are annexed. Their perusal will serve also to show the insidious manner in which inflammation of the brain sometimes steals on, concealed by some prominent affection in a distant part of the body. No case can better exhibit the advantage of active treatment, even when applied late—unfortunately too late, in the present instance, to save the life of the patient.

J. H., aged 30, tall, active, athletic, and of sober habits; for several months complained now and then of severe lumbago, for which blisters had been applied with relief. On the 13th July 1827, he applied for medical advice, in consequence of a return of the lumbago, which had been very severe for several days; he became gradually relieved by confinement to bed, the application of a blister, laxatives, and occasional doses of Dover's powder; on the 3d August, to all appearance, he was very much better, but his bowels were rather confined. During the whole of that day, however, he became, according to the account of the people about him, more and more stupid, without any apparent cause. When spoken to he replied, but always as if abstracted. Pulse natural; countenance heavy, and rather vacant.

4th. Makes no complaint; reposes in one posture, on his back; appears fatuous; and when spoken to, returns a vague, inconsistent answer; articulates indistinctly; both hands are in constant motion; pulse natural and soft; had two stools. Head to be shaved, and cold applied; sixteen leeches to the forehead; a blister between the shoulders. In the evening no alteration; the leeches bled well. Pounded ice has been constantly applied to the head; pulse 80 and regular; tongue white and dry; skin moist. Passes urine and fæces involuntarily.

5th. Had a bad night; is insensible; superior and inferior extremities paralyzed; but the flexor muscles of the arms are rigid, the forearms bent, that of the right arm more than the left; jaws clenched; but the lower one can be depressed a little by using considerable force; countenance pallid and bedewed with perspiration; eyes

fixed, pupils dilated and immovable; pulse 86, regular, and of natural strength; has lost the power of deglutition. In the evening, no change of symptoms, except that the countenance has assumed a severe expression. There is a strong urinous odour, owing to the involuntary passage of urine in the bed. He appears, although insensible, and having lost the power of voluntary motion in all his extremities, to feel the impression of cold disagreeable when the bedclothes are drawn down. Venesection ad 28. The bleeding was persevered in till the pulse rose from 86 to 100, and became somewhat weaker. During the latter part of the operation he appeared to awake as if out of a deep sleep, and looked about him; and soon after was able to reply to any question by a sign, although he could not speak.

6*th*. Some time after the bleeding last night, he made signs that he wished to lie upon the right side, and upon being turned, expressed satisfaction; has since taken his drink occasionally, and put out his his tongue when desired; his countenance is certainly more cheerful, and the eyes are sensible to light, but in other respects does not seem much improved; passes stools and urine involuntarily; pulse 130; skin moist; tongue white and rather dry. Thirty-six leeches to the head, and a large blister to each leg.

7*th*. Passed a more composed and comfortable night; countenance more animated; is able to articulate, but with difficulty, and when spoken to, returns an appropriate answer; pulse 150; pupils dilated; tongue white and furred; skin moist; stools and urine still passed involuntarily. The application of iced water ordered to be persevered in. During the course of the day, the symptoms continued to improve, and in the evening his looks were more lively; the countenance had a more natural expression; had two stools during the day and made water, of which he gave warning, and desired to be raised upon the night chair. There is still a little rigidity of the flexor muscles of the forearms, as well as spasmodic motion of the fingers; and both hands embrace the genital organs; pulse 140; skin moist. Had gruel and arrow-root frequently.

8*th*. Appears better to-day; has recovered in a considerable degree the use of his extremities; reposes frequently on his side; gives distinct answers, and is better able to articulate than yesterday; countenance mild; pupils less dilated; tongue moist and less loaded; pulse 150; skin natural; complains now, for the first time, of debility; and ordered to have food at short intervals. At the evening visit he appeared to be doing well, but still complained of being weak; the pulse 130, and of moderate strength; bowels moved twice during the day; countenance natural and more lively; tongue moist.

9*th*. He was found in a weak, depressed and sinking state this morning; respiration and deglutition difficult; pulse 160. Wine was ordered *ad libitum;* but he continued to sink, and died a little before midnight.

Examination of the body 30 *hours after death.*—Slight emaciation; countenance composed; considerable rigidity of the flexor muscles of the right arm. On removing the *calvarium* and *dura mater*, the brain appeared full and distended; a little serosity between the

Missing pages 553-556

membranes; ramiform injection of the vessels of the *pia mater*, forming a complete anastomosis over the surface of the hemispheres; the whole presented a deep scarlet colour. In the cortical substance of the brain, several red spots from numerous little bloody points closely aggregated. The brain, in these places, softer than natural, and tore readily on separating the membranes from it. Medullary substance also presents bleeding points when cut into.

On the base of the brain the membranes are in a similar state as on the hemispheres; several ecchymosed spots on the lateral parts of the middle lobes. After removing the membranes in a very careful manner from all the central parts at the base of the brain, from the part anterior to the point of decussation of the optic nerves to the commencement of the *medulla spinalis*, a number of bright red spots were observed in different places. On the left *tractus nervi optici* a considerable spot of a bright red colour, found to penetrate through its whole depth; also several smaller spots on the opposite side. On each side of the *pons varolii*, there were similar red marks, but particularly one on the right side, of a dark mulberry colour, about the size of the thumb nail; this was examined minutely, and was found to extend deeply into the medullary substance, and to be formed by an intimate mixture of blood with the cortical and medullary band of the *pons*. There was a considerable spot of a similar description on the right side of the *medulla oblongata*. The membrane lining the ventricles was very vascular, and the *choroid plexus* loaded with blood. Nothing remarkable in the cerebellum. Spinal marrow not examined.

Thorax.—Strong and general adhesions on both sides between the *pleura pulmonalis* and *costalis;* particularly firm on the left side. Pericardium strongly attached to the diaphragm, and anteriorly so firmly united to the heart as to form only one body with it; the bond of union formed by a very dense, almost cartilaginous substance, varying in thickness—in some places more than one-third of an inch, in others only a few lines; the pericardium could with great difficulty be separated from it. A part of the posterior surface of the heart was unattached to the pericardium.

Mucous membrane of the stomach generally, but more especially of its great curvature, of a dark brown colour, with numerous varicose vessels running below it; in some places there were little patches with stelliform injections of the minute branches; other patches were of a uniform blackness. Intestinal canal natural. Bladder contained about half a pint of urine.

HYDROCEPHALUS.

The frequency and fatality of this disease have strongly excited the attention of practitioners, with a view to discover its nature and seat. Two opinions at present divide the profession: according to one hydrocephalus is a disease of inflammation; according to another, it is one of debility. My own opinion is, that it is most frequently a disease of inflammation; but that sometimes it may be

occasioned by other causes, which shall be mentioned in the proper p'ace.

There are several forms under which this disease appears. The division which I propose to adopt is as follows:

Acute Hydrocephalus.
Chronic Hydrocephalus.

Under the acute form, we meet in practice with numerous varieties; and I shall attempt to give a slight sketch of four of the principal.

1. Attended with severe and striking symptoms, such as fits of screaming; grinding the teeth; hot skin; quick pulse; bold expression of countenance; red face and eyes; convulsions; coma; the children dying on the third or fourth day. In such instances, I have seen the first stage terminated in twenty-four hours.

2. With symptoms very mild and insidious, so much so that no alarm is taken for several days. The little patients complain, but this is attributed to peevishness or to teething, till at length the parents become alarmed by the long continuance of the indisposition, together with the rapid emaciation which has taken place.

3. A third set of cases commences with gastric irritation, attended either by constipation or diarrhœa. The febrile symptoms are observed only at night. Medical men are often thrown off their guard, their attention being attracted by the more urgent symptoms connected with the state of the bowels. By and by the child becomes quiet when allowed to rest in the horizontal posture; it grinds the teeth occasionally; and although showing signs of some suffering, yet it never cries or becomes very fretful unless when raised. The moment the head is elevated, great impatience is manifested, and it gives vent to loud expressions of pain, which I suppose to be produced by headache or giddiness.

4. Very frequently hydrocephalus occurs during the course of other diseases, such as fevers, measles, small-pox, hooping-cough and pulmonary affections; and not uncommonly runs through the first stage and part of the second before discovery is made of diseased action in the brain. Convulsions and coma take place at different periods in the course of the disease. The former is sometimes the first symptom, and occurs early in the disease, at other times not till towards the fatal termination. In other cases, coma takes place before the convulsions, and is the first alarming symptom that occurs; in fact, the statements already made respecting inflammation of the membranes of the brain, and also of its substance, equally apply to this particular subject. The description given of the expression of countenance, the state of the pupils, the redness or paleness of the face, the state of the respiration, the mental faculties, the pulse, skin and bowels, all apply with equal force to hydrocephalus.

Appearances on dissection.—In the most rapid cases, the patients are carried off before organic lesion to any extent is produced. Although the membranes of the brain may display considerable arborescent vascularity, still the effusion is in very small quantity—too small to account for death. In cases of longer standing, the effusion into the ventricles will be in greater quantity; or thickening of the

membranes may be found not only where they cover the hemispheres, but likewise at the base of the brain, involving all the important parts in the centre, from the point of decussation of the optic nerves to the commencement of the *medulla oblongata*. The thickening of the membranes is produced by the intermediate deposition of tenacious lymph. The membranes have been found extensively ulcerated, and considerable portions of the brain itself in a state of *ramollissement*, in children who have died with all the symptoms of hydrocephalus; and in these cases, there is not always any considerable effusion into the ventricles of the brain. I forbear, at present, to allude to other diseased appearances, such as tumours, tubercles, disease of the great sinuses, &c., because these more frequently produce chronic hydrocephalus.

Pathological remarks.—The chief point of inquiry relates to the cause of the effusion. Is it the product of inflammation? The best pathologists of the present day consider it as proceeding, for the most part, from inflammatory action of the membranes of the brain; but at the same time there can be no doubt that a serous effusion is frequently the consequence of any cause obstructing, or even retarding the circulation in the head. Thus it is believed to be occasioned by venous engorgement; and dissection affords ample proof that it is often owing to obstructions in the great venous channels in the head.—Others allege that hydrocephalus is produced by debility.

This is a pathological question of the utmost practical importance, because the remedies will be depletory in a certain stage of the disease, according to the one view, and stimulating *in all the stages* according to the other. In order to place the subject in a clear point of view, I shall take the liberty of offering a few critical remarks upon a work by Professor Monro,* because it is the last published work which defends views that I conceive to be erroneous. At page 101, Dr. Monro states that, before subscribing to the hypothesis that the effusion in hydrocephalus is owing to some degree of inflammatory action, "it is necessary to inquire whether this disease usually occurs in persons who are disposed to inflammatory disorders at or near the meridian of life, when the human body is most liable to suffer from inflammatory diseases. With regard to the first of these points, it may be observed, that hydrocephalus is so rare after puberty, when the constitution is most liable to inflammatory disorders, that Cullen and other writers of eminence have described it as being peculiar only to infancy. That the disease is rather to be imputed to *debility*, follows from the well-known fact, that hydrocephalus is frequently a disease which may be traced to bad nursing, improper food, dentition, the sequel of the most tedious and debilitating disorders, as hooping-cough and scarlatina."

Cullen's authority is a most unlucky one to quote in the present day for the true pathology of any disease, and more particularly of any disease of the brain. In the work of this author, there are only two pages and seven lines devoted to a detail of the symptoms, causes, pathology and treatment of all the inflammatory affections

* Entitled, The Morbid Anatomy of the Brain, 1827.

of the brain and its membranes; and all that he has said respecting hydrocephalus is comprised in three lines, in the shape of an erroneous definition!

It is a fact, that children, particularly those under two or three years of age, are peculiarly liable to inflammation of the brain from several causes:—1. From the wonderful changes which take place in the circulation early in life; 2. The large size of the head at that period in proportion to the rest of the body; 3. The change the brain undergoes in appearance and consistency; 4. The great activity of the circulation, and the high state of irritability of the nervous system at that period of life; 5. Difficult dentition, which perpetually excites a determination of blood towards the head. Besides these causes, accounting for the frequency of the diseases, something must be said respecting its fatality in infants. Children cannot tell their feelings, or direct the attention of practitioners to the seat of the disease. Their fretfulness and peevishness are too often attributed to bad temper, or to the state of the bowels, or to the irritation of the gums from the advancement of teeth; and the disease in the brain, as has already been shown, often advances in the most insidious manner, till convulsions or coma take place: and even the latter symptom, although observed in its progress, is too often overlooked until the patients become insensible. Bad nursing and improper food, upon which Dr. Monro has laid so much stress in support of his own views, certainly tend to produce debility; but children badly nursed, insufficiently clothed, who are allowed to remain wet, and receive improper food into the stomach, are peculiarly liable to inflammation and ulceration of the bowels. They will be far more liable than healthy children to irregular determinations of blood, and, from want of vigour in the constitution, venous engorgement may take place, the vessels of the head may suffer, and effusion may in consequence follow; perhaps subacute inflammatory action may be lighted up in the brain. The experienced eye of a careful observer will be able, in general, to detect the disease in the brain, although it is not announced by symptoms so violent and imposing as Dr. Monro seems to expect should be produced if actual inflammation had taken place. That venous congestion of the vessels of the head, terminating in effusion, and that inflammation of the membranes of the brain, should sometimes take place in hooping-cough and scarlatina, which Dr. Monro designates as debilitating disorders, will not surprise any who will study nature, or who will refer to the pathological descriptions given of these diseases in their proper places in the 1st vol. of this work.

Dr. Monro next asserts, that if hydrocephalus were an inflammatory disease, it ought, like inflammation of the lungs, and other inflammatory complaints, to be more prevalent in robust men during the period of life when the human frame is most prone to other inflammations. Dr. Monro might have known that the periods of life at which inflammatory complaints most frequently occur, are infancy and childhood, and that for one inflammatory fever, or inflammation of the lungs, or of any other organ, in robust men during the prime of life, we meet with at least fifty in early life.

Dr. Monro has committed a sad mistake respecting the opinions of two distinguished French pathologists. "If it be supposed, (says Dr. M.,) that hydrocephalus is always connected with inflammation of the brain; and that inflammation gives rise to the *softening* of that organ, which is the favourite opinion of Lallemand, Rostan and others; in that case the brain should be found *invariably* in a softened state, which is not consonant to my observations." But I have already shown that modern pathologists do not assert that the effusion is *always* caused by inflammation; it is sometimes produced by venous congestion, and by any mechanical cause impeding the circulation. Neither Lallemand nor Rostan attribute the softened state of the brain to inflammation of the *membranes*, which Dr. Monro appears to confound with inflammation of the substance of the brain, and who has also attributed to Rostan an opinion *quite contrary* to that which Rostan actually maintains. At page 104 of Rostan's work already quoted, he explicitly states, that although softening is occasionally produced by inflammation of the brain, yet, that it sometimes takes place unconnected with inflammation, and is a peculiar degeneration, which has its own signs and proper characters.

At page 103, Dr. Monro further urges, that, "If inflammation of the brain had given rise to this species of hydrocephalus (acute,) the attack of the disease should be sudden and well marked, and its course rapid, like to that of phrenitis; whereas the origin of the disease is generally not well marked; indeed, so much so, as often to escape the notice of the parent, and even that of the experienced physician." And he further states, that "It is admitted, even by those who impute hydrocephalus to an inflammation of the brain, that the symptoms of phrenitis are well marked, whereas those of hydrocephalus are often very obscure." It has already been shown how very insidious inflammatory affections of the brain are, even in adults; they cannot be more so in young subjects; but the reader shall see what Cullen himself says on phrenitis in his "Outlines," at page 103. "Many of the symptoms by which this disease (phrenitis) is most commonly judged to be present, have appeared, when from certain considerations it was presumed, and even from dissection it appeared, that there had been no internal inflammation; and, on the other hand, dissections have shown that the brain had been inflamed when few of the peculiar symptoms of frenzy had before appeared." And Dr. Monro concludes, that if acute hydrocephalus be owing to an inflammatory state of the brain, "there ought to be no distinction as to the symptoms, origin, progress and consequences of phrenitis and hydrocephalus." To make the statement still stronger, he quotes Cullen's erroneous definition of phrenitis, and then states, with great self-complacency, that "The symptoms of this species of hydrocephalus do not correspond with the above definition."

"One of the most striking features of inflammation of the brain, (says Dr. Monro, at page 104,) is the state of the pulse; but that character is also wanting in hydrocephalus; for the state of the pulse is *widely* different from that of a person affected by apoplexy or inflammation of the brain. It is not full as in the former, or *hard* as

in the latter. It is no doubt quick, as in other diseases which are the effect of debility. Besides, no author, who has described the symptoms of phrenitis, has stated that the pulse becomes slower some time after the commencement of the disorder."—It is almost unnecessary to comment upon the erroneous statements made in these passages; but this opportunity may be taken to mention, that Morgagni has clearly shown the great varieties of the pulse in acute diseases: and there are few practitioners of the present day who are not well acquainted with the varieties of the pulse in cases of affections of the brain. Dr. Abercrombie, in giving a general view of the symptoms which indicate inflammatory affections within the head in adults, makes the following observation at page 12. "The pulse is about the natural standard or below it, frequently about 60." And again: "The pulse having continued from 70 to 80 through the whole course of the disease." After alluding, at page 14, to the circumstance of the pulse becoming slower some time after the commencement of the disease, he observes, "As the pulse falls, the patient is disposed to sleep; this is, perhaps, considered as favourable; it falls to the natural standard; he then sleeps almost constantly; and in another day this sleep terminates in coma. The pulse then begins to rise again; it rises to extreme frequency, and, in a few days more, the patient dies."

Is it not a curious circumstance, that Cullen, in the seventy lines that he has written on inflammatory affections of the brain, does not notice the state of the pulse? Neither does he mention it in his definition.

At page 110, Dr. Monro endeavours to establish an invariable connection between hydrocephalus and dropsy, *both depending on debility;* now, if this were true, children ought to be very liable to dropsical affection in other parts of the body, which is decidedly not the case; but, nevertheless, looking pathologically at these affections, there is a strong analogy. Dropsy sometimes arises from inflammation; so does hydrocephalus. Dropsy sometimes arises from morbid alterations in the structure of the heart; so does hydrocephalus. Dropsy is sometimes produced by disease of the lungs, and particularly bronchitis; so is hydrocephalus. Dropsy in the belly frequently depends on diseases of the liver impeding the circulation; so does hydrocephalus occasionally depend on obstructions in the venous system of the head. Dropsy sometimes depends on diseases of the kidneys; so does hydrocephalus. Lastly, dropsy is sometimes cured by bleeding; so is hydrocephalus!

Treatment of acute hydrocephalus.—If so much discrimination is required in the treatment of inflammation of the brain in adults, still more is necessary in treating the disease in young subjects. With respect to bleeding, in particular, much depends upon the duration of the disease, the age and peculiarities of constitution of the child, and whether the disease has taken place subsequent to other disorders, in the course of which the child has been much weakened. But if called early, no lesion having as yet taken place in the brain, and the child being above two years of age, I have no hesitation in opening a vein, if one is anywhere to be found. This recommendation is urged after considerable experience of its advantages, in controlling diseased

action in the brain at an early period of the disease, and from which I have never seen any bad results. It would appear that the danger of bleeding children from a vein is far overrated. In two cases, the bleeding produced syncope, and yet no bad consequences followed. Capuron says, at page 495,* "It is sufficiently proved, that general and local bleeding are the means of fulfilling the first of these two indications, above all in the beginning, where every thing announces a movement of reaction towards the head; apply leeches round the neck, open the jugular vein or the temporary artery, and be not, like Dr. Odier, afraid of breaking down the vital powers; these are too energetic, particularly during the first period, when they tend to concentrate themselves towards the head, to irritate the brain, to produce a turgescence of its vessels, to leave traces of inflammation, and to produce effusion." It is impossible to give any particular direction as to the quantity of blood which ought to be abstracted. The operation is to be performed when there is high excitement only, and in the earliest stage of the disease. In other circumstances, leeches must be applied to the feet, which may be afterwards placed in warm water, to encourage the flow of blood; and when it is wished to prevent further loss, pressure can be conveniently and effectually used. A great error is committed by practitioners allowing the effect of the first bleeding to be entirely lost, and not following it up, either by taking an additional small quantity after a short interval of two or three hours, or applying leeches. Another error is frequently committed by allowing leech-bites to drain blood from the system by slow degrees, thereby producing great weakness without affecting any diminution of the diseased action. Antimony is sometimes of signal benefit in these cases. Cold applications to the head, purgatives, and all the other remedies mentioned so fully when treating of inflammation of the membranes of the brain, must be employed according to circumstances. The gums should be always carefully examined, and lanced if necessary. Mercury has been highly extolled in the treatment of this disease; but principally by those who regard it as a disease of debility, terminating in dropsy, and not one of inflammation. There are only two classes of cases in which this remedy ought to be trusted to;—1. Those in which we are called too late to employ the most powerful antiphlogistic means; and 2. Those in which these means have been employed without decided amendment.

In subacute cases, as well as in those of an acute nature, after the force of the disease has been subdued by the appropriate remedies, I have seen very beneficial results from the production of a pustular eruption on the head, with the tartrate of antimonial ointment. This is only following the steps of nature, it having been often observed that threatening symptoms have subsided upon the occurrence of porrigo or some other cutaneous eruption. When the disease has advanced to its last stage, it has been proposed to draw off the water by tapping the brain. But the water is not the disease; and, therefore, unless the diseased action were cured, and the healthy condition of the brain restored, it is of no use to draw off

* Traité des Maladies des Enfans jusqu'à la Puberté, 1820.

the water; not to speak of the danger and uncertainty of such an operation, even when performed by the most skilful hands. Whatever good effects are represented to have been produced in chronic cases of hydrocephalus, no benefit can be expected from such an operation in the acute form of the disease.

CHRONIC HYDROCEPHALUS.

Sometimes, in young subjects, acute hydrocephalus runs into the chronic form, and constitutes one variety.

A second variety, the effect of very slight inflammatory action, may be very insidious, and slow in its progress. A child so affected shows marks of suffering, with loss of flesh; but there are no decided symptoms, till perhaps a stranger remarks its head to be much larger than it ought to be. The head may go on enlarging slowly for a number of years, remarkable instances of which are on record; or if the disease attack a very young subject, the bones of the head separate to a considerable extent.

A third variety is sometimes observed, in which the head, perhaps very large originally, does not become larger during the course of the disease; but the bones are found to be remarkably thin, and sometimes after they have become so, the sutures are so much weakened and their mechanism so much altered, that slight separation of the bones is observed.

Children affected in the manner described in the first variety, seldom live so long as the others; and in the third variety, shorter than those in the second, who may live for twenty or thirty years; and it is an interesting pathological fact, that in all the varieties death is often occasioned by some other disease, very frequently ulceration of the bowels, sometimes phthisis pulmonalis, and occasionally an inflammatory affection of some of the tissues of the lungs.

The symptoms vary much; and, in some cases, it is difficult to conceive how children, under such extensive disease, preserve their intellectual faculties. Occasionally the sense of sight, hearing and taste are destroyed permanently, or only for a time; in some, one sense only is affected; in others, two or more, the rest remaining entire. Emaciation is a common symptom, as is also some degree of giddiness in the erect posture. The bowels are in different conditions; but when diarrhœa is intractable, and in some cases even when very slight, I have found after death extensive ulceration in the mucous membrane of the bowels. Strabismus is frequently, and opacities of the cornea are occasionally, seen in this affection. In some instances, convulsions are very violent, many of the muscles remaining constantly rigid; the convulsions may be general, like those of the epileptic kind, with foaming at the mouth; or they may be partial, affecting one or more of the extremities, or the muscles connected with respiration, or, perhaps, only those of the face.

Appearances on dissection in chronic hydrocephalus. — The membranes of the brain are generally very vascular; the veins sometimes very large and turgid. In three instances of chronic hydroce-

phalus, I found extensive traces of disease in the longitudinal sinus: in one, it was almost obliterated by the thickening of its coats; in two others, the area of the vessel was very much diminished, partly by thickening of its coats, but principally by deposition of lymph in its cavity partially organized, and requiring some degree of force to separate it.

The collection of water in the ventricles sometimes amounts to several pounds; and in cases where the effusion is considerable, the convolutions of the brain become more and more obliterated, from the distension occasioned by the fluid, and in some instances I have seen them completely unfolded. The ventricles will be found largely developed, the lining membrane occasionally vascular, and frequently thickened; I have seen this membrane as thick as the rind of an orange, and easily separated from the surrounding brain, which was softened. The brain itself is occasionally of a natural consistence; at other times it is softened. In some cases, particularly where the convulsions have been violent, considerable effusions, presenting more or less of the appearance of lymph, have been found, involving the central parts at the base of the brain.

In some instances, the effusion has been seen external to the brain itself, which has been described as a variety, under the term "external hydrocephalus." Not meaning to deny the existence of such a case, I feel convinced, from my own examinations of brains, where the effusion appeared to be external, that in fact it was owing to the fluid having found its way out of the ventricles, and distending to a great degree the arachnoid coat alone; one instance of which occurred to me a few years ago, and another lately.

Treatment of chronic hydrocephalus.—In the treatment of cases of this nature, the chief object of the physician is to palliate symptoms as they arise, by the occasional application of leeches, the frequent use of blisters or issues, and the contra-irritation produced by tartar emetic sprinkled upon the surface of a pitch plaster; attention to the bowels, regulating the diet, together with the administration of an occasional small opiate. Mercury has been much praised in this form of the disease; and although I have never seen any benefit arise from its employment, yet there can be no objections, in any case, to a fair trial of its powers.

When considering the treatment of acute hydrocephalus, I stated my disapproval of the irrational practice of puncturing the brain to draw off the effused fluid; but I will not venture to speak so decidedly against the practice in chronic cases. If the operation of tapping the brain is ever to prove successful in producing a cure, it must be in chronic cases, where an inconsiderable quantity of fluid is effused, or where there is no considerable organic lesion. Nevertheless, experienced pathologists will, I am persuaded, join me in stating that such cases are exceedingly rare; so rare as not to be met with oftener than once in a thousand instances!

Pressure has been highly extolled: of course it must be employed after the operation of tapping. Similar remarks to those already made respecting the results to be expected from that operation, are applicable to the effects to be expected from pressure.

CHAPTER III.

DISEASES OF THE SPINAL MARROW.

Inflammation of the Spinal Marrow and its Membranes; and under this head I shall at present include Tetanus—Trismus—Trismus Nascentium—and Hydrophobia.

INFLAMMATION OF THE SPINAL MARROW AND ITS MEMBRANES.

It has been considered expedient to treat of inflammation of these tissues together, because it does not appear to be established that inflammation in one texture has such distinctive characters as to enable us to distinguish inflammation of the membranes from inflammation of the substance of the spinal marrow. We are indebted for many important observations on this subject to several French writers and Dr. Abercrombie; nevertheless, systematic authors must be slow in drawing practical conclusions from them, until they be more numerous, and more fully elucidated.

Symptoms of inflammation of the spinal marrow and its membranes.—The chief symptoms of inflammation of these parts are stated to be pain in the back, occasionally shooting upwards and downwards, being very severe in one spot, increased by motion, but not always by pressure, unless it be connected with caries of the bone; rigors; some degree of fever; headache; slight incoherency, and even coma occur. In some cases dysuria takes place; in others retention of urine; convulsions sometimes general, at other times partial; rigidity of the muscles of the back and neck. Sometimes the body is bent backwards, in a state called *opisthotonos;* in some extremely rare cases, the body is bent forwards, in the state termed *emprosthotonos.* Sometimes there is locked-jaw, and occasionally complete tetanus. Sometimes there is great pain or tingling in the extremities, particularly in the lower; and occasionally paralysis, not only of the lower, but of the upper extremities. When the superior extremities are affected with pain, tingling, convulsions or paralysis, it is stated that morbid appearances have been found in the cervical region. In some instances, the limbs are permanently contracted, rigid and painful; while in other cases they are flaccid and without pain. The muscles of deglutition are occasionally affected, sometimes so much so that there is a dread of swallowing any fluid, and in this way the disease stimulates hydrophobia; and there is reason to be-

lieve this class of diseases has been often mistaken for the latter. The functions of the stomach and bowels are deranged; at first, the bowels are constipated and moved with difficulty, but towards the last, stools are passed involuntarily, as in the urine. The tongue presents different appearances; from being loaded and moist, it becomes dry and hard. The pulse is various, and has no particular character. The faculties of the mind, generally speaking, are not much impaired, although there is occasional incoherency. Some allege that it is only when the disease is situated high in the cervical region that the functions of the brain are impaired. When they are permanently, disordered and particularly, if blindness and deafness take place, it may be concluded that the brain is also affected. The respiration, in many cases, becomes slow as the disease advances, so much so, that there may be so few as ten, seven, five or even three inspirations in a minute; occasionally death is suddenly produced by asphyxia.

Sometimes the disease terminates fatally in a few days, but the general course of its acute form is from ten to fifteen; it would appear, however, that it may exist in a chronic state for an almost indefinite period. In the practice of French physicians, we are told this disease has been very generally fatal; but I have seen a number of severe cases treated successfully, which, there was every reason to believe, were inflammation of the spinal cord and its membranes, but by means very much bolder than those which are generally pursued on the opposite side of the Channel. If the disease be produced by caries of the vertebræ, or by blows causing considerable injury to the bones, it will generally prove fatal, at least much more frequently so than when it occurs spontaneously. Probably many affections which now go by the vague name of nervous, and many of the painful sensations in the chest and abdomen, experienced particularly by females, will hereafter be found to depend upon some functional derangement, or slight disorganization of the spinal marrow and its membranes.

Causes of inflammation of the spinal marrow and its membranes.—This disease may be produced by the application of cold, particularly in damp situations; fatigue, and every other circumstance which may upset the balance of the circulation, and produce venous engorgement in different organs; as also by blows, caries of the vertebræ, and tumours growing from different parts within the vertebral canal.

Appearances on dissection in inflammation of the spinal marrow and its membranes.—It may be remarked, that the description given of the morbid appearances of the brain and its membranes, will equally apply to the spinal marrow and its membranes. The effusion will be found beneath the arachnoid. The reader must keep in mind, that there is always a considerable quantity of serous fluid in the spinal canal, which has a free communication with the ventricles of the brain; and that the spinal marrow is rather harder than the substance of the brain.

Treatment of inflammation of the spinal marrow and its membranes.—This consists in bleeding, generally and locally; the frequent

administration of purgatives; the application of contra-irritation, and attention to the bladder, to prevent over-distension. In this, as in all diseases affecting vital organs, the life of the patient depends upon the timely application of the proper remedies, which must be made assiduously. Some cases, thought to be of the nature of those now under description, have been successfully treated, by applying twenty or thirty leeches, after copious general bleeding, and by reapplying them, (even in increased number,) to the part chiefly affected, till the disease was subdued; and by the exhibition of repeated doses of calomel and opium.*

[SPINAL IRRITATION.]

[In addition to the preceding account of the diseases of the spinal marrow, I shall now offer a few remarks on those modifications of disease which have of late been referred to *irritation* of the spinal marrow and nervous ganglia.

It must be confessed that some of the advocates of these views have given them a much too general application; yet it cannot be denied that they are of great practical value, and should be familiar to every physician.

As the basis of the doctrine of spinal irritation, it is assumed that "disease of the larger nervous masses, as the brain and spinal marrow, is not so much evinced by phenomena in the immediate seat of disease, as in those more remote parts to which the nerves arising from the diseased portion are distributed."† Hence it is, that severe neuralgia of the limbs may be attended by comparatively trivial uneasiness in the spinal cord, while the latter is the real source of the irritation, and the part to which the curative means should be directed. It often happens that the patient is wholly unconscious of pain or sensitiveness of the spine, until the latter has been subjected to some degree of pressure, when the connection becomes manifest by the occurrence of a neuralgic paroxysm. In other instances the secondary effect consists in numbness, or in a sensation like fatigue; and again, in very many cases, the spine itself may be very sore to the touch, and yet pressure there has no obvious effect on the remoter symptoms; so that the connection between them is rather to be inferred from other circumstances.

Let us now briefly inquire into the symptoms of spinal irritation in connection with the distribution of the nerves.

1. Irritation of the *medulla oblongata*, and the nerves arising from it, (especially the 5th pair,) gives rise to those painful affections of the face called tic-douloureux.

2. *Irritation of the upper cervical cord* gives rise to neuralgic pains of the scalp, and a stiffness and sense of fatigue in the muscles of the neck.

* The last work written exclusively upon this subject, is that of M. Oliver, of Angers, entitled "De la Moelle épiniére et de ses Maladies."

[† Teale on Neuralgia, p. 3.—I have freely availed myself of this valuable work on the present occasion.]

3. *Irritation of the lower cervical cord* produces its effects on the shoulders and upper extremities.

4. *Irritation of the upper dorsal cord* causes uneasiness in the chest, and is supposed to give rise to that affection of the intercostal muscles called pleurodynia.

5. *Irritation of the lower dorsal cord* induces soreness and pain in the inferior part of the chest, and especially a sense of constriction of the epigastrium, and pains of the abdominal muscles.

6. *Irritation of the lumbar and sacral cord* gives rise to pain, spasm and other uneasiness in the lower extremities, and especially a feeling of instability in walking.

These sensations are sometimes intermittent, sometimes constant; and they present a diversity of character which it would be both difficult and tedious to describe. Pain of every grade; spasm, tremors, debility, weariness, coldness, numbness and loss of feeling, are among the more common symptoms—symptoms which are not unfrequently attended by great physical suffering, and which, for want of our ability to explain them, have been too often considered imaginative, and therefore unworthy of attention.

Mr. Teale has also drawn the attention of the profession to an analogous irritation of the *ganglia of the sympathetic nerve.* He observes, that this disease of the ganglia is seldom found except in conjunction with that of the corresponding portion of the spinal cord, whereas the latter is often affected without implication of the former.

This irritation may occur in any of the sympathetic ganglia, but those most frequently affected are the middle and lower thoracic, and the cervical ganglia. The organs which derive their nerves from these sources, are the seat of a series of symptoms of which the following are the most common: palpitation of the heart, asthmatic breathing, gastric disease of various grades, as spasm, gastrodynia, flatulence, pyrosis, pulsation in the epigastrium, and, in fine, all the indications usually called dyspeptic. Leucorrhœa and irregularities of the catamenia also take place from this cause, together with various perversions of the other secretions.

Mr. Tate, an English surgeon, has, within a few years, called the attention of the profession to the manifest connection between hysteria and spinal irritation; which views, however, will be briefly noticed in the chapter on hysteria.

As yet we know very little of the absolute pathological condition of the spinal marrow and nervous ganglia, under the circumstances above described: they appear, however, to be in a "subacute inflammatory state," which is extended to their envelopes, and, by continuance, to the adjacent integuments: for on no other principle can we account for the extreme sensitiveness which sometimes exists in the course of the spine, and which is aggravated by very slight pressure. Some physicians seem unwilling to acknowledge that this tenderness of the integuments of the spine can arise from irritation of the nervous masses which are deeply shut up in the bones of the vertebral column. Some have even considered this objection as an insuperable difficulty in the view before us: but on this point we may draw a familiar illustration from an inflamed tooth, which, if

not soon relieved, renders the adjacent integuments acutely sensible to the slightest violence, and will even cause extreme neuralgia of the whole corresponding side of the face. Now, in this instance, the nerve which supplies the tooth, and which is the primary seat of the irritation, is as completely enveloped by the maxillary bone as the spinal ganglia are by the vertebræ. However isolated either may appear at first thought, it will be found that there are connections between them and the surrounding parts, which fully account for the propagation of disease from one to the other; and that this disease will consecutively affect the nervous mass, its bony envelope, the periosteum and the integuments, until the skin itself becomes acutely sensible. Of the latter fact a singular example is given in a late quarterly journal (British and For. Med. Rev.,) in which the act of passing the finger lightly over the fine hairs covering the nape of the neck, threw the patient into an agony.

Spinal irritation is not necessarily connected with disease of the vertebræ, although the two may coexist. I have lately met with a remarkable case of spinal irritation in which the vertebræ do not appear to be involved; and yet on each side of the upper portion of the sacrum a distinct tumefaction can be felt, upwards of an inch in diameter, very sore to the touch, and accompanied by neuralgic pains of the lower extremities, great weariness in walking, and various dyspeptic symptoms. This disease had continued upwards of six years before I saw it: it is irregularly paroxysmal, and has tended much to enfeeble a previously delicate constitution.

Treatment.—It may be briefly mentioned, that almost all the ordinary counter-irritants have been resorted to in these derangements, together with local depletion in the course of the spine. Cups or leeches, followed by blisters, constitute our principal resources; but after the acute symptoms have been relieved by these or analogous measures, irritation of a more permanent kind should be instituted without delay. For this purpose the tartar-emetic ointment answers best. Many cases yield to the first application of these remedies; but others require a much more prolonged treatment.

The usual mode of applying tartar-emetic to the spine is by means of the tartar-emetic ointment, formed by mixing one drachm of the mineral salt with an ounce of simple cerate. Much time, however, is often lost in waiting for the effect of this uncertain preparation. A much more active formula is that recommended by Dr. Hannay, of Glasgow, viz.:

℞.—Tartrat. Antimonii, ℥i.
Muriat. Hydrargyri, gr. v.
Aquæ distillatæ, ℥i.
Spiritus Lavend. Compos., ℥i. Dissolve the salts in water, and then add the spirit.

This solution is applied by wetting the fingers with it, and then rubbing them on the skin. To be still more effectual, portions of the antimony itself (much of which remains undissolved,) may be rubbed on: by these means, persisted in for 10 or 15 minutes, an eruption will invariably follow in a few hours.

When tartarized antimony is applied, or a Burgundy pitch plaster,

as is sometimes done, it may be very difficult to remove it when the irritation comes on, and the patient may hence suffer much unnecessary distress.

It is important to know that *during the operation* of tartarized antimony, the nervous symptoms are often greatly aggravated, and the relief is not to be expected until the eruption begins to decline. Care should be taken not to allow the irritation to exceed a reasonable limit, for which purpose its progress must be watched from day to day; and if by any chance it becomes too severe, a starch or bread and milk poultice is well calculated to mitigate the pain.

Galvanism, as directed in the chapter on epilepsy, and moxa have occasionally produced remarkably good effects.

"Where the case is not sufficiently severe to justify the employment of either of the preceding applications," observes Dr. I. Parrish, "or where, from the suddenness of the attack, it is desirable to produce a speedy impression in the vicinity of the spinal marrow, frictions down the spine, with spt. terebinth, either alone or diluted with some unctuous matter, or a decoction of capsicum in brandy, with other similar articles, will be found highly beneficial."*

But while our attention is thus directed to the spinal track as one of the points of diseased action, we are by no means to neglect the various coexisting functional derangements. These require to be treated on general principles, by the judicious interposition of aperient and tonic medicines, with a suitable diet, exercise, and, in some instances, change of air.

In concluding these brief observations, it may be remarked, that spinal irritation is not to be viewed as a simple or isolated affection, but rather as a complication involving various dissimilar organs, and having for its basis a true neuralgic condition. It is a condition from which many different diseases are produced, and these, by long continuance, tend to impair and disorganize the structures in which they are located, however remote from the spine itself; so that the consecutive disease may become infinitely worse than the primary irritation: whence it happens that by removing the latter we cannot always guarantee the cure of the former; or, in a familiar phrase, a chain of morbid actions is established, in which the spinal affection becomes a link of but secondary importance; nor have I a doubt that it is itself sometimes a strictly consecutive affection.

The subject, in truth, is comparatively new, and requires abundant additional observation and reflection, before its real merits can be ascertained.†]

TETANUS.

This is a disease characterized by tonic convulsions, and, for the most part, by rigidity of the affected muscles. Sometimes the mus-

[* Vide Remarks on Spinal Irrit., &c., Amer. Jour. Med. Sci., Aug. 1832.]

[† The best information on this subject will be obtained from the works of Mr. Teale and Mr. Tate, already mentioned: and from the ingenious and truly practical essay of my friend Dr. Isaac Parrish, above quoted.]

cles which close the jaws are solely affected, with perhaps those of the neck, when the disease is usually termed *locked-jaw* or *trismus*. When the muscles of the back are convulsed and contracted in such a manner as to make the body be supported by the head and the heels, the trunk being arched, the term *opisthotonos* has been applied. When the body is bent in the opposite direction, the term *emprosthotonos* has been used. In a practical point of view, these varieties may be considered under the general term tetanus.

An important distinction, however, must be made between the symptomatic tetanus, which is so frequently the result of wounds, and that which comes on without any assignable cause, and which has been denominated, in contradistinction to the other, idiopathic. It affords me much pleasure to hand to the surgeon who boasts of the superior success of his art over that of physic, the traumatic tetanus in the hope that he may be more successful in discovering its true pathology and treatment than his wise ancestors; and I shall now proceed to consider that form of the disease which has been called idiopathic, and afterwards make a few observations on *trismus nascentium*.

Symptoms of tetanus.—Tetanus has no precursory symptoms which can be depended upon; sometimes patients complain of rigors, or merely chilliness, with pain and stiffness of the muscles of the neck and shoulders, which extend, by degrees, to those of the jaw. By and by rigidity of the muscles takes place, accompanied by painful spasms; the jaws are immovable, and if not yet completely shut, soon become so tightly clenched that it is impossible to separate them; deglutition is difficult, at length impracticable; the faculty of the speech is impaired, and at last the power is altogether destroyed, although intelligence may remain; the countenance is exceedingly anxious; the oppression at the præcordia is great, together with a sense of tightness and suffocation.

The spasms sometimes extend from the face and neck to the back, from whence they spread to the rest of the muscles of the trunk, abdomen and extremities, the muscles always remaining rigid; but their convulsive action comes on at regular intervals. In the most severe cases, the paroxysms are violent, and the spasms succeed each other very rapidly. The oppression at the præcordia increases as the spasms extend from the muscles of the jaw and neck to those of the trunk, when there come on a severe sense of constriction in the chest and a violent darting pain extending from the lower part of the sternum to the spine, the return of which the patient constantly dreads. The mental faculties, for the most part, remain sound till near the approach of death; which circumstance gives the disease a distinguishing character from epilepsy. The pulse is generally little affected in tetanus, even in the traumatic form of the disease; occasionally, however, it is quick, particularly towards the fatal termination. The functions of the lungs seem to be seriously impeded, respiration being very rapid, or slow, not exceeding three, five, seven or nine inspirations during a minute. The skin is seldom hotter than natural, that is to say, there is no feverish heat; the body is frequently bathed in perspiration, which, as the disease advances,

is converted into a cold, clammy sweat. The functions of the stomach and bowels are sometimes unaffected. Deglutition is, in many cases, very difficult, which may be partly owing to the tough phlegm lodged about the fauces in considerable quantity, and partly, also, to the spasmodic action of the muscles. Greater difficulty is experienced in swallowing fluids than solids, which the patient is apprehensive will produce complete suffocation; and, if he is a person of irritable temper, he may, perhaps, show a marked dislike to fluids when presented to him, which will give an appearance of *water-dread.* Should such an individual have received a bite from a dog, even twenty years before, he will be said to be affected with hydrophobia; and I am convinced, after much patient investigation, that many of the cases recorded as pure hydrophobia, were nothing more than trismus, conjoined with difficulty in swallowing fluids. Tetanus is a disease which is very rapid and fatal in warm climates, terminating as early as the third day; in this country, it is seldom fatal till between the fifth and tenth. The danger of the disease is to be calculated by the frequency, violence and duration of the convulsions.

Causes of tetanus.—In warm countries, it is believed that the black population is more liable to tetanus than the white. Individuals possessing what is termed a nervous temperament, are, perhaps, more subject than others. Long-continued fatigue, together with exposure to cold damp air, conjoined with the excessive use of ardent spirits, are the causes usually, and, perhaps, truly assigned.

Appearances on dissection in tetanus.—Many distinguished pathologists believe that tetanus has its seat in the spinal marrow, and that its nature is inflammatory. There can be no doubt that there is a striking resemblance between the symptoms of tetanus, and those produced by inflammation of the membranes of the spinal marrow. Tetanus, well marked in its symptoms, however, has proceeded to a fatal termination, and, upon the most minute examination, no morbid appearance could be discovered either in the membranes or in the spinal cord itself. And, on the other hand, inflammation and other organic lesions of this part have been found, upon dissection, in cases where no symptoms of tetanus had manifested themselves. Others allege that the ossific scales, found on the surface of the arachnoid membrane of the spinal marrow, are the cause of tetanic convulsions; but I have frequently seen these ossifications where symptoms of tetanus never appeared.—The lungs have been often found loaded with blood; but this can scarcely have any connection with the causes of the disease; it is, perhaps, only an effect of the impeded respiration. It is said that the cardiac portion of the stomach and the lower end of the œsophagus have always been found inflamed, and attempts have been made to connect the occurrence of the disease with this appearance; but were this a cause of tetanus, it would be a disease of very frequent occurrence in these latitudes. A similar remark applies equally to worms having been occasionally found in the alimentary canal, but they may possibly give rise, in some constitutions, to symptomatic tetanus.

Treatment of tetanus.—After a careful review of the cases recorded in the annals of physic, no plan of treatment, hitherto employed, seems to have been attended with much benefit. Bleeding, purging, cold and warm bathing, all the most powerful narcotics, and mercury, have each had its warm supporters, but with little success. The following is the plan which I would adopt in cases of tetanus, including those of locked-jaw, in previously healthy subjects. If called early, the strength being good and the pulse not very rapid, I would bleed from the arm till the near approach of syncope; by this means, plethora will be reduced—any determination of blood will be altered—and any tendency to inflammation, if such exist, so far at least subdued. But venesection ought not to be employed if the disease had made much progress, or if the pulse were very rapid, the tongue dry, and the strength reduced by the diseased action. In an hour or two after the general bleeding, blood should be abstracted locally in the course of the spine, either by applying a considerable number of leeches, or by means of cupping-glasses, which ought to be repeated from time to time, according to circumstances. The bowels must be kept freely open; but much mischief has been done, and the spasms rendered more violent, by the constant exhibition of drastic purgatives. Tobacco enemata have long been used,* and have of late years been again strongly recommended in this disease by Dr. O'Beirne of Dublin. Opium, in 5 grain doses, ought to be exhibited every 2d, 3d or 4th hour, according to circumstances; or what is better still, a hundred drops of laudanum, sixty or seventy of Battley's sedative solution, or half-grain doses of acetate of morphia. From the beneficial effects produced by colchicum in gout and rheumatism, in both of which the nervous system is very much implicated, large doses of that medicine might be conjoined with the opium. Patients labouring under tetanus appear to bear immense doses of opium: many cases are recorded, in which twenty and thirty grains have been exhibited daily, and persevered in for two or three weeks without causing any apparent bad consequences. Mercury has been much in favour among medical men in the treatment of this disease, and it has been asserted that those patients have recovered in whom salivation had been excited; but there is a great deception likely to arise from this statement. It is difficult to excite this action in violent diseases, which run on rapidly to the destruction of life: the very severe cases run through their course in too short a period of time to allow the mercury to act; therefore it can only be in the slighter varieties of the disease in which the action of the remedy can take place, and which might be cured by other means. The remedy, however, has been too strongly recommended to be passed over. A large blister should be applied to the spine. As to cold and warm bathing, it may be shortly stated, that I have no faith in either, as the least motion will very generally produce a paroxysm. The strength must be carefully watched, and nourishment, with or without a little wine, should be given at short intervals, long before there is any decided appearance

* Vide Observations by Mr. Duncan, 11th vol. Ed. Med. and Surg. Journ., p. 198.

of sinking. When the stage of collapse approaches, stimulants must be had recourse to, and there can be no doubt that their judicious exhibition has occasionally saved lives. Among other remedies, which have been recommended, I may mention assafœtida, musk, camphor, valerian, bark, sudorifics, ammonia, carbonate of soda, &c.

TRISMUS NASCENTIUM.

I HAVE now to say a few words respecting the locked-jaw of infants. It is a disease seldom seen in this country, and is more peculiarly an affection of negro children in warm climates; attacking them between the 7th and 15th day after birth, seldom later than the 17th, and, in general, neither preceded nor accompanied by any febrile movement. The disease steals on in the following manner. Children lose flesh and strength, and are affected with drowsiness and frequent yawning; they suck with increasing difficulty, and at last are unable either to suck the breast or to swallow; the skin gradually puts on a yellow appearance; by and by the jaw is observed to become stiff, its muscles rigid; general convulsions sometimes precede death, which often happens in two or three days from the first attack.

The true pathology of this affection has evaded the efforts of all inquirers. It has been attributed to irritation produced by tying the navel-cord; to the irritable state of the umbilicus upon the separation of the cord at the natural period; while others maintain that it is owing to some diseased state, or retention of the meconium.

No treatment hitherto tried appears to have had much effect in controlling the disease after it is fairly established; but that which has been found most beneficial, is the application of turpentine to the navel.

If the child survive the ninth day without the occurrence of any symptoms of the disease, it is considered safe. At one time, in some of the West Indian Islands, this disease was so common and so fatal, that, on an average, two out of three infants perished.

HYDROPHOBIA.

THIS is a disease happily of rare occurrence, particularly in this country; and, as already mentioned, it is probably of still rarer occurrence than is generally imagined, being frequently confounded with tetanus, when, along with that disease, there is a dread of liquids; but there can be no doubt that such an affection does exist. I once saw a patient many years ago, but before I was able to judge of such matters for myself, who was said to be affected with hydrophobia: it terminated fatally; but I have never met with a medical man who could say he had seen even one case in this country. Hydrophobia is produced by a morbid poison generated in the dog, wolf, fox, and occasionally, although rarely, in the cat. The poison appears to be mixed with the saliva; and the characteristic of the disease produced is a dread of liquids. That such a disease does exist

and that it is capable of being communicated from one animal to another, has been satisfactorily proved by experiments performed in the year 1813, by Magendie and Breschet. The saliva of a man affected with hydrophobia, was collected and inserted beneath the skin of two dogs, which were at the time in excellent health, and in thirty-eight days one of the two dogs became rabid, and bit two others, one of which died in a month after the same disease. Experience has proved, that all the animals bitten are not necessarily affected with hydrophobia. Of this fact, Mr. Hunter gives a striking example. Twenty persons were bitten by one rabid animal, of whom only one suffered. It is generally admitted, that the state of the mind has a powerful influence in the production of disease; and it is probable that hydrophobia may be sometimes produced by the constant agitation into which timid, nervous persons are thrown after having been bit. Some allege that the virus may remain dormant in the system for years before the disease appears; but the general opinion is, that it shows itself in between twenty and sixty days from the occurrence of the accident. During this period, there is no constitutional derangement, unless the individual is depressed by fear.

Symptoms of hydrophobia.—The disease is ushered in by rigors, languor, lassitude, severe mental depression, irritability, anxiety, restlessness and watchfulness. Occasionally a shooting pain is felt in the neighbourhood of the injured part. As the disease advances, the anxiety of the countenance, the irritability and watchfulness, the oppression at the præcordia and sense of contraction of the chest, increase; slight tumours, affecting every part of the body, appear, and difficult deglutition; a considerable quantity of viscid phlegm is observed in the mouth and fauces; stiffness of the jaws now and then takes place; as also general spasmodic paroxysms, resembling those in tetanus; but it is asserted that, on careful examination, the convulsions will be found to be of the clonic kind. In pure hydrophobia, the body is said to be affected more with tremors than convulsions. At length the water-dread increases so much, that the sight of any thing liquid, or merely an allusion to it, produces a paroxysm of tremors, at a time too when the thirst is very urgent. On some occasions, the dread only takes place when the patient attempts to drink. As the disease goes on advancing, the least noise or motion made by any of the attendants produces a paroxysm, as well as every effort on the part of the patient either to move or speak. He manifests increasing terror and watchfulness. As in tetanus, the mind generally remains entire till towards the termination of the disease. The thirst and sense of constriction increase in urgency; respiration becomes painfully hurried and short; the pulse and heat of skin are generally about the natural standard; but the former increases in frequency while the latter sinks towards the fatal termination, and the surface is covered with a clammy sweat. Debility, in the proper sense of the term, is scarcely ever present till towards the last stage, when the eye becomes hollow, and the countenance pale and haggard.

The duration of the disease in slight cases is about a week, but in those of a more violent nature, two or three days. Mr. Marshall

informs me, that the last case of this disease which came under his notice, died in twenty-two hours from the occurrence of the first suspected symptom. Two hours before death, his patient ate bread and jelly with an appetite. Another case, which Mr. Marshall attended, terminated fatally in a shorter period.

Appearances on dissection in hydrophobia.—A great many discordant statements will be found, in different works, respecting the seat of the disease. Some pathologists, after the most careful examination, have not been able to discover any morbid appearance whatever in any part of the body; while others have seen vascularity in the pharynx, œsophagus, the cardiac extremity of the stomach, and even in portions of the intestinal tube, particularly the ileum; and these parts have been represented to have been even in a gangrenous condition. Magendie found no diseased appearances in the brain. Professor Trolliet, of Lyons, published a work on this subject in the year 1820.* He seems to have had ample experience in the treatment of this dreadful malady; and the following are the diseased appearances which he discovered on dissection in different cases. Vascularity and inflammation of the mucous membrane of the air-passages, which was coated over with a frothy matter, (according to his view,) of a *peculiar* kind, and which he supposes to contain the specific virus; the lungs were gorged, and apparently emphysematous; in some instances air was discovered in the heart and large blood-vessels; the blood was black, uncoagulated, and had an oily appearance. This gentleman found the membranes of the brain, and more especially the *pia mater*, very vascular.

One fact has been established by all the individuals who have investigated this disease—that the salivary glands, and the surrounding cellular substance, have always been found healthy.

Treatment of hydrophobia.—Bleeding even to syncope, and large doses of opium, have been employed, together with camphor, musk, mercury, and almost every other potent remedy in the materia medica, without success. To show the extent to which bleeding has been carried, I may mention a case treated by Professor Trolliet. The patient was bled to the extent of five pounds, when the water-dread first appeared. In a few hours afterwards, the operation was repeated to the extent of eighteen ounces, when syncope again took place. In four hours subsequently to the last bleeding, fourteen ounces were abstracted; and in four hours after that, the patient died, being twelve hours from the commencement of the hydrophobia. It was remarked, that the symptoms became more aggravated after each bleeding. Notwithstanding the result of this and other cases, I would still be disposed to recommend a similar plan of treatment to that I have proposed in tetanus at page 574.

The injection of tepid water into the veins has been practised without success. But from the experience we have had of the safety of throwing even ten pounds of saline fluid at a time into the vascular system in cases of epidemic cholera, there is little doubt that the practice in hydrophobia will be conducted with greater boldness, and probably attended with better effects.

* Nouveau Traité de la Rage.

CHAPTER IV.

EPILEPSY—HYSTERIA—CHOREA—NEURALGIC PAINS.

EPILEPSY.

This is a convulsive disease which affects the voluntary muscles, and is characterized by the suddenness of the attack, loss of sense and voluntary motion.

Symptoms of epilepsy.—The fit generally comes on suddenly, sometimes with a frightful shriek, and the patient falls down, and immediately loses sense and voluntary motion; convulsions follow on the instant; the muscles on one side of the body are generally more violently affected than those on the other; all the muscles connected with respiration, and those of the face, are always involved. The pupils are sometimes dilated: the eyes roll about in a most frightful manner, and at last become fixed. The face is frequently of a dark purple colour, but occasionally it is pale and haggard. The tongue is sometimes thrust with violence out of the mouth; it is occasionally caught between the teeth, and severely bitten; a considerable quantity of phlegm is collected in the mouth, and expelled with violence in a frothy state, with considerable noise. The respiration is always hurried and laborious, which is often produced or increased by patients breathing through the clenched teeth, and the frothy saliva. The pulse varies much; in some cases it is very rapid, in others, preternaturally slow. The affected muscles are not constantly rigid, but occasionally become relaxed, and then rigid again; this is the state termed by nosologists, "clonic spasms." The duration of the attack varies from a few minutes to half an hour; the convulsions cease; the face becomes pale; and the patient may recover his senses and power of voluntary motion, either immediately or very slowly; his judgment is, in general, for a time impaired, and he is left debilitated, with the feeling of weight in the head, or actual headache. The paroxysm sometimes terminates by violent vomiting. Occasionally it happens that one fit succeeds another till the patient becomes comatose, and dies; but comparatively few die during a fit, unless the disease has existed for a considerable period of time.

An epileptic paroxysm is occasionally preceded by a peculiar and painful sensation in a distant part of the body, as in the fingers, toes, or some part of the abdomen, and is described as proceeding in a gradual manner, like something creeping towards the heart, in other

cases towards the head, when the convulsions commence. This is called the *aura epileptica*. The attack is also occasionally preceded by certain symptoms which announce its approach to the patient, but which he has usually no time to communicate; these are, headache, imperfect or erroneous vision, sparks of fire before the eyes, and *tinnitus aurium*.

Females appear to me to be more liable to this disease than males. It is not entirely confined to man, as I have seen it in horses—in dogs, particularly of the Newfoundland breed—in poultry and pigeons.

Causes of epilepsy.—Epilepsy appears to be occasionally hereditary. I have known it to be the cause of death in both father and son; but it is more frequently an acquired disease. Idiots are often also epileptics; and insanity frequently terminates in epilepsy. Fright is said to be a cause: and every kind of mental agitation. Thus, it was formerly called the electioneering disease in England, because it so often occurred at such periods from violent mental excitement, aided, however, by another cause, the abuse of intoxicating liquors. Indigestible articles of food, and constipation, by occasioning irritation in the stomach and bowels; the irritation produced by worms in the intestinal tube, are also very frequent causes; as is likewise excessive venereal indulgence. This complaint has been attributed to tumours in the brain, and projections of bone arising from the inner table of the skull.

Appearances on dissection in epilepsy.—A great variety of organic lesions has been discovered in the brain and spinal marrow of epileptics. Congestion of the vessels of the brain; thickenings and indurations of the membranes; inflammations; exostoses; tubercles and tumours of different kinds, and in different parts of the brain—sometimes situated externally to the membranes; at others occupying the very centre of the cerebral mass. Some assert that these disorganizations are exclusively confined to the cerebellum; others to the spinal marrow; but these are to be regarded only as assertions made by individuals, whose observations have been made upon a limited scale. It must be observed, that any one of these morbid appearances may exist, and even several of them combined, without producing that combination of symptoms which constitutes the disease under consideration; and further, that in some instances, upon the most careful examination, no morbid appearance whatever has been discovered, either in the brain or spinal marrow. Worms have frequently been found in the intestines; and this has led several pathologists to assert, that their presence is the sole cause of epilepsy; but in a great number of instances, not a vestige of these animals could be discovered, or any lesion in any part of the body. So that, notwithstanding all the attention which has been paid to the investigation of the nature and seat of this disease, we are left very much in the dark.

Epilepsy appears to be a functional disease of the brain and nervous system, produced by a variety of causes, sometimes by mental emotions, at others, by various irritations affecting the digestive

organs; and very frequently by some of the above-mentioned organic lesions of the brain and spinal marrow.

Treatment of epilepsy.—Experience has convinced me, that much can be done for epileptics in preventing attacks; but almost every thing must be done by the patient himself in the intervals. I have seen little benefit from any mode of treatment during the paroxysm, except by placing the sufferer in the horizontal posture, and taking such precautions as will prevent him from being injured by the violence of the muscular commotion into which the body is thrown. One of the first circumstances to be attended to is to put something between the teeth to prevent injury to the tongue, and the garments must be loosened, particularly stays and neckcloths; and it is often very serviceable to sprinkle the face with cold water, particularly when the convulsions are confined to the muscles connected with respiration.

After the paroxysm is over, the patient should be kept quiet, the heat of the body supported, the bowels opened as speedily as possible, and light nourishing food in moderate quantity allowed. At no time should a patient load the stomach. The abuse of stimulants is to be abstained from, and every cause, corporeal as well as mental, which can possibly have the effect of disturbing the balance of the circulation, or exciting the nervous system. If there be marks of diseased action in the brain, the treatment must be more rigid; occasional cupping may be had recourse to, and if there be considerable plethora, a bleeding from the arm may be serviceable, together with keeping the head shaved, and the introduction of a seton in the neck; or a drain is to be made by means of an issue applied to any other part of the body. If worms be suspected, turpentine and other anthelmintics should be exhibited.

With respect to blood-letting, I have often seen it had recourse to, both during the paroxysm and in the intervals. It certainly has been sometimes serviceable in plethoric subjects; but in general, it does not appear to have any beneficial effect, and occasionally has been injurious; therefore it is a remedy which ought to be used with great discretion.

It has been mentioned, that irritation in the stomach and bowels is a frequent cause of epileptic paroxysms. Some individuals seem to be born with very irritable mucous membranes; and I have seen several epileptics so constituted, that the irritation produced by a laxative medicine, or diarrhœa coming on without any assignable cause, occasioned a recurrence of epilepsy. A lady affected in this manner with epilepsy, was recommended by one of the most learned physicians of the present day, to use drachm doses of the powder of mistletoe, which she persevered in without any apparent benefit for some months; at last happening to pass through a country town, and being in want of a supply, an apothecary sent by mistake drachm doses of powdered *oak-bark*, which proved of more service than any other remedy she had previously taken. The only inconvenience experienced was the subsequent difficulty of getting the bowels opened without producing irritation. Since this case presented itself

to my notice, I have used astringents several times in similar instances with apparent benefit.

The ammoniuret of copper has been much lauded in the treatment of epilepsy, as also the nitrate of silver. The latter remedy has been pushed to an extent which would almost surpass belief were the facts not well authenticated. It has been given to the extent of from one to eight grains a day, for weeks, without producing any effect, except slight griping pains, which ceased when the preparation was conjoined with opium. I have seen only two cases in which the remedy had any beneficial effects; and it is remarkable that they had been under the care of the late Dr. Baillie; the skin of both was changed from the natural colour to that of indigo, but they were cured of the disease.*

[The experience of the French physicians presents some very contradictory results; but the following note, which was communicated by M. Esquirol to M. Ratier, embraces such a mass of evidence that I gladly insert it here. "The Salpêtrière," observes M. Esquirol, "contains upwards of four hundred epileptic patients, and I have employed, but unsuccessfully, all the boasted remedies for that disease. More than twenty female patients, of different ages, and offering, for the most part, the most favourable chances of cure, have made use of the nitrate of silver in various doses, from half a grain to eight and even sixteen grains a day, during several months, without experiencing the slightest relief. In many of them it produced very severe gastralgia. Two facts have contributed not a little to make me abandon the use of this medicine: a young girl was the victim of jealousy; the menses were suppressed, and she became epileptic. She was put under the use of nitrate of silver for a year without advantage. Soon afterwards the catamenia were re-established, and the epilepsy ceased, and the case was considered a proof of the efficacy of nitrate of silver: but she avowed, on her dismissal from the hospital, that she had never taken a single dose of the medicine, and that the return of the menses was owing to the use she had secretly made of a strong infusion of emmenagogue plants. The second case was that of a stout woman who, before entering the Salpêtrière, had taken the nitrate of silver in considerable doses during two years. She was brought to the hospital in a state of deplorable cachexy; vomited whatever she swallowed, and suffered excruciating pains in the stomach. She died; on examination it was found that the inferior half of the mucous membrane of the stomach had disappeared, and there were four or five perforations through the peritoneal coat. Latterly," continues M. Esquirol, "I have, with much caution, tried on five patients the muriate (hydrochlorate) of silver, as prepared by M. Pelletier, but without having obtained any positive result. I have observed that moral influences have a power over the brain of epileptics sufficient to retard the paroxysms. The hope of cure and confidence in a remedy may produce this effect; and thus the first year that I was entrusted with the cure of

[* This appearance, which is unsightly in itself and alarming to the patient, passes off entirely, but by very slow degrees. Its disappearance is said to be much accelerated by the free use of a solution of supertartrate of potash.]

epileptics, the patients, in the belief that I would adopt some efficacious treatment, suffered much less frequently from their paroxysms than they previously had done."]

Several patients have been under my care, who were able to prevent an epileptic paroxysm if they had time to apply a ligature tightly round the arm, the moment the *aura epileptica* was felt in the hand. This is a curious circumstance; but I can testify to the truth of it. One of these patients was found dead, having, it is supposed, died in the paroxysm; one end of a cord was in his mouth, and the other in the hand, showing that he had been attempting to apply it round the affected arm.

The only disease with which epilepsy is likely to be confounded, is hysteria; but it is a matter of very little consequence in actual practice; it being the slightest cases of epilepsy about which there can be any doubt, when the remedies applicable to the one disease, are exactly those which should be employed in the other.

Catalepsy is a form of epilepsy which ought here to be mentioned. There are generally no convulsions; the patient remains for a shorter or a longer time insensible, deprived of the power of voluntary motion, remaining in the position in which the body happens to be placed at the moment of attack; or if an extremity be moved into a particular position by an attendant, there it remains. This form occasionally runs into the true epilepsy with convulsions. It is, however, a disease of very rare occurrence.*

[Galvanism has, of late, been employed with great effect in the treatment of epilepsy and other spasmodic diseases. Even in that most helpless complication of epilepsy with congenital idiocy, I have seen the convulsions reduced to a tenth part of their ordinary frequency: in one instance they were almost entirely suspended for more than three weeks, in a patient who had previously suffered from two to five paroxysms daily. But on removing the galvanic influence, the paroxysms gradually returned in their accustomed frequency and force. In another case which was treated by Dr. W. B. Simpson, resident physician to the Philadelphia Hospital, the result was still more fortunate: the patient, a stout, middle-aged man, had been struck with lightning, after which he became epileptic; his convulsions recurring every day, but without affecting his mind in the intervals. The galvanic apparatus was applied in the usual manner —his convulsions became at once less frequent, and in a few weeks ceased to recur. He was soon after discharged cured. About two years afterwards this man again entered the hospital, asserting that his convulsions had returned: but during a lapse of several weeks, no such recurrence was observed; and I could not help suspecting that the patient had reapplied for admission more with a view to indulge his indolent habits than to avail himself of medical aid.

In those cases of epilepsy which are not complicated with idiocy or organic disease, in other words, those which depend on mere functional irritation, galvanism seems to promise more than any

* An excellent article on Epilepsy, by M. Esquirol, will be found in the "*Dict. des Sciences Medicales*," but the most profound work on this subject, is that published by Baron Portal, entitled, "*Observations sur la Nature et le Traitement de l'Epilepsie.*"

other single remedial agent; but to insure its good effects it must be persevered in for several weeks at a time; and the interval between the removal and the reapplication of the plates, (except to clean them,) should not exceed one or two weeks.

I shall not stop to inquire in what way galvanism produces its favourable effects. Dr. N. Chapman remarks, that "the hypothesis from which this practical expedient is deduced, supposes an undue accumulation of electric matter in the brain, at the expense of other parts of the body, and hence the cure depends on equalizing the distribution of it."—A *negative* point is, therefore, established as near the brain as possible, and a *positive* one in some distant part of the body. To meet the first of these indications, a blister about an inch and a half* in diameter is placed on the back of the neck near the roots of the hair; and a similar application is made on the inner side of the leg below the knee, or to any other part of the extremities that may be more convenient. To the neck we apply, *first*, a piece of sponge cut flat and thin, and moistened with water; *secondly*, another piece of sponge of the same shape, and also wetted; and *lastly*, over the sponge is laid the *silver plate*, which is kept in its place by adhesive strips.

The distant or positive point, being also prepared, as just mentioned, by vesication, there must be applied to this surface, a piece of sponge, as in the neck; over this a thin layer of muscle or of buckskin, (for either will answer, and the latter is the cleanliest,) and, upon the buckskin, the *zinc plate* is to be secured by adhesive strips. Each of the plates has a small perforation near the margin, to which a delicate silver wire is attached; so that, by this means, the communication between the two plates is effectually insured; the wire passing down the back to the hip, whence it is brought over the groin, and so to the zinc plate at the inside of the leg. "The apparatus thus arranged," says Mr. Mansford, "will continue in gentle and uninterrupted action from 12 to 24 hours, according to circumstances. This last is the longest period that it can be allowed to go unremoved: the sores require cleaning and dressing, and the surface of the zinc becomes covered with a thick oxide, which must be removed to restore its freedom of action: this may be done by scraping or polishing; but it will be better if removed twice a day, both for the greater security of a permanent action, and for the additional comfort of the patient."

It may here be added, that galvanism has not only been successfully used in epilepsy, but also in nearly all the neuroses, and especially the protean forms of neuralgia.]

HYSTERIA.

Hysteria is another disease of the nervous system, the nature and seat of which have not, in any degree, been explained. It is a disease almost exclusively affecting females; but males are not entirely

[* In young children the vesicated surface may be considerably smaller.]

exempt. I have myself seen several well-marked instances in gentlemen, apparently of very different constitutions and habits; but the attacks came on in all of them under the influence of depressing passions.

Phenomena of hysteria.—The invasion of hysteria is sudden and irregular, sometimes periodical. In the slighter forms, the patient, without any assignable cause, bursts into a fit of weeping, which, perhaps, is soon followed by convulsive laughing, which may last for a few minutes; and before composure takes place, the patient gives several loud sobs. One of these fits may quickly succeed another, till the patient falls asleep. In more severe instances, complaint is made at first of pain in the abdomen or chest; a sensation is felt as if something were in motion in the abdomen, owing, probably, to flatus; it moves upwards, producing in the epigastrium a sensation of tightness and of suffocation; and a feeling is experienced as if a ball were ascending to the throat.* The belly is tense; the surface is generally cold; the extremities exceedingly so. The countenance varies; sometimes it is red and swollen, or pale, and the features contracted; the pulse is also very variable; and in some cases, palpitations are violent and troublesome.

In the more severe instances of hysteria, there are symptoms showing the existence of affections of the head and spinal marrow, indicated by spasmodic, and even convulsive affections of different muscles, particularly of the hands, face, jaws, and those connected with respiration; they are of the *clonic* kind. The pupils are dilated; and occasionally, the paroxysm has a very close resemblance to epilepsy, only that the insensibility is rarely complete, unless the attack be combined with syncope. Occasionally there is retention of urine, but for the most part, there is a copious limpid discharge, in either case attended by symptoms of ischuria. Sometimes the disease commences with shrieking, which may continue from time to time during the whole paroxysm, and often terminates in hiccup of the most violent description. In some cases, dyspnœa is a very urgent symptom. Dyspeptic symptoms often precede the attack; and the bowels will, in general, be found in a very bad condition, with a tympanitic state of abdomen.

Some diseases of a very aggravated nature seem to be ushered in with violent hysterical symptoms, and require a very experienced eye to form a correct diagnosis. In many cases, however, the symptoms of hysteria do not take place till the patient is recovering. When the practitioner is in doubt as to whether any severe organic affection is going on, thus obscured, the patient should be seen at short intervals; and the treatment cautiously conducted in such a manner as to remedy and not aggravate the more severe malady if it exists.

[Mr. Tate, in his Treatise on Hysteria, states that a diagnostic symptom of the disease is pain in the left side. "This," he observes, "is very peculiar: it is usually situated immediately below the left breast, in a hollow formed between the cartilages of the fifth,

[* It is this sensation which has received the name of *globus hystericus*.]

sixth and seventh ribs: it is generally so circumscribed that it may be covered by a shilling, and is of the gnawing kind."* Mr. Tate supposes this pain to be seated in the intercostal nerve; and although the right side is not free from it, he has observed it in nineteen cases out of twenty on the left side. The same author states his conviction that the protean forms of hysteria are referable to irritation of the spinal marrow, especially of its dorsal portion, and originally induced by a disordered condition of the uterine function.

Since my attention has been drawn to this subject, I have so repeatedly noticed the pain under the left breast, as to believe with Mr. Tate, that it is characteristic of hysteric affections; and that these "never do occur without a combined error in the nervous system and the uterine functions."]

Causes of hysteria.—It is rare to meet with this disease before the age of puberty, or after the period of life when menstruation finally ceases; in most instances, women are attacked during the time of menstruation; therefore, many have attributed the disease to the uterus. Girls of high passions, and those who have been over-indulged when children, are most liable to hysteria; as also those who become impressed with strong religious feelings, unaccompanied by a sufficient share of common sense to guide them. Women very pregnant, and those who labour under the disorders of menstruation, seem strongly predisposed to hysteria. It appears to affect women of all constitutions—that is to say, those who are robust and plethoric, as well as the pale, weak and emaciated. Some attribute hysteria to the bowels; and there are not a few who consider it as a disease of the nervous system. Emotions of the mind, together with irregularity of bowels, seem to be the chief causes. My own opinion is, that it is a complicated disease, and that the supporters of these different pathological views are all partially correct.

Treatment of hysteria.—This is difficult at all times, and a radical cure in many cases almost impossible, unless we had the power of changing the temper, altering the disposition, subduing the passions, and relieving the mental distresses of the fair sufferers. It is of great consequence, however, to attend to the bowels, and to improve the powers of digestion. The diet should be light and nourishing; cold should be avoided, and particularly cold feet; exercise in the open air should be advised: and the patient's mind should be gradually strengthened, by being directed to healthful and interesting pursuits; and much is to be done by a proper intermixture of innocent and rational amusement. During a paroxysm, the stays and all tight strings should be loosened, and plenty of air admitted into the apartment, and sixty drops of the *spiritus ammoniæ aromaticus*, or the same quantity of volatile tincture of valerian, may be given in a wineglassful of water. If the bowels are distended by flatus, laxative medicines will do much to produce its expulsion; these may be assisted by injections, containing half an ounce of the tincture of assafœtida,† or a tablespoonful of the spirit of turpentine. Opiates

[* Page 42.]

[† A more effectual enema of assafœtida, because more easily retained, is made by

are, in many cases, serviceable after the bowels have been fully opened. Bleeding has been strongly recommended, and is often had recourse to in this disease; but in pure hysteria, it is scarcely ever justifiable. Bitters, and more particularly the sulphate of quinine, will be found very serviceable in restoring the functions of the stomach and bowels. Should the disease be found to depend on any of the disorders of menstruation, the case must be managed accordingly, as will be pointed out in a subsequent part of this volume. In severe cases, a mustard plaster should be applied over the whole abdomen, and an enema of very cold water is frequently serviceable.

[When the disease can be traced to irritation of the spinal marrow, counter-irritation should be established in the course of the vertebræ, either by blisters or by tartar-emetic ointment. The latter is preferable, and should be employed according to the directions already given under the head of Spinal Irritation, p. 568.]

CHOREA.

This is a disease of the nervous system, characterized by sudden involuntary motions of various muscles of the body, without being necessarily connected with fever, or any severe constitutional derangement. The appetite is generally unimpaired, and all the functions natural, except that, in many cases, the bowels are observed to be unusually tardy. But after the disease has continued for some time, the general health becomes impaired, and the functions of both mind and body are at last undermined. It most frequently appears between the age of eight and fourteen, but has been known to occur later; and several instances have fallen within my observation, where the disease attacked individuals after the age of twenty-one, and in two cases between thirty and forty. The later in life the disease appears, it is generally found to be comparatively more slow in its progress, and difficult to cure. Generally speaking, convulsive movements, or rather twitches of the fingers and muscles of the face, are first observed. The convulsive movements become, in time, more decided; strange contortions of the features take place; the disease extends to the voluntary muscles of all parts of the body, and frequently those of the lower extremities are so continuously excited, that the patient appears to be dancing. His walk is very unsteady, and he is most affected when he wishes most anxiously to control his actions. Another curious circumstance is worthy of being mentioned, that, however violent the convulsive motions may be, they cease the moment the patient falls asleep, unless in severe cases of long standing. Articulation and deglutition are frequently difficult, more particularly the former. In young subjects, a more acute form of the disease is occasionally met with. The intellectual faculties are more impaired; the general health sooner gives way; the stomach and bowels appear much deranged, as is indicated by hardness, sometimes unusual softness and swelling of the belly, together

rubbing up a drachm of the gum with four ounces of water, and administering the whole at a single injection.]

with constipation; the stools have a very offensive smell; and there are sometimes evidences of the existence of the disease denominated *tabes mesenterica.*

Causes of chorea.—The causes of chorea are very imperfectly known. The opinion broached by Dr. Hamilton, senior, that chorea depends on a collection of feculent matter in the bowels, is so decidedly erroneous, that I need not say a word upon the subject. It attacks people of both sexes, more particularly children who are scantily fed, imperfectly clothed, and prevented from taking a proper degree of exercise in the open air. There can be little doubt that those of an irritable nervous frame are peculiarly the subjects of chorea, and it has some resemblance both to hysteria and epilepsy.

Treatment of chorea.—This should consist in keeping the bowels regularly open, by means of mild but frequently repeated laxative medicines, never allowing a day to pass without producing at least two alvine evacuations. The diet should be light and nourishing; every indigestible substance should be carefully avoided. All means should be had recourse to which will improve digestion, if it be impaired, and restore the general health. In the two instances which I have met with above the age of thirty, the functions of the stomach and bowels were much impaired. But, superadded to these, the chief existing cause in these cases was the abuse of ardent spirits. The occasional application of leeches to the head when pain is complained of, and the administration of a narcotic when there is much nervous excitement, will be found serviceable. Good effects sometimes follow the use of the warm, at others that of the cold bath. The oxide of zinc, castor, and many other tonics and antispasmodics, have been at various times in high repute; but of these, the carbonate of iron, in doses of two drachms four times a-day, will frequently cure, or relieve the patient in a remarkable manner.

NEURALGIA.

Those neuralgic pains of which I am now to treat, are not produced by any appreciable organic lesion; they occur in every part of the body, and often return periodically. The disease is most frequently partial; sometimes, though rarely, it is general, but is not necessarily attended by fever. The *tic douloureux* is a striking example of this affection; it is generally classed as a surgical disease, but is more frequently relieved by medical than by surgical treatment. The bladder, the stomach and bowels, and the heart* also, are liable to be affected with neuralgia.

[* See the chapter on Neuralgia; and in addition to the evidence there given of the neuralgic character of *angina pectoris* itself, I gladly quote the corroborative sentiments of Prof. Chapman of the University of Pennsylvania: "That the disease is a species of neuralgia I am entirely persuaded, commencing, for the most part, in the peneumogastric nerve, and spreading in different directions, as other nerves may become involved. The derangements of the heart and other structures, with which it is sometimes associated, I hold to be coincidences or effects, and not the cause, since, among many reasons which might be adduced in corroboration of this, the disease has undoubtedly prevailed independently of such organic lesions, and conversely, these have existed wituout occasioning it. Cogently is its neuralgic

[Indeed, there is reason to believe that all the nerves of the cerebro-spinal system, from their origin to their ultimate ramifications, are more or less subject to this disease, and especially the subcutaneous nerves. But the most frequent seat of the intense form of the disease is the head and face, which is attributable, observes Dr. Bennett, "to the number and sensitiveness of the nerves in this situation, as well as their superficial arrangement; and perhaps, also, to their intimate connection with the sympathetic, and consequent susceptibility of impression from conditions of the abdominal viscera." But it is the trigeminal or fifth pair of nerves which is generally attacked, and each of its branches is almost equally the subject of this suffering malady. When the first branch is affected, the pain shoots from the supra-orbitar foramen, and radiates to the upper eyelid, the forehead and to the eyeball itself. This is called hernicrania or megrini. It is accompanied by intense pain, heat, throbbing, intolerance of light, and an abundant secretion of tears. When the second, or infra-orbitar nerve, is attacked, the pain extends from the corresponding foramen as a centre to the lower eyelid, alæ nasi, upper lip, side of the nose, teeth, palate and antrum, and even to the tongue. The inferior maxillary nerve is the third seat of facial neuralgia, which commences at the anterior mental foramen, and extends thence to the teeth, tongue, lip and cheek of the corresponding side, the pain terminating, as is the case also with the other nerves, in the mesial line of the face.

The cervical nerves do not escape; and of the intercostal, that running between the eighth and ninth ribs is most liable to suffer, particularly in women. The lumbar nerves are the centre of neuralgic pains of the anus, spermatic cord, scrotum and ureter, and the uterus and vulva in women; and to this cause is attributable most of those pains which are called sciatica and lumbago. The muscles, generally, are subject to neuralgia, whence the painful and bruised condition of the limbs in the early stages of fever; the glands, the parenchymatous and membranous structures and the skin itself, are also the occasional seats of this disease, which thus invades every texture in proportion to the nerves that are supplied to it.]

The most troublesome and most frequent forms of the disease which I have met with in practice, are those abdominal pains which affect women, more particularly at the menstrual periods, which shoot down the thighs. They sometimes appear to begin in the back, and extend towards the abdomen, in which case the bowels are generally found obstinately constipated. The discharges by stool consist either of very hardened fæces, or of gelatinous matter, resembling half-digested worms; at other times, they have a frothy, yeasty appearance. Affections of the bladder frequently supervene, particularly if the attack comes on during the menstrual period. This affection is of a different nature from that which is called dysmenorrhœa. In this

character sustained by the well-established fact of its proneness to alternate with similar affections in other parts, as sciatica, lumbago, tic-doloureux of the face, gastralgia, muscular spasms, paralysis, or at least a loss of sensibility in portions of the body." Lectures on the more Important Diseases of the Thoracic and Abdominal Viscera. p. 158.]

disease the menstruation may be copious, of a natural appearance, and not attended with pain.

Causes of neuralgic pains.—Frequently unknown, and for the most part obscure. They may be occasionally traced to disorder in the organs connected with digestion; and, in some instances, may probably be connected with disease in the spinal marrow, or in the nerves themselves.

[Partial wounds of nerves, and especially, blows on those of the face, are among the immediate causes. So also are severe atmospheric changes, although these mostly act through decayed or sensitive teeth, checked perspiration, and sudden and violent emotions of the mind, acting on nervous constitutions. Diseased conditions of the brain, especially at its base, whether from effusion, chronic inflammation, tumours, &c., and lesions of the membranes of the brain, are also among the many causes of neuralgic pain.]

Treatment of neuralgic pains.—In *tic douloureux*, I have seen the knife used very often, and but seldom with permanent advantage. If the pain have left the part affected, it has attacked another nerve in the vicinity—a strong proof that the disease is generally more deeply rooted in the system than is commonly imagined. In the treatment of neuralgic affections, proper regulation of the bowels, diet and habits of the patient, and avoiding exposure in cold damp weather, are all points of the utmost importance. Almost all tonic and narcotic remedies have been successively in great repute; thus we find that bark, iron, zinc and other tonics, as also opium, musk, cicuta, hyoscyamus, belladonna and stramonium, have each their advocates. If the pain be periodical, the use of large doses of quinine will generally be found to act promptly and efficiently, as in intermittent fever. In fact the doses requisite in the one are precisely adapted to the other. Many severe and long-standing cases have been much benefited by drachm doses of the precipitated carbonate of iron; but to subdue a paroxysm of pain, and produce a long interval of ease, the sedative solution of opium, given in small quantities, (15 or 20 drops,) by injection, or the acetate or sulphate of morphia, in doses of 1-4th of a grain, every 3d or 4th hour, will be necessary. Several very bad cases of general neuralgia have fallen under my observation, and these remedies were found beneficial after all others had failed. One case, in particular, may be mentioned: A gentleman who had been frequently liable to partial attacks, was seized with general neuralgia during the period when he was preparing for graduation. His general health became much impaired; and not being acquainted with any medical man in particular, he sent for one of the gentlemen whose lectures he was attending at the time, but who offended him very grossly by discrediting the account of his sufferings, and by terming his complaint "*a graduation sickness.*" After the lapse of a month or six weeks, I was requested by a family who were interested in his welfare to visit him. He was much emaciated, had a pale and haggard countenance, and was almost worn out by pain and want of rest. The disease was general, but the part most severely affected was the neck, where the pain was so much aggravated by the slightest touch, that he was obliged to sit with his neck

and shoulders bare. He had almost abandoned the intention of graduating. After putting his bowels into proper order, I gave him, while suffering a very severe paroxysm of pain, a dose of the sedative solution of opium; and in less than ten minutes he felt more relief than he had experienced for several months; and by repeating the dose a few times upon the threatening of a paroxysm, he got rid of the disease, his health and strength soon recovered, he renewed his studies, and passed his examinations with considerable éclat. Since the publication of the last edition, the attention of the profession has been directed to the external employment of veratria, by Mr. Turnbull, of London. Five or ten grains of the medicine are to be mixed in an ounce of lard or simple ointment, and a small quantity rubbed carefully on the pained part. I can speak with confidence of the relief afforded by this application in six cases of *tic douloureux*, but it did not perform a cure in any one.

[Neuralgia is extremely common in the United States, and is supposed to be more so than in former years, merely because the disease, which was formerly confounded with rheumatism and gout, is now better understood. It appears, for the most part, in a strictly paroxysmal form; though its first invasion is often marked by a frequent succession of short and feverish paroxysms, which, by perfect rest, mild aperients and diaphoretic anodynes, soon present longer and more perfect intermissions with less of the inflammatory character. The free use of quinine, in the manner above indicated, becomes now our first reliance; and after the paroxysms are broken, the same medicine should be administered to the extent of eight or ten grains per diem, for three or four days in succession. This plan has, of all others, been most successful in my hands. But it has been remarked that neuralgia is often attended with fever, and sometimes the pain is of so intense and pungent a character as to be agonizing and intolerable, and especially in the facial forms of the disease. Under these circumstances, local remedies become absolutely indispensable; and of these, free leeching over or near the parts is our most effectual resource. When the fever runs high and delirium or coma is present, bleeding will be necessary; but I have rarely met with examples of this kind. After local or general depletion, or independently of either, blisters behind the ears, or elsewhere in the vicinity of the pains, are of great service, but they should seldom be applied to the part itself, inasmuch as they aggravate the pain and distress. Direct local applications of opium or belladonna, in plasters, are highly beneficial. So also is the tincture of aconite, which, from its activity, should be applied by means of a camel's hair brush, or a soft sponge. The ointment of veratria is another resource: it is formed of one part of the alkaloid with 80 parts of rancid lard, and is applied to the affected part. The iodide of mercury, as recommended by Mr. Scott, is composed of two scruples to an ounce of lard.

During the intermission, all the tonics from both the vegetable and mineral kingdom are administered with various degrees of success, depending on the seat of the disease and constitutional peculiarities. Among these preparations are the ferruginous articles, and especially the protocarbonate of iron; which, as it tends to constipation, may be

made into pills with rhubarb. Spirits of turpentine, in drachm doses two or three times a-day, has been used with advantage by Dr. Bennett. Free catharsis has been resorted to by some physicians, and even croton oil is recommended by others. We have already spoken of the external use of aconite. It is also given internally in dose of the eighth of a grain three or four times a day.

I have faithfully tried every form of galvanism* and electricity; but, for the most part, with little advantage. The electro-magnetic apparatus, however, is the most convenient of all these appliances and, in my hands, the most successful. It should be resorted to at the very outset of the pain; and under these circumstances, I have known a solitary case in which the paroxysms, though they yet recur at intervals, are invariably removed or greatly mitigated by the electro-magnetism, provided no fever is present at the time.]

In the affection to which I have alluded as occurring in women, I have seen considerable benefit from the occasional use of a draught composed of turpentine, with an equal part of castor oil, and conjoined with twenty or thirty drops of the sedative solution. One of the most potent measures, after the diet has been regulated and the bowels have been put into good order, is to produce, from time to time, an eruption on the abdomen or loins, by means of antimonial ointment. In an obstinate case which lately occurred, much relief followed the use of strychnia, in doses of one-twelfth of a grain, repeated four times a-day, till it produced imperfect vision, with some degree of headache; it was then intermitted for a few days, and when resumed, was given only twice a-day. Some practitioners speak highly of cold bathing, while others do the same of warm; but I cannot say that I have seen either of them beneficial. Routine practitioners are too much in the habit of bleeding whenever the pain is severe, and of giving calomel or blue pill when the pain is referred to the right hypochondriac region. I have been consulted by individuals whose constitutions were injured by the frequent repetition of powerful remedies, and by some who never can regain the loss of blood, or recover from complaints thereby produced, and the too frequent use of mercurial preparations.

About the year 1812, Mr. William Wood, of Edinburgh, called the attention of the profession to a neuralgic affection which he denominated painful "subcutaneous tubercle," and has lately published further observations and cases in the 3d vol. of the Transactions of the Medico-Chirurgical Society. But as this is avowedly connected with an enlargement of the affected nerves, requiring surgical rather than medical aid, I will conclude by recommending the perusal of Mr. Wood's learned and interesting essay.

[* See the remarks on Spinal and Ganglionic Irritation, page 568.]

CHAPTER V.

APOPLEXY—PARALYSIS.

APOPLEXY.

Apoplexy is generally characterized by loss of sense and voluntary motion, the patient continuing comatose for a shorter or a longer period. It is sometimes attended with convulsions, and frequently followed by paralysis of some part of the body.

Phenomena of apoplexy.—To detail the varieties of apoplexy, with a view to make minute symptomatical distinctions, would be an endless and really an unprofitable task; and practical men are well aware, that at the commencement of the attack, experience does not enable them to tell whether the case is to be slight, terminating in recovery, or fatal. This is well exemplified, by observing the termination of those cases in which the loss of sense and recollection exists only for a few minutes, and in which the recovery appears as complete as it is sudden; yet, perhaps, in a few hours afterwards, coma takes place, and death soon follows. In my lectures, I usually divide apoplexy into two varieties:—1. That in which no lesion of the brain has taken place, and after death no morbid appearances can be discovered. This has been called simple apoplexy. 2. That in which serous effusion, or extravasation of blood, is found upon dissection, and which has been termed extravascular apoplexy.

Although this plan is open to many objections, yet I am disposed to adhere to it for the present.

Apoplexy very rarely comes on without precursory symptoms, which, however, are sometimes so slight as to be disregarded. These are vertigo—headache—a sense of pressure applied to the head, and fulness, or a feeling as if the head were a great deal larger than natural—irritability of stomach—singing in the ears—occasionally impaired vision—double vision—some degree of deafness—impaired powers of articulation—weakness of memory and judgment, sometimes slight incoherency—restlessness or lethargy—startings, and a weakness of the limbs, which gives to the patient a staggering gait, as if he were inebriated: these symptoms may take place with or without rigors. Should an individual complain of several of these symptoms at any period of life, he may be regarded as on the very brink of a serious affection of the brain. If they occur in a person of a full habit with a short neck, the danger will be still greater; and if in the

decline of life, it might be safely said that he is in immediate danger of an attack of apoplexy, although by care and good treatment the disease may be warded off for an indefinite period.

The form of the disease which I shall venture to term the slightest is that in which the loss of sense and voluntary motion is very transient. It continues for a few minutes only, and leaves, perhaps, a slight paralytic affection of the muscles of the mouth; the patient is commonly thought by the attendants to have been only in a faint, from which he quickly recovered. The variety which may be called the most severe, is that in which the patient has for some time complained of some of the premonitory symptoms already noticed, is suddenly seized with loss of sense and voluntary motion, accompanied, perhaps, by convulsions, the respirations being stertorous, the pulse weak and frequent, and the patient never recovering from the state of coma. In practice, we meet with every variety between these two extremes.

During an attack, the limbs are generally flaccid, although occasionally some of the muscles may be found rigidly contracted; and in other cases, as has been already mentioned, general convulsions take place. The face is red, sometimes of a very dark colour; but occasionally it is pale and ghastly; the features are swollen, and the mouth, perhaps, drawn to one side. The respiration is sometimes stertorous, at others, not in the least so. The pupils are occasionally dilated; sometimes contracted, but almost always immovable. The pulse is sometimes full and slow, not exceeding thirty beats in the minute; at other times it is weak, easily compressed, and quick, beating, perhaps, one hundred and fifty in a minute.

In those instances in which death does not take place, and no organic lesion is produced, the patient soon recovers some degree of sensibility and the power of muscular motion, when it may be discovered that one half of the body is paralyzed: the pulse, if previously slow, now rises to the natural standard; he then recovers his senses, perhaps very quickly, and looks about him with an expression of surprise; he also gradually recovers his speech, although he may have difficulty in articulating. In some hours, these symptoms will be found much diminished; he will gradually recover the power of his limbs, and in ten or twelve days, although weak, he may be pronounced to be nearly well. Instead, however, of recovering sense and voluntary motion immediately, patients sometimes continue comatose for some hours, and then recover more or less quickly in the manner already stated, being, however, at times lethargic for several days.

In other cases, the patients remain much longer comatose, and recover much more slowly, with some degree of loss of memory and of speech, which may be temporary or permanent, together with paralysis of one half of the body, or only of one limb, the use of which may be either never or partially restored. I have seen several cases in which both mind and body were permanently reduced to a state of childhood.

In other cases, patients remain for months in a lethargic, paralytic

state, from the time of attack till death takes place, without the least appearance of amendment.

The period between the first appearance of any symptoms which can be called premonitory, and the actual apoplectic seizure, varies much; sometimes years intervene, at others, an instant after complaining for the first time of violent pain in the head, or of giddiness, the attack comes on. The period between the attack and the return of sense and voluntary motion, also varies greatly. The period between the occurrence of the first symptom and recovery, is also very various. The intervals between the attacks are by no means uniform; sometimes only a few minutes intervene; at others, hours, days, weeks and even years.

Many people survive fits of apoplexy even when small effusions of blood have taken place into the substance of the brain, and so far recover as to be able to transact their ordinary business; but it very frequently happens, that if the patient survive an effusion of blood for a few days, a new train of symptoms will be excited—symptoms produced by inflammatory action in the brain, or membranes immediately in contact with the effused fluid.

Causes of apoplexy.—Apoplexy is said to be hereditary. It may come on at any age, but in the great majority of cases the age is above fifty; certainly it may be said to be a disease of the decline of life. The individuals most predisposed are those of a full plethoric system, who have what is called a stout frame and short neck. Full living, idleness, sedentary occupations, late hours and sleeping on soft pillows increase the tendency to this disease, together with every other cause which disturbs the balance of the circulation. Diseases of the blood-vessels of the brain lead to rupture of their coats, and the consequent effusion of blood; viz.: ossification of the arteries, aneurism,* and obstructions in the sinuses; and it is also well known that hypertrophy of the heart sometimes produces apoplexy.

Appearances on dissection in apoplexy.—On cutting through the scalp of persons who have died of apoplexy, a considerable quantity of blood generally issues from the incisions. On removing the calvarium, the membranes are sometimes observed to be very vascular, with some fluid beneath the arachnoid; occasionally, although rarely, blood is effused between the arachnoid and the pia mater, giving an appearance of ecchymosis; or the effusion may have taken place into some part of the substance of the brain. The parts which I have most frequently found affected are the *corpora striata* and the *thalami nervorum opticorum*. The ventricles are sometimes found distended with coagula; and the cerebellum occasionally suffers. Effusion of a serous fluid, in greater or less quantity, is found in the ventricles. It, however, sometimes happens, that no morbid appearance whatever can be detected.

In old apoplectics, who have survived many shocks, cysts are occasionally found, enclosing a clot of blood, or a fluid resembling

* There is a splendid preparation in my museum, of one large and two small aneurisms of the sylvian artery; the largest of which, about the size of a hazelnut, burst, and a large effusion of blood took place with instant death. The patient was only 23 years of age, and the brain was very much broken down by the effusion.

pus, and sometimes they are empty, the contents having probably been absorbed. Some writers have described an appearance which they suppose to be a cicatrix, an almost complete restitution of parts having taken place. Sometimes we find considerable portions of the brain surrounding the effusion in various stages of inflammation, either showing marks of increased action or complete ramollissement. On some occasions, most extensive destruction from inflammation has been discovered in the substance of the brain, a remarkable instance of which is subjoined.

A gentleman, aged 51, stout in make, plethoric in constitution, having a tendency towards obesity, and accustomed to full living, was found dead in his bed after having had eight or nine apoplectic attacks, some of which were succeeded by temporary paralysis. The fit which preceded that which proved fatal, took place seven or eight weeks previously; it was severe, with a pulse as slow as 30 beats in the minute. Medical aid was promptly obtained, and he was saved by timely loss of blood. Subsequently to this attack, he was able to transact ordinary business, and actually attended a public meeting. Nay, on the night previous to his death, he played for some time at the game of backgammon, and evinced his usual acuteness of mind. On examining the head, the apoplectic attacks and the paralytic symptoms of which this gentleman had so long complained found a very sufficient solution in the mass of disease within the brain. The *dura mater* was found to adhere round the corona with such firmness, that it resisted every attempt at separation without tearing, and the skull itself was rather more than usually dense. On the upper surface of the brain a quantity of serous fluid was effused; while at the base both of the skull and brain, the blood-vessels were unusually numerous and full, giving an appearance of redness to the base of the skull not often to be met with. The principal arteries of the base were enlarged in size, and presented numerous points of ossification, as did also the minute branches in every part of the brain. The ventricles were found to contain a small quantity of fluid, and their whole surface was red and vascular. In the third ventricle, part of the *thalami* firmly cohered; but neither here nor at the base of the brain did the fulness of the vessels extend much beyond the surface. On cutting into the substance of the brain, the traces of much disease and an evident softening became apparent, particularly in the ganglions of gray substance called *corpora striata* and *optic thalami*, in which the softening had passed on one side almost into suppuration; and several regular cysts were discovered, four on the right side of the brain, and three on the left; but none of them were of large size; and although both hemispheres were diseased from about the centre of the middle lobes forwards, yet the right had suffered considerably more than the other. Such anatomical evidence is rarely found of life having been protracted with the preservation of intellect, till the whole centre of the nervous system underwent such a change as that described in the above case.

Treatment of apoplexy.—Some routine practitioners will be found invariably to bleed in cases of apoplexy, without reference to the period of the disease and the state of the pulse. I have little doubt,

that valuable lives are occasionally lost, which otherwise might have been saved, by avoiding the lancet. If the pulse be slow and strong, a happier result may be expected from venesection than if it be quick and weak. The feet should be put into hot water, in which mustard has been mingled; the garments should be loosened; the head shaved, and cold cloths applied. Active purgatives must be speedily administered, to be assisted by injections of turpentine, particularly if there be evidence of flatulent distension of the bowels; and blisters are to be applied to the lower extremities.

Should a patient be fortunate enough to recover from the immediate effects of the attack, much may be done by subsequent treatment, to present a return of the disease. It is of vital importance to keep the bowels daily and freely open, to avoid cold feet and exposure to cold damp air. Regular hours and exercise are to be enjoined, and a seton in the neck will be found very beneficial. Frequent bleeding, whether by the lancet or by cupping, cannot be too strongly deprecated; our business being rather to prevent plethora by the above means and by a proper regulation of the diet. I know no plan more likely to create constitutional distress, and to promote the quick formation of blood in the system, than frequently repeated bleedings. A great deal of mischief is done by keeping patients too long upon slops; it is far better, in many cases, after the first danger is over, to allow a small quantity of animal food to dinner, and toasted bread or biscuit, in moderate quantity, for breakfast and tea, than to give them a general order to live on farinaceous food, which, after all, many will not long adhere to, or if they do, they will take a large quantity to counterbalance the quality of the food. Restriction should be made respecting the amount of fluid to be consumed in the course of the twenty-four hours; and in all cases, where valuable lives are concerned, and when the patients move in that rank of society where they can obtain every comfort and attention, it will be found of great consequence to regulate the quantity of food and diluents by weight and measure. All causes of anxiety should, if possible, be removed; the patient should sleep in a large well-aired room, upon a hair mattress; he should use the patent air-pillows, with the head and shoulders somewhat elevated.

PARALYSIS.

Paralysis appears to have been generally confounded with apoplexy by the older writers, who thought apoplexy was a complete paralysis, and looked upon the latter as a partial apoplexy.

This affection is a frequent result of apoplexy, as well as of inflammation of the brain, and of disease of the spinal marrow; but it often exists without any apparent organic lesion.

Paralysis has been divided into several varieties. 1. Paralysis of the nerves of motion, which take their origin from the anterior part of the spinal marrow;—2. Paralysis of the nerves of sensation, which take their origin from the posterior part of the spinal marrow;—3. Hemiplegia, which implies the existence of paralysis in one-half of

the body;—4. Paraplegia, which signifies that the lower extremities are paralyzed;—and, 5. Partial paralysis, as of the muscles of the mouth or of an extremity.

Paralysis of the motive powers may exist in very different degrees; it may be complete or incomplete; in the latter case the individual uses the affected limb awkwardly, and it sometimes feels weaker and heavier than the other.

Paralysis of sensation may also exist in various degrees. Sensation is scarcely ever altogether destroyed, but is rendered more obtuse than usual; but in some instances of paralysis, the sense of touch is very acute, so much so as to be a source of considerable suffering to the patient.

At all age individuals may become paralytic. I have seen several children born hemiplegic, and young subjects are sometimes attacked with the disease; but it is more frequently an affection of advanced age, and of men than women.

Phenomena of paralysis.—When palsy takes place without being preceded by apoplexy, it is not generally accompanied by marked disturbance of the vascular system, or of the respiratory organs. Frequently there are premonitory symptoms, similar in many respects to those which oftentimes precede apoplexy, and to a practised eye announce that a serious affection of the nervous system is at hand. We sometimes perceive weakness of an extremity or numbness, together with coldness; and occasionally there is violent pain in a limb. I have known paralysis to affect many people who had been subject for years to violent headaches, sudden pains in the course of the spine, and tingling in the extremities. As the disease advances the weakness is more apparent; the patient easily loses his balance; he always feels unsteady, and experiences increasing difficulty in going down stairs, and in walking on an inclined plane. By and by he is obliged to use a stick; at length he cannot walk without receiving support from an attendant; and at last he is unable to move from one apartment to another.

Although the disease sometimes approaches so slowly that I have known persons to be seriously threatened for years previous to the paralytic attack, yet at other times it comes on very suddenly. Frequently there is momentary insensibility, and the patient's mouth is found to be drawn to one side; or the disease may attack an arm or a leg; or one-half of the body may be affected. Sometimes the patient becomes paralytic without any affection of the brain. Violent cramps sometimes take place in the extremity, which soon after is found paralytic. The bowels are generally very torpid; sometimes the muscular powers of the bladder are paralyzed, at other times those of its sphincter; in the former case, the patient cannot expel the urine, in the latter it is passed involuntarily; frequently the rectum is similarly affected. The pulse will be found in different states; frequently quite natural; but in the affected limb it is generally observed to be weaker than in the sound one. The limb generally becomes emaciated, although, to the patient's feelings, it may be considerably larger than natural; it is usually colder, although, in rare cases, it is found to be above the natural heat. The mental faculties

continue in many cases of paralysis quite unimpaired; in others, they are slightly affected, the patients being sometimes a little incoherent, or they betray some weakness of judgment; occasionally a state which has been called second childhood is produced, and continues till death. Of all the mental faculties, memory appears to be the one most frequently affected; the names of individuals and of countries will be forgotten, while circumstances connected with them may be often alluded to by the patient, who will be found, in the course of conversation, to forget words; and it is curious that the memory will be more perfect respecting transactions which occurred twenty or thirty years before than of those which took place during the previous day. These circumstances, together with the appearance of the patient, particularly the expression of countenance, which is frequently silly, too often give an impression to a stranger that his mental faculties are weakened or destroyed, and the more so if, as sometimes happens, the saliva be running out of the corners of the mouth, and his speech is affected. This is most important, as a will was lately made by a gentleman when in this state, which was afterwards disputed by the heir-at-law: all the witnesses who had frequent intercourse, and several who had occasion to transact important business with him, were able to swear that he was of sound mind at the time, and for some time after the will was executed; whereas, on the other hand, some who only saw him occasionally, judging from his appearance, and the lethargy with which he was at those times affected, swore that he was neither capable of thinking nor of acting properly.

Causes of paralysis.—There can be no doubt that paralysis of every kind and degree may be produced by disease in the brain and spinal marrow. It is, however, more frequently produced by disease of the spinal marrow. Facts seem to prove that paralysis may be produced by disease of the nerves of the affected limb, without any lesion of the central parts of the nervous system; and I also believe, from the effects of certain remedies, that the disease under consideration may be the consequence of functional derangement of the nerves of the part affected, as well as of the brain and spinal marrow. Too much sexual indulgence, and certain noxious and disgusting habits, occasion palsy, particularly paraplegia.

Treatment of paralysis.—We should be guided, in the treatment of paralysis, by the duration of the disease and by the pathological condition of the body on which this symptom depends. If the disease be recent, and the individual not weakened, blood may be drawn both generally and locally, care being taken not to carry the bleeding too far. Strong laxatives must be exhibited at first, at short intervals; but subsequently, during the progress of the case, they are to be given at longer intervals, so as to produce one or two evacuations daily, keeping in mind, that in most paralytic affections, the stronger purgatives are required to produce even a moderate effect. Emetics have been recommended, but they should not be employed unless there are evidences of a loaded stomach; little danger need be apprehended from any temporary increase of determination of blood to the head which is supposed to take place in the

act of vomiting. Frictions on the affected part, with or without stimulating embrocations, are said to be serviceable, as well as contra-irritation in the course of the spine, produced either by any of the ordinary rubefacient, or the tartar-emetic ointment; caustic issues, as recommended long ago by Mr. Pott, may be applied; or moxas, which have been much praised by Dupuytren and Larrey. Electricity and galvanism have been used in paralytic affections; but I cannot say that I have ever seen them beneficial. Some employ the hot bath, and others the cold. If it can be commanded, the patient should sleep in a well-aired apartment; and it is of great consequence to keep his mind amused without being fatigued.

The nux vomica has been much employed of late years in paralysis. It has been tried to a considerable extent in the hospitals at Paris; and there can be no doubt that it has occasionally done good. It is exhibited in the form of powder, and of spirituous extract; of the powder two grains, of the extract three, repeated from two to six times daily, constitute a proper dose for an adult. It has also been given in the form of injection. In some cases, a tendency to muscular contraction appears in half an hour after its administration; and it is curious that the sound parts remain unaffected. It is said to increase the appetite, and sometimes to produce stupor, with a feeling of intoxication, and in an over-dose, tetanic convulsions. Still more recently, the active principle of nux vomica, called strychnia, has been employed. I have used both preparations in a number of cases, and as yet have seen only one case in which the nux vomica was decidedly beneficial; it was increased in doses of from two to eight grains daily, and its use persisted in for several weeks. Of the strychnia, I have exhibited four or five twelfths of a grain daily in several instances; and in two cases, the drug seemed to produce spasmodic muscular contractions of the paralyzed limbs. The strychnia, in particular, is worthy of further trial, as in many cases which do not depend on organic lesions in the central parts of the nervous system, it will probably be found very beneficial.

Dr. Bardsley, (Manchester,) states, that he employed the strychnia in some cases of paralysis with no benefit, in others with only partial advantage, but in the majority with complete success. He considered that it may be an efficacious, though not a certain remedy in this affection.* Dr. Bardsley has given thirty-five cases—of which twenty-two were cured--ten relieved—in two it had no effect—and one patient left the hospital.

* Hospital Facts and Observations, p. 38.

CHAPTER VI.

INSANITY — HYPOCHONDRIASIS — AND DELIRIUM TREMENS.

INSANITY.

This, I am aware, is a term of very extensive application. Under it, I mean to comprehend every alteration of the functions of the brain from a state of sanity, with the exception of the delirium which so frequently accompanies fever and intoxication, and hypochondriasis.

There are many degrees and shades of insanity. Some persons may be affected with the most violent delirium and incessant raving, furiously threatening the attendants with destruction, wrong alike in their perceptions and reasoning faculties. Others may have some eccentricity, produced by an error of perception, a wrong impression, or some slight derangement of judgment.

Cases are frequently met with in practice where there is diseased perception, with more or less derangement of judgment, or the former may exist without any such complication. For example, an insane person frequently perceives objects which do not exist, or he may see a post which his diseased perception transforms into a monarch; he will kneel before his majesty, deliver an address, and kiss hands; every act as it is done at court will be correctly imitated. Nothing can be said to be wrong about the insane person, except the first erroneous perception; all his actions tally with the situation in which he supposes himself to be placed. We meet with others who take up an erroneous impression, the reasoning faculties being perfectly sound, so that a man may conceive that a minister of state has been guilty of some dereliction of duty. He will write upon the topic, make out charges against the individual, and reply to letters received upon the subject; and yet no one, upon reading his correspondence, or from conversing with him, could discover any error of reasoning, or any expression which would lead him to conclude that he was insane; nothing is incorrect but the first impression. In some instances, we meet with errors in the reasoning faculties which frequently lead men to ruin their fortunes, and bring an accumulation of distress upon their families by following out some castle-building speculation, the absurdity of which is too apparent to every one but themselves. In others, we can only discover a disordered state of the association of ideas, or a disproportionate emotion from

the application of slight causes. On other occasions, we find individuals believing the fancies of a wild imagination to be realities; they transform themselves into kings and peers, or fancy themselves reduced in circumstances, even to beggary. In other cases, complete fatuity takes place.

These different states may be variously mingled and modified into endless varieties of insanity, as it is usually treated of in books; and the symptoms may be still more diversified by the degree of excitement or depression which co-exists, together with the peculiarities of constitution and the state of the patient's health.

Insanity sometimes makes its attack suddenly; but, in general, it is slow in its progress, although decided in its precursory symptoms, which, however, develop themselves differently in different cases:—One patient shows elevation of spirits, speaks loud, is easily irritated, and some eccentricity of conduct is sooner or later observed; at last he will be found to follow out some particular hallucination, which will occupy his thoughts more and more completely as the disease advances. Another individual will show depression of spirits; he will be observed to be more cautious, timid or shy in his manner; he thinks he hears the voices of individuals planning his destruction, or robbing him of his property; or his depression of spirits may be owing to religious doubts as to his own worthiness, or to the existence of a future state; or he fancies himself haunted by evil spirits.

We sometimes meet with an intermediate condition, where an individual shows his ordinary state of temper and disposition; he evinces neither increased excitement nor depression; while an erroneous notion, religious, political or professional, haunts his imagination for weeks, months or even years, which shows itself occasionally, but never disturbs his health, or alarms his friends, till some accidental circumstance gives the mental disease activity, when it breaks forth in a most decided manner.

Some individuals show a great desire to quarrel, litigate and to take personal revenge for imaginary insults and injuries; but all these propensities may exist separately:—A man may be extremely quarrelsome, but, if properly managed, easily appeased, and may never show any tendency to take the life of a fellow-creature, nor would he do any thing to hurt him. Another will take revenge only in one way, by litigation; while the third, but happily this is the rarest case, would murder all and sundry in the most cold-blooded manner, and when under restraint, will glory in the thought of murders he has committed only in his own imagination; or, in the most ingenious way, he will endeavour to excite hatred between his keepers, so as to induce the one to murder the other. Others show a most determined propensity to commit suicide, and sometimes follow it out with so much pertinacity, as to elude, at last, the vigilance of the most attentive keeper; and, what is very curious, each will have his own reason for the act. The vanity of one has received a blow which has lowered him in the eyes of the world, and he destroys himself because he cannot live dishonoured, degraded or even laughed at. The fear of another induces him to commit the rash act, with a view of escaping from some evil spirits, or of disappointing the machinations of

some relatives who have conspired either against his peace, his life, or his property. I have known a few instances also of men committing suicide, who could not survive the loss of a wife or child; and it would appear that the act was committed under the impression that their departed spirits were to be immediately afterwards reunited.

Several curious circumstances quickly attract the attention of those who are in the habit of attending this unfortunate class of patients. 1. A hatred of, or indifference towards those to whom they were previously most attached, because these are the individuals who, the maniacs suppose, have conspired against them, and have ultimately deprived them of liberty. 2. Their physical powers are frequently not at all affected. Thus a body of insane soldiers under confinement, not completely fatuous, will fall into the ranks upon the usual signal being given, and will perform a number of mechanical acts at the word of command, with nearly as much attention and precision as if they were sane.* 3. The natural functions are generally not materially impaired, unless it be in those cases where insanity supervenes upon some other disease, or is produced by an injury of the head, some organic lesion in the brain, or by long-continued indulgence in the use of intoxicating liquors; when there may be heat of skin, quickness of the pulse and a train of nervous and other symptoms which need not, at present, be more particularly alluded to.

Causes of insanity.—Unfortunately, there can be no doubt that insanity is hereditary, at least under certain limitations; but I believe it may be warded off for many years, and in some cases entirely prevented, by proper management; which principally consists in keeping all the functions of the body in a natural state, by diet, exercise and attention to the bowels, as well as by avoiding all excesses, keeping the passions under control, and the mind properly exercised. Gluttony and drunkenness are too frequently the causes of insanity, and particularly the latter in cases where no hereditary predisposition can be traced. Individuals seem also to be more and more predisposed to the occurrence of insanity as age advances, it being rare before the age of puberty. Among the passions, love, "by which the young and tender wit is turned to folly," may be particularly mentioned as a fertile source of the malady under consideration, particularly in females. It is rare to meet with a case of insanity from this cause in men, for reasons which are too evident to require being mentioned. Intense and long-continued anxiety respecting the results of extensive mercantile speculations, as also the pernicious vice of gambling, are frequent causes of insanity. It is likewise a disease which sometimes attacks females after parturition, and also when the predisposition is strong, during the diseased states of menstruation.

* This I had an opportunity of seeing at Chatham, where a large establishment has been formed for the insane officers and soldiers of the British army. Fort Clarence is, I believe, exclusively used for this purpose, and the unfortunates there have the enjoyment of good air and exercise, are well fed, kindly used, and carefully superintended. Long may it remain a monument to the good feeling and benevolence which characterized his late Royal Highness the Duke of York, and to the zeal and exertions which Sir James M'Grigor has always displayed to increase the comforts of the British soldier.

Appearances on dissection in insanity.—Nothing satisfactory has yet been discovered; for although many organic lesions have been found in the brains of individuals who have died insane, yet the same lesions have been observed where no insanity existed, and in many cases of insanity, no diseased appearance whatever has been detected in the head. Hence, in the present state of our knowledge, I am inclined to attribute the various and ever-varying phenomena which occur in insanity, to functional disease of the different parts of the cerebral mass.

So far for the symptomatical description of insanity, which, in my opinion, teaches nothing of the nature and seat of the disease. But if it be true that the brain is a congeries of organs, that each performs a peculiar function, and if we admit insanity to be a disorder of function, then, indeed, there seems to be sufficient grounds to warrant my departing from the usual beaten track, and submitting to my readers a short account of insanity, founded upon the phrenological principle that the brain is a congeries of organs. According to Dr. Andrew Combe, in his able work on Insanity, insanity is not a specific disease, but a symptom of disordered action in the brain or organ of mind, and, like every other disorder of function, it may proceed from a variety of different states. The delirium of fever is one form of disordered mind, which is always viewed as a symptom, and so ought all other forms. The brain being to the mind what the eye is to vision, it follows that, just as vision is deranged by many pathological states of its organs, such as ophthalmia, iritis, cataract, &c., so may the mind be deranged by many states of the brain. The sufferers on the raft of the Medusa became mad from starvation and exposure; while many become so from excess, particularly in stimulants. The asylum at Milan is filled by lunatics from bad feeding, and almost all recover by nourishing food; while Bayle, at Charenton, finds many cases arise from chronic meningitis; and Broussais declares that, in the early stages, it is so obviously from inflammatory excitement, that it may often be cut short by free leeching, as certain as pleurisy is by blood-letting. Hence insanity is not the same disease in all.

Insanity, being a symptom of morbid action in the brain, springs naturally from causes affecting its health, and hence a great affinity between the causes of acute cerebral affections, and of those on which insanity depends. The *hereditary* tendency depends on a peculiarity of nervous constitution, and is of primary importance. *Excess* of some mental qualities leading to eccentricity predisposes, in irritable constitutions, from the high action into which the corresponding predominant organs are thrown; and hence the latter are generally those whose manifestations are deranged, as proved in Dublin by Mr. Combe having, in so many instances, pointed out correctly, *from development*, the probable form of the mental affection. Other predisposing causes, such as age, sex, profession, &c., are referable to the same principle.

The *exciting* causes are, *whatever disorders the action of the brain.*—That organ requires regular exercise for its health and preservation, and for the improvement of its functions, just as other

parts do, as the muscles in fencing or dancing. Practice, in the latter instances, increases nutrition, and consequently, power, and it gives facility of combination to produce a given end. The same organic laws preside over the brain. Consequently, *excess* of exercise, as in intemperate study, excitement of passion, anxiety and strong mental emotion long sustained, leads to morbid cerebral action, with derangement of function in irritable subjects. *Deficiency* of exercise, or idleness, leads equally to diseased action and manifestations, as exemplified in the melancholy and ennui of the retired merchant or soldier, and in the numerous victims in the unoccupied classes of society. Local causes act by disordering the brain. Blows on the head, *coups du soleil*, intense cold, drunkenness, meningitis, &c., show this.

Dyspepsia and other disorders of the abdominal viscera excite it secondarily in some instances in *predisposed* subjects, but, in general, mental causes have preceded. The same remark applies in nymphomania and erotomania, in which the affection of the generative organs is generally the effect and not the cause of the cerebral disturbance. The brain, in short, is more frequently disordered by *direct* than by indirect causes, and, in this respect, the analogy between it and other organized parts is preserved.

The *symptoms* indicative of insanity consist of deranged cerebral functions and local phenomena. Every sense, every nervous function and every faculty of the mind may be involved in the disease or not, and hence indescribable varieties occur. The *true standard is the patient's own natural character*, and not that of the physician or of philosophy. A person, from excess of development in one part of the brain, may be eccentric and singular in his mental manifestations, and yet his mental health be entire. Before we can say he is mad, we must be able to show a departure from his *habitual* state, which he is incapable of controlling. An irascible man may be very boisterous without being mad; but if a mild and timid creature become equally boisterous and irascible, we may fear for his wits. One may be *naturally* suspicious, jealous and cunning without being insane; but if a man of an open, generous and unsuspecting nature becomes so, danger to his cerebral health is at hand. The derangement may consist in *excitement* of the patient's predominant qualities, in *diminished* action, or in *perversion* or *vitiation* of function. A proud man, who, during disease, fancies himself a king, is an instance of the first condition, or that of excitement of function;—one who humbles himself in the dust, and fancies himself unworthy of regard, is an example of the second, or diminished function;—while one who fancies himself something out of the ordinary course of nature, is a specimen of perverted or vitiated function;—or one who is attached to friends when in health, may, when insane, either have inordinate love for them, be indifferent, or have a hatred and aversion to them; and so on with every feeling and faculty of the mind.

The existence of digestive derangement modifies the mental state, and gives greater anxiety and irritability than when the stomach,

liver and bowels act well. Other complications modify in other ways.

Monomania, religious, erotic and other manias, are not different diseases. One organ or faculty being chiefly affected, and the rest entire, give rise to monomania; but the proximate cause may be, and often is, the same as when all the organs and faculties are affected. Religious despondency is a mere symptom, also, and appears because the function of some cerebral parts is to manifest religious feelings, and those being sick, the function necessarily suffers, and the feeling is altered. But the *same* pathological state affecting combativeness and destructiveness would produce furious mania.

Monomania and melancholy are less easily curable, not from the proximate cause being more serious, but from the other faculties and reason succeeding in longer concealing the existence of aberration; whereas, in mania, it betrays itself early in spite of the patient.

Insanity is not a state separated by a broad line from sound mind. Every gradation is observable, and we perceive morbid action before we can venture to say that the patient is insane. Some are cured at home of mental affections in a few weeks, who, if sent to an asylum, would become mad, and remain so for months or years.

Treatment of insanity.—The first important question which naturally suggests itself in the treatment of insanity is, what combination of circumstances ought to exist before a medical man is entitled to commit any individual suspected of labouring under it to an asylum, or to any other place, where he is not only deprived of his liberty, but is placed under some degree of restraint. This is a duty which I fear is still too generally performed without sufficient attention to all the features of the case. Medical men should take care not only to be themselves satisfied of the necessity of such a serious step, but that they have sufficient proof, which cannot fail to convince a jury that it was most necessary. If an insane person evince a propensity either to take away his own life or threaten that of another there can be no doubt that confinement is absolutely necessary. If an individual, in a state of mental aberration, disturbs the public peace, and is a source of annoyance to any one, a medical man, if consulted, should recommend, as a preliminary step, the interference of the local authorities. If a patient act in such a way as to offend public morals, he being insane, or even eccentric, I also think an appeal should, in the first instance, be made to the same source for protection. If a person be unable to manage his own affairs, if he enter into such speculations as none but a madman would think of undertaking, which must be connected with some striking aberration of mind, or if he squander away his money, as in buying a pack of hounds, or expensive paintings, which neither his fortune nor his rank in life entitle him to do, a medical man, consulting his own safety and the respectability of his character, will take care that he is able, by the evidence of a sufficient number of disinterested witnesses, to prove the fact to the satisfaction of judge and jury before he signs the committal of any lunatic.

A man may be perfectly mad on one point, and yet be quite able to manage his own affairs. Thus he may suppose that his legs are made

of glass, and that if he attempted to stand, they would break into a thousand pieces. A second may fancy, that if he attempted to pass through a door, he would be crushed to pieces; a third may imagine himself to be a king; and yet they might all be able to manage all the transactions of ordinary life, and be wrong upon no other point. Surely it would not be justifiable in any medical man to commit such patients to a mad-house. Individuals are frequently under some religious delusion, which may be quite innocent in itself, either as it relates to the individual, or the public at large. One man may fancy himself to be of divine origin; another may be in constant communication with angels and holy spirits; and a young lady may innocently enough employ herself from morning to night in writing love-letters to angels; and yet a medical man would not be entitled to send them to a mad-house, unless public decency were offended; indeed, were it otherwise, the one-half of the world might be for committing the other who think differently on religious matters. Perhaps there are more religious than any other class of lunatics; and at present, there are a dozen or two of young ladies, who are too well fed, and have too little to do, praying by detachments, night and day, for the conversion of some of the highest, the most pious and the most rational members of the Scotch church. There are others who, in the wildness of their diseased imaginations, fancy that a proclamation for a universal pardon, alike to saint and sinner, has been received from heaven; and that a power has been imparted to them, in virtue of prayer, to perform miracles; in short, that they can make the lame to walk, renew the lungs of consumptive patients, and even raise the dead! Yet I suppose they consider themselves perfectly sane, and would be very much surprised to find themselves safely lodged within the precincts of an asylum; but it would not be difficult to show, that they, as well as the followers of Joanna Southcote, and sundry other wild enthusiasts, are at least not very wise, and that a few weeks' work on the treadmill, with scanty fare, would probably cure them of such fantasies.

The second point of importance is, should an insane person be sent to a proper establishment, or treated at home? After considerable experience in the treatment of insanity, I am disposed most unhesitatingly to declare, that removal from his own house, if not actually necessary, is the step best calculated to produce a speedy recovery, and more particularly if he be the head of a family; it being the most difficult thing to gain a sufficient degree of authority over a person in the house where he has been always obeyed. But I entertain great abhorrence at the idea of consigning any person to a private mad-house, where the money received for board and medical attendance is an object to the individuals who keep the establishment. In a case where the liberty of the subject and the peace and happiness of so many individuals are at stake, should not private mad-houses be put down by law? Although, then, a decided preference should be given to a public establishment, yet I am not prepared to say that they might not be improved; and if an investigation were instituted by Parliament, it would be discovered, that the duties which the directors of such institutions take upon them-

selves, are generally very slovenly, and sometimes very imperfectly performed. It would also be seen, that secrecy is not sufficiently observed; and that, in some instances, the medical appointments are mere jobs, every interest being sacrificed to gratify the caprice of some idiots who ought to be patients instead of directors.

In the treatment, more is to be done by moral management, and by attending to the bowels, to the regimen, and to the temperature of the patient's body than by heroic remedies, such as bleeding and blistering, exhibiting digitalis, and persevering in the use of strong drastic purges. As to general bleeding, it is necessary only when there is considerable plethora, vascular excitement, determination of blood towards the head, or more especially signs of inflammatory action in the brain; but local bleeding by cupping, should, if possible, be substituted, unless the balance of the circulation be much disturbed, when the lancet must be used. In a considerable number of cases, shaving the head, and the occasional application of cold, by pouring water in a small stream upon it for a considerable length of time, will frequently diminish excitement, and produce tranquillity, without having recourse to bleeding.

Opiates have been so often found injurious, that by some they are laid aside entirely; but I imagine this has happened from their indiscriminate employment, as well as from the insufficiency of the doses. I have seen the best effects from the exhibition of eighty, and even a hundred drops of laudanum, repeated every third hour, in cases where there were great irritability and want of sleep, and where there were no marks of organic disease within the brain. Blisters are rarely serviceable, and they oftentimes irritate a patient till he becomes unmanageable. Large doses of tartar-emetic will sometimes be found useful, having a very powerful effect in controlling the circulation, and keeping the bowels open.

The moral treatment consists in obtaining complete power over the mind of the sufferer, if possible, without the application of any violent means. This can be effected only by studying his character, avoiding argumentative conversation, and keeping a sharp look-out, that he may have neither excuse nor opportunity to aggress. In short, a soothing system, and frequent acts of indulgence, as rewards for quietness and good conduct, are highly conducive to recovery. The high and ferocious maniac, however, requires to be secured during the night, by means of straps and strong gloves, which are fastened in a peculiar way, so that the patient cannot do himself or his keeper any injury; and during the day, to be confined in a large well-cushioned chair, which is fixed to the floor; and even here the soothing system is of decided advantage. The superintendents and keepers should possess great prudence and imperturbable tempers; and are never, on any account, to be allowed to exercise any harshness, either in action or expression, towards a patient. In many establishments, there is a chair fixed in a box, very much like a sentry-box, which is whirled round with great rapidity by machinery; and I am told that it has been found of great service in those cases where great violence exists with a considerable share of reason. The remedy has to be used only once; subsequently, the mere threat of

it is quite sufficient to make the patient control himself. Every ward should be heated with warm air, which will render fires in the apartments unnecessary. Comfortable clothing and preserving warm feet ought to be strictly attended to. Unless a patient have fever, his food should be substantial, and at the same time nourishing; a dinner of good roasted or boiled fresh meat should be allowed. A proper share of exercise in the open air is highly necessary; and nothing is more beneficial than a minute attention to a proper classification of patients; yet I fear, from negligence and laziness, this is either much neglected, or very imperfectly and irregularly performed. In a receptacle for the insane, this last should be insisted on as a daily measure. The number of directors should be increased in each establishment, and two should be compelled, under a severe penalty, to visit the insane every day at the hour of dinner, to satisfy themselves with respect to the food when presented to the patients, both as to its quantity and quality, and to see that an individual, with some returning sense, is not horrified by the presence of others in a much worse state than himself. Some means should also be contrived to allow the visits of friends as often as may be wished, without the patient's being aware of their presence.

It often becomes a difficult matter to decide when a patient is in a fit state to be discharged, and return to his friends. If I might be allowed to insist upon any particular line of conduct, it would be, not to dismiss a patient till he has been for at least two months without showing any aberration of mind; and it is even justifiable, before his dismissal is determined on, to converse with him touching the chord of his previous illusion. This should be done by the medical attendant, whose responsibility is great, who should be well remunerated, and be chosen as much for his honourable and benevolent feeling, probity and straightforwardness, as for his zeal and talents. It would be, perhaps, an additional safeguard if this examination were conducted in the presence of a magistrate.

In addition to these remarks respecting the management of the insane, the following valuable observations by Dr. Combe are annexed. "Besides what you notice with regard to treatment, every thing demonstrates that *employment* of the patient is not sufficiently studied. The brain loses its health from vacuity of mind, and yet we shut up in scores, in perfect idleness, men who, when well, were accustomed to a bustling and active life, and whom, at any time of their lives, idleness would have driven mad. Manual labour and occupation are also of immense consequence, and the moral influence of keepers and superintendents, acquainted with human nature, and interested in their avocation, is prodigious in producing quietude, and accelerating recovery, just from giving to the brain that healthy exercise which it requires. Lunatics retain a good deal of reason, even in their worst condition, and hence are more accessible to the influence of reason and example than might be supposed. In every point of view, it is best to act towards them with the same consistency, firm honesty and good feeling as if they were quite in possession of themselves. They are quick in detecting deceit, and when once deceived, they never give confidence again. I mention this,

because I differ from what ——— once said to you on this subject, in having flattered D———'s predominating vanity, and led him by it, and from what you said in accordance with his views. My experience says, never advance a word which you cannot conscientiously stick by when the patient recovers, and you will retain your ascendancy. Do not thwart his delusion, but neither give it any countenance. Our friend is now satisfied I am right in this, and I have decidedly proved it in practice. Remove all provocatives and allusions to the morbid feeling or idea, and exercise the rest as much as possible on their own objects.

"In subjects not delicate, and not beyond middle life, I find many who are greatly benefited by cupping and free and repeated leeching, followed by tepid bathing, and cold to the head while in the bath. Many, of course, do not require depletion, but it may be advantageously used when the usual indications exist. General bleeding I know little of, and do not like it. After the irritability and excitement of the immediate explosion are over, a *great deal* of exercise in the open air seems most useful in diminishing irritability, relieving the head, and procuring *sound* sleep; but if used too soon, it injures. The ordinary principles of pathology ought, in short, to regulate medical treatment, and adapt it to the state of the *individual* patient, for the latter is the only safe and successful plan."

HYPOCHONDRIASIS.

This disease, when severe, is synonymous with monomania, and might, very properly, have been comprehended under insanity.

Hypochondriac symptoms affect two classes of individuals:—1. Those whose ailments are only imaginary or functional; and, 2. Those whose complaints are produced by organic disease. The first class of patients embraces the idle, the wicked, the dissipated, and those who are brought up without a profession, who, when left to their own resources, know not how to kill time. The minds of such persons are enervated from a want of due exercise of the faculties they may actually possess, till at last the vital actions become weakened; some of the natural functions, particularly those performed by the stomach and bowels, may be impeded; at which time, should a friend die, or the history of a disease fall in their way, they will immediately fancy themselves affected with the same disorder. Or they may have a hundred and fifty different complaints, and think they experience a thousand strange sensations and unaccountable feelings, till bodily disease is, in the end, engrafted on the mental. The organic disease acts upon the mind, producing a state which, to say the least of it, is far from one of sanity. The primary disease may be functional or structural. If the former, the stomach and bowels will, in general, be found to be the parts at fault; and I have sometimes discovered, on dissection, diseased states of the liver, lungs, kidneys, bladder, heart, blood-vessels, and also of the brain and its membranes.

I have been often surprised, while attending hypochondriacs, to

hear the animated description they give of their feelings; and as one impression is driven away, another quickly appears in its place. They sometimes declare that they have no appetite, and cannot eat, while they may be in the very act of taking a hearty dinner. In the same way with regard to sleep; according to their own account, they never close an eye night or day, although it is well known that they sleep ten hours out of the twenty-four. Some of them never have any passage from their bowels, although they pass two or three evacuations daily: and, on one occasion, a lady told me that she had not a stool for thirty-eight years, and wished for something to relieve her, although her bowels were quite regular at the time! Now, surely persons cannot be said to be sane in circumstances such as these. Patients affected with hypochondriasis are not always in the same state; perhaps, without any assignable cause, they become quite well, and again relapse; so that the disease is intermittent and irregular, until it acquires some duration and intensity, when it continues, the patient becoming progressively worse.

Causes of hypochondriasis.—These are to be detected in a more satisfactory manner, by studying the character of the individual, assisted by observing the phrenological development of the brain. The character of the individual will be found, in general, to be timid, either from having been weakened by previous bad habits, or in consequence of a total want of moral courage. Hypochondriasis almost never makes its appearance before the age of puberty, and it should be made extensively known, that it more peculiarly affects aged bachelors and old maids!

Treatment of hypochondriasis.—Both classes of patients are objects of pity and compassion, and alike demand strict and decisive medical treatment. We should never have any doubts, nor should we attempt to persuade a patient that he has not the disease which he supposes himself to labour under. Our language should rather be, that we possess a remedy which will most undoubtedly effect a cure; and we should use every exertion to inspire the sufferer with hope. To all patients we should be regular in our visits, and guarded in conversation; but more particularly so when attending a hypochondriac. The bowels should be kept open; the diet should be regulated according to circumstances; and, if the patient labour under local disease, it should be treated accordingly; contra-irritation produced by frictions with antimonial ointment, will be often found beneficial, as well as the occasional use of warm and cold bathing. Air, exercise, and every kind of innocent amusement, should be strongly urged; and the physician should take the trouble to ascertain that his directions are properly followed; but he must not be at all surprised, or put out of temper, on finding that the patient, if wealthy, is in communication with twenty other medical men.

DELIRIUM TREMENS.—MANIA A POTU.

WHENEVER a person has delirium, accompanied by a tremulous motion of the body, or even of a part of the body, he is said, in common language, to be affected with delirium tremens.

[This affection occurs in drunkards, who, after a long indulgence in spirituous potations, are suddenly deprived of their habitual stimulus. The symptoms are extremely varied, from simple nervous tremors with aberration of mind, to the most violent and uncontrolable mania: but, in a majority of cases, we are able to recognize the three stages mentioned by Dr. Blake, viz:

The first stage appears soon after a protracted debauch, and is marked by slight fever, nausea or vomiting, cold, moist skin, great debility, vertigo, loathing of food, melancholy, and broken sleep with frightful dreams. After a few days follows the

The second stage is characterized by utter sleeplessness, anxious countenance, constant tremor and delirium, extravagant hallucinations, incessant talking, and a violent and menacing manner. The pulse is frequent and full; the face flushed; the tongue dry and furred, and the pupils contracted. The bowels are mostly costive, and the evacuations, when induced, are offensive. This stage lasts from three or four days to a week, yet seldom so long as the latter period.

The third stage is sometimes a mere subsidence of the second: the patient drops into a deep sleep, and awakes convalescent. If, however, the disease goes on, the mind continues maniacal, with involuntary struggling; a cold, clammy perspiration, a frequent, weak pulse, and universal tremor; and the patient dies either in a coma or convulsion.

It must be acknowledged, however, that, in very many instances, these stages are not manifest; the symptoms being so confused as to admit of no demarkation. Patients sometimes go through the first stage without encountering the second: many, again, escape the third stage; while in other instances, the disease begins with those symptoms which are characteristic of the second stage.]

Two pathological conditions of the body are often confounded by practitioners, as well as by writers, under this term. The one is delirium, accompanied with trembling, the consequence of the combined influence of irritability and general functional disease of the nervous system, with positive weakness of the whole frame. In the other, similar symptoms exist, with irritation and increased action, sometimes inflammation of the brain, the patient having a robust, perhaps plethoric, at all events an unweakened state of body. Both are the consequences of excessive indulgence in strong potations; but a distinction between the two is, in general, not very difficult, if we can depend upon the history given of the patient's previous habits, by comparing these carefully with the immediate cause of the attack, and the existing symptoms. If we are told that the

patient has had many similar attacks, has been long addicted to the excessive use of ardent spirits, and that the immediate cause of his present condition is great excess; if he display no great bodily strength; if his pulse be frequent and weak, his tongue dry and dark-coloured, with a pale, subdued countenance, a different line of practice ought to be pursued from that which I would recommend in a patient whose health had been previously unbroken, and who was not habitually addicted to drinking. If such a person as the last mentioned were seized with delirium and trembling after a solitary debauch; if the delirium were furious; the strength greatly increased; the limbs being sometimes spasmodically contracted; the pulse of moderate strength, and not above 100; and particularly if the tongue were moist, depletion must be employed. Whereas, in the first case, the hope of recovery must depend upon the judicious and timely exhibition of stimulants. The kind of stimulants should be adapted to the rank of life and habits of the patient; but upon the whole, wine is the best repeated in the quantity of a small glassful, every half hour in urgent cases, or every hour or second hour, according to circumstances; attention must be paid to the bowels, and opiates and blisters used, if necessary. A patient labouring under this form of the disease, would, in all probability, be destroyed by the loss of four ounces of blood.

In the second variety, which has been quoted, if the disease has not existed long, a bleeding from the arm, in such quantity as the case requires, will be found highly beneficial; but should the disease have gone on for any length of time, the same objections which were made against bleeding in the former case are equally applicable to this. But instead of stimulating, we must trust to the exhibition of powerful purgatives, shaving the head, and applying cold to it, with sinapisms to the feet or blisters to the legs. In some instances, local bleeding will be proper, when that from a vein is totally inadmissible. The observations already so frequently and so pointedly made in different parts of this work, with respect to venesection, and the difference in the results to be expected from that remedy according to the period of the disease, need scarcely be repeated in this place. But it may be again stated, that bleeding is often a doubtful, and sometimes even a dangerous remedy in this affection, when the pulse is exceedingly quick; say 130 or 140, and still more so, if at the same time the tongue be dry and parched; whereas, it is at least a comparatively innocent remedy, if the opposite states of the pulse and tongue exist. Considerable caution is also required in exhibiting opiates; if the patient be restless and watchful, an opiate can, at least, do no harm, and is often of signal service; but if there be a tendency to coma, an opiate will, in general, prove hurtful.

[Delirium tremens is frightfully prevalent in the United States; and the treatment adopted here differs, in some essential particulars, from that mentioned in the preceding paragraph.

It is to Dr. B. H. Coates,* of Philadelphia, that we owe those pathological views which have led to a new and more successful

[* N. Amer. Med. and Surg. Journ., vol. iv., p. 27.]

treatment of the disease, and of which we propose to give a brief abstract.

Dr. Coates, after describing the well-known effects of alcoholic stimuli on the human system, observes, that delirium tremens is produced by habitual stimulation; but not until the stimulus itself is suspended. "The patient is suddenly interrupted in a long-continued course of hard-drinking. What is then the consequence? The tremulant fever abates or subsides, from the abstraction of its cause; and the system immediately feels the want of its customary narcotic. It has been gradually changed, until the depressing agent has become necessary to the preservation of an approach towards health: without it the patient is unable to sleep, and his cerebral and nervous system are thrown into a state of the very highest excitement. Who can fail to perceive in this the production of an excess of activity, a superabundance of vitality in the brain and nerves, requiring the habitual narcotic to keep it down to the ordinary standard."

A complete analysis of Dr. Coates's valuable paper cannot be attempted in this place; but I shall give, in his own words, the *aphorisms* deduced from his investigation.

"1. The disease is a delirium and not a mania; and this distinction should be attended to, both for medical and legal reasons.

"2. It consists in a heightened activity of the sensorium; and this appears to arise from a generation in that organ, of an unusual vital power which is not, as in common, exhausted by the narcotic poisons habitually used.

"3. The delirium may be combined with many other diseases and injuries, situated in many different parts of the body.

"4. When violent, it obscures and renders imperceptible most of the symptoms of the coexisting disease.

"5. It is doubtless necessarily accompanied, as all vital excitements are, with an unusual amount of the circulation of the blood in the organ affected; and is, from this cause, sensibly influenced by cups, blisters and emetics. It is not so far checked by emetics as to render these advisable as a leading means of cure. It is not sufficiently under the control of the general circulation to be cured by venesection, or to be sensibly relieved by it without such an exhaustion as is highly dangerous to life.

"6. It is entirely and absolutely under the control of opium, although the fevers and other diseases which are liable to accompany it are by no means so.

"7. It admits of very large doses of opium, which are not productive, either at the time, or subsequently, of any injurious consequences, provided they are not repeated after a tendency to sleep is evinced.

"8. The patient must *sleep or die.* There is no alternative. Yet the physician should personally watch the effect of very large doses of opium.

"9. There is no distinction of stages which need occasion a moment's delay in resorting to opium.

"10. Purgatives are of no use in this delirium; but it is necessary

to prevent costiveness subsequently to the administration of opium. Purgatives may be necessary for diseases which exist at the same time; but when this is the case, they are, in general, most advantageously postponed till after sleep has been obtained.

"11. Gentle stimulants are frequently useful during the convalescence; but these should not resemble ardent spirits; and an excellent and efficient one is capsicum. Nor should any ardent spirits, unless indicated by peculiar circumstances, be given during the paroxysm."

Without subscribing to all these propositions, I must acknowledge that they have very much governed my practice for a number of years at the Philadelphia Almshouse Hospital: and although at different periods, the emetic and depletory plans have been abundantly tried, the opiate plan has been attended with the most decided success. The opium is freely administered; viz.: from one to three grains every hour until sleep is induced: and, in several instances, after in vain giving these doses for some hours, I have made the patient take a tablespoonful of laudanum at once. If, as Dr. Coates observes, the patient can be made to *sleep*, the chances are in favour of recovery. If, on the contrary, he cannot sleep, death is, in a majority of cases, inevitable.

A case that came under my care, during the past year, was that of an innkeeper, who, after several weeks of hard drinking, became violently delirious and unmanageable. I was called to see him late in the afternoon, and directed him four grains of morphia in solution (equal to sixteen grains of opium) to be given in doses of a large teaspoonful every hour. He took it all by the next morning, but without any sensible effect. I then ordered him a teaspoonful of laudanum every hour. In the evening he had taken five doses, (more than half an ounce,) but in his delirium broke away from his family and came in person to my house. He was with great difficulty got home again, when I administered to him at 9 o'clock, P. M., a large tablespoonful of laudanum. At 12 that night he fell asleep, slept soundly until next morning, and, with slight intervals, through the whole succeeding day. This man, who had been in a raving delirium, haunted by robbers and contending with shadows, became quiet, conscious and reasonable, and was soon restored to health.

This patient, therefore, took the equivalent of nearly fifty grains of opium in forty-eight hours.

In this case, as is much my custom, the head was freely cupped, and after convalescence commenced, a strong infusion of columbo and quassia was freely administered for several days. Let it not be supposed, however, that opium will, in every instance, control this disease: all that I maintain is, that it will cure more patients than any other remedial agent. I have seen cases in which it was of no service whatever: and in some others, after it has been used to a great extent, the anodyne effect was not produced until the patient had been walked to fatigue in the open air; after which sleep and recovery followed.

When the head is greatly affected, especially in plethoric persons, a blister should follow cupping; and I have met with a number of

cases in which venesection was not only admissible but indispensable.

The danger arising from the sudden and entire abstraction of spirits is said to be counteracted, in the Boston House of Correction, by administering a strong decoction of wormwood, which is given freely. With, perhaps, one exception, (say the managers,) there have been no fatal consequences from delirium tremens since this practice was introduced.]

PART VI.

DISEASES OF THE EYE AND EAR.

CHAPTER I.

GENERAL REMARKS ON THE DISEASES OF THE EYE.

The eye is one of the most sensible and delicate organs of the body, and, from its situation and function, is liable to many accidents and diseases, the nature and treatment of which are now happily much better understood than formerly. It is my intention to avoid noticing the surgical diseases of the eye, and to confine myself entirely to the consideration of those strictly medical, which will include inflammation of the different tissues of which the eye is composed, and the lining membrane of the eyelids, together with the diseases of the optic nerve.

In the last century, uneducated quacks were chiefly employed in treating diseases of the eyes, which was no doubt owing to the general ignorance which prevailed on the subject. In the present day, we find a class of well-educated men called oculists, who devote their time and attention exclusively to this branch of the profession. There can be no doubt that advantages are gained, both by the profession and the public, from a division of labour; but every individual, whatever particular department he may choose to cultivate and practise, should have previously gone through a good general medical education. Many of the diseases of the eye depend upon a variety of constitutional causes, which must be understood before we can cure or alleviate the diseases which they produce. It is now generally admitted, that every individual in the profession should be able to treat the diseases of the eye with the same facility with which he can manage those of any other organ. The surgical diseases of the organ of vision are certainly more complicated, requiring a delicacy of hand and quickness of eye which many do not possess; but those which fall under the care of the physician are similar to diseases of other parts of the body, though at first, perhaps, somewhat more difficult to understand and treat. Students of medicine of the present day will have themselves to blame, if they undertake the responsibility of general practice without a competent knowledge of this subject, as at every school of medicine in this country, an establishment especially devoted to diseases of the eye exists, superintended by medical men of eminence in this department. I am happy to have this opportunity of speaking in terms of high commendation of the arrangements of the Eye Dispensary of Edinburgh, under the able management of Drs. Robertson and Farquharson.

The Germans are exceedingly and needlessly minute in their classification of diseases of the eye. According to Plenck's arrangement, there are one hundred and nineteeen genera, and very nearly six hundred species. Dr. Mason Good, in noticing this division, observes: "A regard to *our own ease* may dispose us rather to take with the abbreviating spirit of Dr. Cullen than the discursive genius of Dr. Plenck." I think that a regard not only to our own ease, but to the ease, comfort and safety of our patient, ought to induce us to do so; as it is scarcely to be believed, that any practical man can carry in his head the one-hundredth part of the distinctions of the Germans.

Inflammation of the eye may be divided into external ophthalmia, or inflammation of the conjunctiva in its principal modifications; and deep-seated ophthalmia, or inflammation of the other tunics, including the disease called amaurosis, which, although not always, is sometimes produced by inflammation. These are subdivided into acute and chronic inflammation of the part affected.

I shall now give a general but brief account of the phenomena of inflammation of the eye, its causes and treatment, before proceeding to consider the individual diseases. The general symptoms differ little from those of inflammation in other parts of the body, and only in as much as they undergo modifications from the peculiar structure and functions of the organ. Inflammation of the eye may be confined to one tunic, whence it often extends to surrounding tissues, and may spread in this manner till the whole organ is affected; or it may attack the whole eyeball at once, although this must be an extremely rare occurrence. The disease may be confined to one eye, or may affect both simultaneously; or first one eye, then the other may be affected. Almost universally the disease attacks the same tissue in each eye, whether it be the iris, the conjunctiva, or the retina. Inflammation affecting one particular tissue of the eye, whether it be of an acute or chronic character, if not invariably, is generally characterized by some peculiar symptom or appearance; thus, inflammation of the conjunctiva may be readily distinguished from inflammation of the retina, and both from that of the iris.

Symptoms of inflammation of the eye.—These may be divided into local and constitutional. The local symptoms are, first, a sensation which would be produced by a grain of sand in the eye, followed by a sense of heat and pain in the eyeball, increased secretion of tears, intolerance of light, and a feeling as if the eyeball were swollen. On making an examination, a network of vessels transmitting red blood is seen, although in a state of health they contain a colourless fluid. If all these symptoms be present, and continue for any length of time, no individual, however uninformed, can be in doubt respecting the existence of inflammation. But it often happens that very severe inflammation of the internal parts of the eye may be going on without any external redness or unusual vascularity; and cases occur which terminate in the total destruction of vision, unaccompanied by much pain. Thus, Dr. Robertson was called to a case, some years ago, in which both eyes were completely disorganized within twenty-four hours from the commencement of the inflammation, and yet the patient complained but slightly of pain. Intolerance

of light is not always complained of in an external ophthalmia, at least at the beginning of the attack, in proportion to the intensity of the inflammation, but it is a prominent symptom of inflammation of the internal parts of the eye. Instead of an increased flow of tears, a preternatural dryness of the eye may take place, particularly when the diseased action is intense. Swelling of the eyelids takes place when the inflammation attacks their lining membrane; they then sometimes become very much tumefied, which is by no means an unfavourable symptom.

The observations which have been so often repeated in this work respecting other inflammatory affections, viz.: that symptoms vary much according to constitutions, and that an important organ may be undergoing considerable changes of structure, without producing the regular train of symptoms, either as to number or intensity, apply equally to ophthalmia.

Severe inflammation of the eye is frequently attended by headache, nausea, prostration of strength, constipation and febrile symptoms. When the internal coats of the eyeball are inflamed, there are generally more pain, headache and fever than in conjunctival inflammation. These are termed the constitutional symptoms.

Causes of inflammation of the eye.—These causes are numerous and diversified; few can be said to be peculiar, the great majority being such as are well known to occasion disease in other organs of the body. They may be divided into two classes:—1. External or local; 2. Internal or constitutional. Among the first are included sand, dust, lime, small insects, the irritation produced by tumours growing within the eyelids, and inversion of the eyelashes. Of these, the application of lime is the most injurious, from its well-known property of destroying the vitality and texture of animal tissues. In all of these cases a very minute examination of the eye should be made. Morgagni relates the case of Thomas Mangelli, a relative of his own, who had a dangerous and protracted ophthalmia. His physicians and surgeons believed that an ulcer had formed in the cornea from inflammation, and a variety of internal as well as external measures were adopted, but without the least advantage, until one of the surgeons discovered the wing of a small fly in the bottom of what had previously been considered an ulcer. The patient recollected that an insect had flown into the eye a little before the inflammation commenced, and that it had been killed by the application of his hand; the wing had remained closely applied to the cornea, where it brought on inflammation, and the surrounding swelling represented the lips of a small ulcer. Soon after the foreign body was removed, the eye recovered.

Acid fumes and vapours are fruitful sources of ophthalmia; as also the application of gonorrhœal virus, the discharge from a syphilitic ulcer, or, indeed, acrid matter of any sort. These are powerfully aided by intemperance. There can be no doubt of the influence of climate in producing inflammation of the eye: the colder regions of the world are comparatively exempt from these diseases, while they are frequent and peculiarly severe in warm countries. Many writers have accounted for this circumstance, by attributing it to heat, light

and dust. It cannot be disputed that any sudden exposure of the eyes to great heat or light is very hurtful to vision; and, under all circumstances, long-continued exposure, without intermission, to light and heat, even when neither is very intense, must be injurious. Egypt appears to be the country which, of all others, is most favourable to the production of ophthalmia. The English and French troops employed in that country, in 1801, were harassed by the general prevalence of the disease; and, in the subsequent expedition, the English troops were equally affected. Nevertheless, I am inclined to believe that these causes are very much overrated, and that sudden atmospheric changes, and the disgraceful intemperance of British troops, have far more influence in producing inflammation of the eyes, not only in warm climates, but in our own, than is generally admitted. It is not uncommon for ophthalmia to appear like an epidemic in this country during the spring and autumn months; and it has been remarked to take place in seasons when there were considerable and sudden changes from heat to cold, more particularly if attended by moisture. In warm climates, these vicissitudes are more severely felt by the constitution. It will not require any laboured argument to show that these causes affect the eye by producing alterations in the balance of the circulation, and not so much in consequence of any direct effect on the eye itself. It is but fair to mention, however, that I have myself experienced considerable annoyance from the effect of light in warm climates, but not so much from the sun's rays falling upon the eye, as from the reflection produced by white sandy roads and white-washed houses, the sensation being quickly removed upon getting into the shade, or walking upon grass.

Among the constitutional causes may be enumerated general plethora, disordered state of the bowels, suppression of any discharge which had previously existed for a considerable time, including the constitutional discharges peculiar to the female, dentition, general chronic disease of the mucous membranes, the diseased state called scrofula, acute and chronic diseases of the skin, the retrocession or metastasis of inflammation to the eye during the progress of gout and rheumatism.

Some of the most severe and intractable diseases of the eye take place during the decline of small-pox, scarlatina, measles, and other diseases of the same class, and constitute one of the numerous evils commonly denominated the "dregs" of these diseases.

Treatment of inflammation of the eye.—After the sketches which have been given of the symptoms and causes of inflammation of the eye, it is necessary, in this place, to give a very short account of the remedial means; but it must be premised, that some remedies are applicable to inflammation of one tissue, and some to that of another. Inflammation of the *iris* may be adduced as an example, in which the action of mercury is peculiarly beneficial. The treatment must vary also with the cause of the disease; if it be produced by acrid vapour, by the damp or exposed situation of the residence of the individual, or by particles of dust engendered during a person's trade or occupation, removal from the cause must, in general, be

insisted on before we can promise success. If any foreign body be lodged in the eye, it must be extracted; and this frequently requires some nicety, if it be imbedded in the coats of the eye, or in the cornea. Foreign bodies, however, most frequently lodge under the superior palpebra, and when their existence is suspected, the eyelid should be completely everted. Cases are sometimes met with, particularly of slight inflammation of the *conjunctiva*, in which a spontaneous cure takes place; but as such a termination is doubtful, and always slow, we ought to pursue the proper course of treatment. Many cases yield to the application of warm vapour, warm anodyne fomentations, or astringent washes. These simple remedies, together with due attention to the bowels, and confinement to an apartment moderately lighted, will often have the effect of subduing the inflammation. But in severer cases of external inflammation of the eye, and in all deep-seated inflammations of that organ, more powerful measures must be used. Of these, general bleeding stands the foremost, and is more particularly indicated when the symptoms of inflammation run high—when the eye cannot bear a moderate light—and when there is a darting pain through the head. The indication is still more obvious, if there be fever with a hard pulse; and more particularly still, if the patient be plethoric. The quantity of blood drawn should be proportioned to the urgency of the symptoms, the age, peculiarities of constitution, and habits of the patient. The importance of general bleeding in many cases of ophthalmia, has been long known to the profession; but like most of the potent remedies employed for the cure of this and other diseases, it has sometimes been held in great estimation, and at others sadly decried. It is now above thirty years since the disease called the Egyptian ophthalmia created such ravages in the British army, having the double effect of crippling its exertions, and entailing a heavy expense upon the nation, in the shape of pensions to soldiers who had lost their sight; and when I first entered the army, in the early part of the year 1808, I soon observed sufficient to convince me, that the bad success was owing to injudicious treatment, particularly relating to four most essential points:—1. The older military surgeons, upon whom the treatment devolved, did not seem to be acquainted with the different seats of the inflammation. I never saw any distinction made by one old surgeon, whose wisdom and knowledge were generally admitted and highly extolled, between inflammation of the conjunctiva and that of the iris; 2. It was matter of surprise to find that eyes were lost in the course of a day or two, when the symptoms were apparently mild, and they seemed to expect to meet with a severe and rapid disease only when there were violent symptoms, and the chief symptom they depended upon was pain; 3. They appeared to be unable to discriminate between acute and chronic inflammation, which often led them to apply local stimulants most injudiciously; 4. A great deal of bad success was owing to a systematic plan of taking from all subjects, whether old or young, weak or strong, exsanguined or plethoric, the precise quantity of twelve or sixteen ounces of blood. While acting under an old surgeon, the plan of treatment ordered to be pursued, when

a man came into hospital, was—"Bleed him, sir, to 16 ounces, and give him salts." If the patient happened to be better at the next day's visit, an order was given to apply a stimulant, generally the *vinum opii*. On the following day, if he were worse, the order was —"Bleed him again, sir;" and this alternation of practice,—bleeding one day only to weaken the system, without making any decided impression on the disease, and applying local stimulants the next, before the acute inflammation was subdued—appeared a most decided error in the treatment. So strong was the impression made on my mind, that one day three men were received into hospital, whom I was desired to bleed, and not considering, or perhaps disregarding the consequences of deviating from the regular plan, I bled each of them to syncope, which required the abstraction of from 25 to 35 ounces of blood. The men made rapid recoveries; but the transaction would have cost me my commission, had I not had powerful friends at court.

I knew another surgeon, who, although he used to bleed in cases of ophthalmia, placed his chief dependence on Dover's powder. To show how much the government was alarmed for the state of the army, it may be mentioned, that a male and female quack were hired to take charge of the cases in a certain military hospital; but, as might have been expected, their mysteries and mummeries failed altogether in checking the ravages of the disease.

On a subsequent occasion, a medical gentleman joined the army with high pretensions as an oculist. He introduced the practice of everting the eyelids, which was done in all cases, for the purpose of applying stimulants: and I attributed the loss of a great number of eyes to the indiscriminate employment of this operation together with not distinguishing the difference between acute and chronic inflammation, as well as between superficial and deep seated inflammation of the eye.

One bleeding will, in general, suffice, but it should be carried far enough to affect the constitution. Drawing blood from the temporal artery has been strongly recommended by many. I have seen it often practised, but was never sensible of any superior advantage derived from this method; and it may be mentioned, that some practitioners of reputation consider it rather injurious. The application of leeches is the most gentle method of taking blood from the vessels in the neighbourhood of the eye; they may be placed either upon the forehead, the temple or the cheek immediately below the eye. Some object to this means, because the leech-bites occasionally produce considerable swelling and inflammation of the eyelids, now and then assuming an erysipelatous character; but it should be recollected, that this will only happen in cases where there is a bad habit of body, in which circumstance their application may be avoided. Cupping the neck may be had recourse to, either when leeches cannot be obtained, or when it may not be convenient or proper to employ them. In conjunctival ophthalmia, particularly when the lining membrane of the palpebra is vascular, the application of the scarificator to the everted lid will be found very beneficial, and is a speedy method of taking a considerable quantity of blood from the part

affected; but it is only to be had recourse to in certain cases hereafter to be noticed. A modification of this last practice has been recommended by Mr. Crampton, (3d vol. Dub. Hosp. Reports,) which is, to apply leeches to the everted mucous membrane of the lower palpebra.

The beneficial effects of the most judicious and copious abstractions of blood will, however, soon be lost, unless followed by other important means, such as the keeping up a moderately brisk discharge from the bowels, and the use of antimony. Blisters, applied either to the neck or behind the ears, are often serviceable; and in cases of chronic inflammation of the conjunctiva, when the mucous membrane of the intestinal canal is in a state of great irritation, I have found it very beneficial to apply the tartar-emetic ointment to the abdomen, alternately with leeches to the epigastric region: it is in such cases that the frequent use of the warm bath proves beneficial.

In acute and even subacute inflammation of the eye, the employment of the antiphlogistic regimen is indispensably necessary; but I apprehend that practitioners too frequently run into an extreme, by persevering in the use of slops and low diet for too long a period, to the injury of the functions of the stomach.

With respect to local applications, some practitioners have great faith in cold lotions of different kinds, and others in warm fomentations, consisting merely of warm water, or its vapour, a decoction of chamomile flowers, or of poppy-heads. Whether the applications are to be warm or cold may be safely left to the feelings of the patient, although the former appear, in a majority of instances, to be most soothing. Poultices are used by many, but they are not so serviceable as fomentations; and if there be any tenderness, it is increased by the weight. In pustular ophthalmia, as well as in chronic inflammation of the conjunctiva and cornea, stimulants are most conducive to the cure, and perhaps the best is the *vinum opii*. In such conditions, astringent washes are also used in the proportion of one or two grains of the *acetate of lead*, or *sulphate of zinc*, or from one to seven or eight grains of the *sulphate of alumina*, to the ounce of water. A solution of the *nitrate of silver* is also employed in different conditions of the eye, as in chronic inflammation of the conjunctiva, and inner membrane of the eyelids, as well as in ulceration of the cornea. Emetics have occasionally been found serviceable in some long-standing cases of conjunctival ophthalmia.

Experience has proved that the action of mercury is almost indispensable in inflammation of the iris; but it is by no means to be depended upon to the exclusion of general and local bleedings.

Notwithstanding the general opinion which prevails against the administration of opiates in the diseases under consideration, I would strongly recommend them in cases where there are great pain and want of sleep, after the employment of proper depletion. The dose must be proportioned to the urgency of the pain, as well as to the degree of constitutional irritation; in severe cases, I have given, with benefit, 60 drops of laudanum, or 30 of Battley's sedative solution; but in either case the dose should be repeated, with half the quantity, in the course of two or three hours, if necessary.

So long ago as the year 1807, Dr. Wardrop recommended the evacuation of a part of the aqueous humour, by making a puncture in the cornea, in cases of very violent inflammation of the eyeball, when the pain is intense, the eye prominent and the cornea slightly opaque; and more particularly when the case appears to resist other treatment. I cannot speak of this operation from experience; but it appears to have been performed, in a few instances, with benefit.

CHAPTER II.

INFLAMMATION OF THE CONJUNCTIVA.

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1. Simple inflammation of the external covering of the eye, including what is termed by authors ophthalmia mitior et gravior; 2. Simple Catarrhal Ophthalmia; 3. Purulent Ophthalmia, the description of which will be drawn from the disease as it occurs in infancy; 4. Pustular Ophthalmia.

SIMPLE INFLAMMATION OF THE EXTERNAL COVERING OF THE EYE.

The conjunctiva, from its situation, is, of all parts of the eye, most liable to inflammation. In the natural state, it is rare to see vessels carrying red blood, but on the slightest irritation the vessels of this membrane become injected. It is only in the most intense inflammation, of some days' continuance, that we see vessels on the surface of the cornea.

Symptoms of simple inflammation, &c.—A sensation of itching takes place, sooner or later succeeded by pain, resembling that which is known to be produced by sand or dust when applied to the eye; redness heat, tension and throbbing follow, aggravated when the eye is moved, and upon the admission of light. An increased flow of tears is observed, sometimes scalding the cheek, or an unusual dryness of the eye from suppression of tears, which last adds greatly to the pain. In severe cases, the pain shoots from the eyeball, as it were through the head, or affects the scalp on the forehead over the affected eye. In some instances, there are febrile symptoms, with a full, strong, bounding or hard pulse, generally preceded by rigors or slight chilliness. If the symptoms are mild, the disease is called *ophthalmia mitior;* if severe, *ophthalmia gravior.*

On examining the eye in the acute stage of the disease, the vessels are observed to be superficial and distinct, running in straight lines, leaving the intervening spaces of a slight pinkish colour; and when the smaller branches are also well injected with red blood, the conjunctiva has a uniform red appearance; whereas, when the disease is chronic, the vessels become tortuous in their course, assume a purple colour, and are capable of being rolled about from the looseness of the connecting cellular tissue. We judge also of the change in the character of the inflammation by the cessation of the severe throbbing pain, and by the greater tolerance of light. In some cases of the description

now under consideration, as well as in those of the affection which has been denominated *purulent ophthalmia*, the conjunctiva becomes swollen, having a red, granular, somewhat fungous appearance, and considerably elevated above the cornea; this state is called *chemosis*, and is frequently confounded with ecchymosis, which also takes place occasionally, not only in chronic, but in acute inflammation of the eye. Chemosis is occasioned by thickening and vascularity of the conjunctiva, with an œdematous state of the subjacent cellular tissue. We see, on some occasions, also, an accompanying œdema of the eyelids, which become much swollen, and occasionally a red fungous state of their lining membrane takes place. In these circumstances, there is some puriform secretion.

Treatment of simple inflammation, &c.—In the milder forms of the disease, general bleeding is unnecessary; but if the complaint do not yield to other remedies, it would be wrong to delay opening a vein, particularly if the pulse be hard, or if there be much excitement in the system. In severe cases, one prompt and copious bleeding will be necessary, followed by the application of leeches, fomentations, strong purgatives, the solution of tartar-emetic, and blisters, as the urgency of the symptoms may require. It is important to consider what the circumstances are which we have to dread;—puriform effusion into the cornea, together with opacity, thickening and ulceration; and the extension of the inflammation to other tissues. Chronic inflammation of the conjunctiva may take place in two different circumstances, viz.: either as a consequence of previous acute disease, or as a slow inactive inflammation. In either of these cases, the eye has the appearance formerly described; and the practice which I would recommend, is to pay more attention than is generally done to the constitution; the condition of the mucous membrane of the stomach and bowels should be carefully investigated in the manner so fully pointed out in the first volume. In chronic inflammation, it may sometimes be found of great service to scarify the eyelids, if there is much vascular turgescence of their lining membrane; astringent and stimulating washes must be had recourse to; it is in these cases that the solution of nitrate of silver is found useful, together with the wine of opium and an occasional blister. It has been recommended to divide the trunks of the small vessels just before they enter the cornea, when there is any tendency to opacity, and when red vessels are seen on that part; and although it may be beneficial in some cases, yet I have seen it injurious in many, by producing additional irritation.

SIMPLE CATARRHAL OPHTHALMIA.

The particular affection which I wish to denote under this term is one of very common occurrence in this country, being the effect of sudden alternations from heat to cold; it is, in fact, called by the vulgar, "a cold in the eye," and, generally speaking, is to be considered as a mild description of purulent ophthalmia, which disease, in its more aggravated form, is known by the appellation, *Egyptian*

ophthalmia—occurring after the application of gonorrhœal virus to the eye, *gonorrhœal ophthalmia*—and taking place in infants, *infantile purulent ophthalmia.* They are all the same disease, requiring the same treatment, modified by the patient's age and peculiarity of constitution, and by the urgency of the case.

Symptoms of simple catarrhal ophthalmia.—After exposure to cold, soreness of the eye is complained of, either preceded or accompanied by chillness and a feeling of general uneasiness, with lachrymal discharge, sneezing, and sometimes aching pains in the bones, and some degree of fever. It is a slight inflammatory affection of the conjunctiva; but the inflammation is, in some cases, so very great as to destroy the eye. In addition to pain, intolerance of light, and the other symptoms described in the last section, we find a puriform discharge, and some swelling of the eyelids. The eyelids, though frequently washed, quickly become glued together by the drying of the matter, so that, in making examinations, as well as in cleaning the eye, great mischief is frequently done by forcibly opening the lids, and thereby producing additional inflammation. After the disease is a little advanced, the eye, upon examination, will sometimes be found in a state of chemosis, and we should make at least one daily inspection to ascertain the state of the cornea. If there be no opacity or dimness of the cornea, and no vascularity or ulceration on its surface, the case may be regarded as doing well; but should any of these circumstances be observed, the loss of vision may be dreaded.

Treatment of simple catarrhal ophthalmia.—The same general plan of treatment as recommended in simple inflammation of the conjunctiva should be had recourse to. Attention must be paid to discover when the disease has passed into the chronic stage, that we may have recourse to remedies of an astringent nature; care should be taken to keep a small piece of linen twice folded constantly applied wet to the eyes; at all events, the eyes should be well soaked with some tepid fluid, before any attempt is made to separate the palpebræ. I shall have to speak hereafter of the proper plan of treatment when ulceration of the cornea takes place; I shall now only further mention, that the inner membrane of the eyelids is frequently left, at the termination of the disease, in a soft, swollen, spongy condition. Should the ordinary astringents fail, the scissors of the surgeon, or what, perhaps, answers fully better, the application of lunar caustic, may be used once every third day, taking care to evert the eyelid completely, and to bathe the part with a little milk the moment after the caustic has passed over its surface; this renders it innocent to other parts of the eye. In the acute stage, the warm bath and antimony will be found peculiarly serviceable, as well as repeated doses of Dover's powder.

In cases where the introduction of syphilitic virus into the eye is suspected, it must be left to the discretion of the practitioner whether to use mercury or not. Perhaps it ought not to be given in the first instance; but in the case of syphilitic, gonorrhœal, or any other acrid matter producing inflammation, the knowledge of the fact should lead us to watch the progress of the case more anxiously, and be

ready to apply the most potent remedies speedily, should they be necessary from the extent and intensity of the inflammation. An interesting case may be mentioned, which terminated very fortunately:—A young man came to the hospital with violent inflammation in one eye, attended with slight purulent discharge; he complained of excruciating pain both in the eye and head, and a large ulcer was discovered on the cornea. Upon examination, a purulent discharge was observed coming from the urethra, although he had previously denied the existence of gonorrhœa.

Notwithstanding the advanced stage of the disease, I instantly resolved to open a vein, as he was stout and plethoric, and as his pulse was strong and hard. There was little probability of saving the eye, and it was fully expected that the contents of the eyeball would escape in the course of twenty-four hours; but it was necessary to mitigate his sufferings, which he described to be agonizing. The blood was allowed to flow till the approach of syncope. Slight epileptic convulsions followed, which went off immediately upon his being laid down on the floor; he was now in an extreme state of weakness, and was threatened with a return of the convulsions upon making the least exertion, as well as when he was raised for the purpose of being placed in bed. When in this state, it was a matter of surprise to me, to find scarcely a trace of one vessel upon the eye, which had a few minutes before been exceedingly vascular, and the ulcer on the cornea already appeared as if it had received a death-blow. The blood was accurately weighed, and the quantity found to be fifty-six ounces. In a day or two a slough separated, and the ulceration was found to have extended throughout the whole depth of the cornea; the only part which remained was its lining membrane, which was pushed out by the aqueous humour, forming an appearance like a hernia. From this time the healing process continued; the cicatrix which afterwards formed, at first interfered with the sphere of vision, but the patient could see all objects above him; gradually, however, the cicatrix diminished in size, a very slight speck is left on the lower part of the cornea, and vision is now quite perfect.

PURULENT OPHTHALMIA OF INFANTS.

The disease of which I have now to treat, is an inflammation of the *tunica conjunctiva* of the eye; occasionally attacking children soon after birth, and frequently, when unopposed by proper means, rapidly destroying the structure of the eye, by producing alteration of texture of the cornea, and sometimes, though rarely, by extending to, and injuring the deep-seated parts of the eye. It is now many years since this disease first attracted the notice of medical men, but we had no good description of it till Mr. Ware, a celebrated ophthalmic writer and practitioner, published an account of it, and he was soon followed by several continental writers, particularly by Reilius and Schmidt in Germany.

The *tunica conjunctiva*, and the reflection of it forming the lining

membrane of the eyelids, has been considered, and, I believe, very properly, as a mucous membrane. It is the principal seat of the disease, and undergoes a change, when inflamed, analogous to that of other membranes of the same class.

Symptoms of purulent ophthalmia. — The date of the attack varies. I have several times seen children born with the disease, and have often detected it on the second day, and it may occur at any subsequent period; but, generally speaking, it takes place before the sixth week, usually during the course of the first fourteen days. It may attack one eye only, but it commonly happens that both eyes are simultaneously affected.

It is often difficult, if not impossible, to write a good description of the symptoms of a disease in infancy, but I shall here record nothing but what I have noted down at the bed-side.—A child affected with purulent ophthalmia, is observed to be very restless and fretful, particularly when exposed to light, although it keeps the eyelids firmly closed; it never opens them to look about, as infants usually do, who are readily attracted by the light of a candle or the blaze of a fire. At the onset of the disease, a slight redness is first observed on the conjunctiva lining the eyelids, especially about the inner canthus, attended with a secretion of whitish matter. There are generally observed also some heat of skin, and a foul tongue. The eyelids soon appear red and swollen, or the eyelashes are found matted together by a glutinous exudation. Whenever any of these appearances are observed, the eye should be minutely examined, after it has been properly soaked with warm milk and water, so as to soften the matter which seals the lids together. On no account ought the examination to be proceeded in before this preparatory step is fully accomplished, as I have seen great mischief done by nurses and impatient medical men forcing open the eyelids, thereby occasioning great immediate suffering, and subsequently increasing the inflammation.

I hope to be excused by those medical men who largely indulge in the filthy habit of taking snuff, for urging upon them the necessity of taking care that the fingers employed in opening the eyelids are clean, and that they keep their noses in such a situation, that none of the noxious herb may fall into the eyes of the poor little sufferers. As the disease proceeds, a discharge of tears mixed with the secretion takes place when the eyelids are separated, and the itching is so great that the fingers of the child can scarcely be kept away from the eyes; swelling of the eyelids soon follows; the discharge increases in quantity, becomes more puriform, and sometimes so acrid as to excoriate the cheeks.

The inflammation, if it have not already affected that part of the conjunctiva which covers the eyeball, soon extends to it; numerous blood-vessels are seen of a bright scarlet colour, sometimes giving the appearance of chemosis; the quantity of matter is occasionally very great indeed, and when the eyelids are allowed to be glued together for some time, it collects, producing great distension, and when they are opened, a teaspoonful or two of puriform matter gushes out. In neglected cases we discover disease in the cornea, perhaps on the first

examination, or that it is already destroyed. The external skin of the eyelids in some cases becomes affected, being red, swollen and of a livid colour, particularly when the infant struggles or cries. The inflammation, in some instances, extends to the lachrymal sac and duct and lining membrane of the nose, from which a similar puriform fluid is discharged.

As the complaint advances, portions of the cornea put on a dusky appearance, become elevated, and, in the course of perhaps twenty-four hours, a process of separation commences. The slough, when thrown off, leaves a ragged ulcer of an ash colour, the bottom of which is coated with a brownish matter. These sloughing ulcers vary in number, generally there is only one, sometimes there are several, and occasionally the whole cornea sloughs at once. As soon as one slough separates, another begins to form, which process goes on, if the disease be not arrested, until the ulcer penetrates into the anterior chamber of the eye, when the aqueous humour is discharged, and the iris pushed through the opening. The ulcer on the cornea may not be disposed to heal, or may enlarge, allowing more and more of the iris to protrude, which, in its turn, ulcerates; at last it happens, in some neglected cases, that the lens and vitreous humour are expelled, and vision is for ever destroyed. In some rare instances, with or without opacity or ulceration of the cornea, the inflammation extends to the deep-seated parts of the eye, and vision may be destroyed by internal disorganization.

Such is a general outline of this disease in its most malignant form, when allowed to run its course, or when the inflammation is aggravated by improper treatment—a disease which, when early opposed by proper means, is seldom productive of any bad effects. When the inflammation is arrested at the period that the cornea first begins to slough, opacities or small specks are generally left; but when it advances still further, and the iris is protruded, staphyloma is generally the consequence.

It has been supposed, by some authors, that the acrid discharge produces the ulceration of the cornea—by others, that the cornea begins to ulcerate from within; but I believe the best informed practical men are convinced that both opinions are erroneous, and that the disorganization of the cornea arises solely from the violence of the inflammation; and it is highly important to keep this fact in view.

Much irritation and discharge are sometimes kept up for a considerable period by a diseased state of the lining membrane of the eyelids, which, when examined, present a swollen, spongy, granular appearance, and more or less of a red colour. This state of parts frequently occasions relapses, till at length chronic inflammation steals slowly on some tissue of the eyeball itself, which ultimately impairs or destroys vision.

Causes of purulent ophthalmia of infants.—These are stated to be various. The most common are cold and damp, exposure to too much light and heat, to which infants are very liable when nursed in the lap, and to smoke or acrid vapours; and I believe it is occasionally produced in consequence of mechanical injury inflicted on the conjunctiva by the child's own nails. Purulent ophthalmia is said,

by some, to be produced by the direct application of acrid matter to the eyes of the infant during parturition. This is very probable, if the mother be affected with syphilitic chancres, or gonorrhœal discharge; but, on the other hand, I have known many women so diseased, whose children were not attacked by purulent ophthalmia. Others maintain, that it is invariably produced by the peculiar discharge called the *whites:* but experience completely disproves this assertion; for if it were the case, scarcely one new-born babe could, by possibility, escape, as a very large proportion of women are affected with whites during pregnancy, particularly in the latter months.

Treatment of purulent ophthalmia of infants.—Regarding the disease, in severe cases, as one of intense inflammation, the treatment is easily understood. The only difficulties with which practitioners have to contend are, first, to determine whether or not the disease be too far advanced to admit of any hope of success; and secondly, whether or not the inflammation has yet become chronic. With respect to the former, it may be stated, that long standing and most unpromising cases occasionally do well under the active management which is here recommended. We must not allow ourselves to be guided by the number of days the disease has existed, but by the state of the eye itself after minute and careful examination, comparing that with the constitutional symptoms, together with the strength and peculiarities of the patient. With respect to the second difficulty, some experience is no doubt required. The appearances presented by chronic inflammation, however, have been already fully described, and must be kept in recollection.

It has been already stated, that both eyes are generally simultaneously inflamed, but one eye is found to be more intensely affected than the other; young practitioners must be upon their guard not to fall into a common but very natural error of directing their sole attention to that organ which is in the most dangerous condition, to the comparative neglect of the other, which, when subsequently examined, is too often found to be irreparably lost. General bleeding, in early infancy, is altogether out of the question, therefore we must have recourse to leeching; and most infants stand the effects of the application of two leeches remarkably well, if the draining of blood be not allowed to go on too long. If both eyes be affected, a leech may be put on each temple, within about half an inch of the external canthus of the eyes, for when applied too near the part, the loose tissue of the eyelid becomes swollen, inflamed and ecchymosed, creating alarm and an impression in the minds of those most interested, that the abstraction of blood has done harm. This opinion may make them unwilling to repeat the application of the leeches, which should be done, perhaps, every four or six hours, according to the strength of the patient, till the violence of the disease is subdued. The bowels are to be acted upon by two or three smart purgatives, repeated at short intervals, such as one grain of calomel combined with two grains of scammony; but subsequently, milder means may be had recourse to. It is of great consequence to keep the eyes clean, not because the matter, if allowed to lodge, would injure the cornea, but to prevent it from sealing the lids toge-

ther. This is best effected by keeping the infant upon its back, while a small piece of wet linen rag is applied to each eye, and a little milk and water dropped occasionally upon the inner canthus. The necessary precautions already mentioned, before any attempt is made to separate the lids, must be carefully observed. I have seen much mischief done by the incautious and too frequent use of the sponge, as well as by injecting fluids between the eyelids, an operation which ought never to be confided to a nurse.

With respect to the operation of scarifying the lining membrane of the eyelids, I formerly had doubts whether it did not occasionally do harm; but experience has taught me, that it is one of the most effectual parts of the treatment, not only in the chronic, but in the acute stage. The scarifications are to be made very slightly, as their edges sometimes suffer from subsequent irritation and inflammation. To procure the full effects of scarifying, the eyelid should be carefully everted, the child steadily held, and a large quantity of blood allowed to flow before the part is returned; to effect which the scarificator should have a very fine edge; and instead of wiping the surface with a warm sponge, it should be done with a piece of dry soft linen. Scarifications are also occasionally of great use in the chronic stage, when the part is very vascular; and they are often serviceable after the membrane becomes soft, spongy and granular.

The light should be excluded from the apartment. In bad or doubtful cases, the state of the cornea should be minutely examined twice a-day, and once when the case is going on well. The warm bath ought to be used morning and evening; the diet should be restricted at this early period of life to the breast milk. We judge of the effects of the remediesin reducing the disease, partly by the diminution of the constitutional symptoms and quietness of the infant, and partly by the diminution of the discharge, as well as by the child opening the eyes; but in order to ascertain this last point, it is necessary to watch its motions before light is admitted into the apartment, because the moment this takes place, the eyes will be closed, and the child will forcibly resist their being opened.

An occasional opiate will be found useful in allaying pain and irritation, and producing sleep. One drop of the sedative solution of opium forms a good full dose. The state of chronic inflammation has been already frequently alluded to, but, perhaps, in the circumstance now under consideration, it is a term not very happily chosen. After acute inflammation of the eye has subsided, the vessels are left in a gorged state; the swelling in the surrounding tissues gradually diminishes, leaving the vessels tortuous and loose, the blood contained in them being of a darker colour: the inflammation is destroyed, but the vascularity remains, and the remedies which subdued the previous action will, if continued, rather tend to increase than diminish it. At the same time, I have to urge the remark which I made in a former instance, and which applies with double force to the diseases of such a delicate organ as the eye, viz.: that practitioners are too meddlesome, and do not give sufficient credit to the restorative powers which a living organ possesses; or, perhaps,

from their own physiological and pathological dimness, they must always be doing something for appearance's sake. I have seen much mischief done by officiousness; therefore, as soon as the inflammation is either nearly or altogether subdued, I follow a passive plan with respect to applications, and content myself with keeping the eye tolerably clean, and the eyelids unsealed, at the same time that the precautions with respect to light, diet and state of the bowels, are strictly attended to. In a day or two after convalescence has been established, an astringent, nay, even a stimulating application, may be necessary and serviceable, should the vascularity still exist, or should the mucous membrane be in the fungous, granulated state already mentioned. Many use the application as a matter of routine practice, whether these conditions exist or not, so that they often irritate the eye and produce relapses. Should the fungous granular state resist the use of ordinary means, caustic must be applied, or surgical aid obtained and the part clipped or cut off—at first recommended by Reid, who, by the date of his work published in 1706, appears to deserve the merit of the originality of the plan, which has been of late years again brought before the profession by Mr. Saunders, and claimed as a discovery by Sir William Adams.

Immediately on the decline of the disease, some insist much upon the benefit to be expected from tonic medicines; but whatever may be said in their praise in old worn-out constitutions, their effects in early infancy are very questionable. In some cases, where considerable debility prevails, particularly where there is a somewhat exsanguined appearance, I find considerable benefit from the occasional exhibition of one, two or three drops of brandy mixed with a little milk from the nurse's breast. To many great and pompous practitioners, who depend upon mystery, this plan may appear vulgar and unscientific—let such people give a few drops of "Huxham's tincture of bark."

The experienced reader will have remarked, that the effect of blistering has not hitherto been noticed in the treatment; but it was purposely avoided, to be made the subject of my concluding observations. In the general remarks, I have already spoken of the advantages to be derived from the application of a blister to the temples, behind the ears, or to the back of the neck, in inflammation of the eyes: the same benefit may be expected in purulent ophthalmia; but in young infants, the blistered surface is liable to slough, and death will so frequently follow such an occurrence, that I entertain considerable repugnance at applying a blister to a new-born child; and it is impossible I shall ever forget the fright experienced on the last occasion I applied one in purulent ophthalmia. The case was severe; the parents had heard of the good effects of blistering, and I was urged by them to apply one. My objections were honestly mentioned, but they still insisted; and a blister was accordingly applied, with the precaution, too, of placing a piece of fine gauze between it and the skin; a deep slough took place, and the child made a narrow escape from death.

PUSTULAR OPHTHALMIA.

This disease appears to be a chronic, or, perhaps, rather a subacute inflammation of the conjunctiva, speedily terminating in the formation of pustules. At the commencement, these pustules have a red or yellowish appearance, slightly elevated, surrounded by a considerable turgescence of vessels, varying very much in size, number and situation, and sometimes attended by considerable pain; but at other times no inconvenience is complained of, either local or constitutional. It is a disease produced by exposure to cold.

Treatment of pustular ophthalmia.—In general, this is a very manageable disorder, and is quickly cured, dropping into the eye a little *vinum opii*, or a solution of nitrate of silver twice a-day. But should the pustules be very painful, attended by headache and febrile symptoms, and more particularly, should they be situated upon the cornea, where they sometimes leave ulcerations, more active means should be employed. A number of leeches must be applied, perhaps a vein opened, a few strong purgatives exhibited, and recourse had to the other means which are employed in cases of severe inflammation of the eye. After the acute inflammation is subdued, which we are to judge of by the diminution of the symptoms, the *vinum opii* may be used. Should ulceration take place upon the cornea, it is to be treated in the usual manner. I have been assured by Dr. Robertson, that much greater advantage has been derived from the application of blisters behind the ears or to the nape of the neck than from any other means.

CHAPTER III.

INFLAMMATION OF THE EYEBALL.

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1. Inflammation of the Sclerotic Coat.—2. Inflammation of the Iris.—3. Amaurosis.

INFLAMMATION OF THE SCLEROTIC COAT.

Inflammation of the sclerotic coat is distinguished from that of the conjunctiva by the vessels being of a more pinky hue, by their lying deeper, and by their not being movable on making the conjunctiva slide upon the sclerotic, by pushing the former membrane from side to side with the finger, the eyelid being slightly interposed between the finger and the membrane. The pain complained of in this disease is a rheumatic kind, and more uneasiness is felt in the different motions of the eyeball; it is also, in many instances, vicarious, with gouty and rheumatic affections of other parts of the body. In such instances, remedies which prove useful in rheumatism and gout are to be used, in addition to those required in simple inflammation. Of these I may mention that I have seen great advantage result from the exhibition of colchicum and Dover's powder. In almost every case of iritis the sclerotic is found to participate in the inflammation.*

INFLAMMATION OF THE IRIS.

Inflammation of the iris received the denomination of *iritis* from Dr. Schmidt, of Vienna, and by that term it is now generally known. The symptoms are of a very violent nature when the inflammation is acute, particularly after it has existed for twenty-four or thirty hours, when the patient's sufferings are often agonizing; severe pain over the eyebrow is rarely wanting; it commonly comes on in pa-

* I have thought it unnecessary to treat of inflammation of the sclerotic coat at much length, because it is a disease which rarely takes place unless the inflammation be connected with gout or rheumatism, or have spread from other tissues. Neither shall I treat of inflammation of the choroid coat, although I believe it sometimes occurs uncomplicated. I must, therefore, refer my readers for more minute information on these subjects, to any of the numerous works upon the eye, and particularly to the "Compendium of the Diseases of the Human Eye," by Mr. Watson, of Edinburgh.

roxysms. The constitutional symptoms are very similar to those which occur in other acute inflammations of the same organ, but there are local appearances which are highly characteristic.

In iritis, vessels are seen running in straight lines towards the cornea beneath the conjunctiva, but they suddenly disappear before they reach the cornea, leaving a whitish zone round it. This appearance is peculiar, and no doubt arises from the vessels passing at this part through the sclerotic to be ramified on the inflamed iris. As soon as the zone appears the iris loses its proper colour; in some rare cases it becomes distinctly red. Jannin relates a case in which the iris resembled a piece of raw flesh; Beer saw it of a blood-red colour, and Conradi observed it of the same colour after a wound of the eye. Dr. Robertson states, in a paper on iritis, in the Edinburgh Medical and Surgical Journal, that more than once he has seen spots of a blood-red colour upon its surface. When the iris changes its colour, it first commences at the pupillary margin, and the colour it assumes when inflamed is that which would be produced by a mixture of red blood with the natural pigment of the iris. The pupil becomes contracted and irregular, being slightly drawn upwards and inwards. It is also worthy of being mentioned, that the vessels, in iritis, as in inflammation of the sclerotic coat, present a peculiar pink colour.

The retina sometimes becomes affected. This is indicated by greater sensibility to the impression of light, deep-seated pain darting through the head, and an appearance of sparks of fire and flashes of light before the eyes. If iritis be not speedily cured, it terminates by the effusion of small masses of lymph, sometimes even of blood, and more rarely by the effusion of puriform matter. The first-mentioned terminations probably take place when the serous membrane covering the iris is principally affected; the last, when the substance of the iris suffers a high degree of inflammation. The effusion of lymph sometimes produces adhesions between the margin of the iris and the capsule of the lens, by which its motions are completely lost, the pupil subsequently remaining immovable under every change of light. When the effusion is considerable, it is seen hanging in tufts from the pupillary margin, or stretching in bands across the pupil, and sometimes exists in such quantity as to destroy vision. Occasionally this effused lymph becomes organized, and red vessels may actually be traced by the naked eye. Another termination of the disease is by the formation of an abscess in the substance of the iris itself. Its situation varies, but, for the most part, is found on or near the pupillary margin. This abscess may terminate in two ways—by bursting, as most frequently happens, and discharging its contents into the anterior chamber, forming the appearance which is called hypopion; or, as the disease declines, by the absorption of the matter. In some rare instances, it has happened that ulceration has taken place after the discharge of the matter from the abscess.

In this disease the iris is sometimes pushed forward towards the cornea, assuming somewhat of a conical shape; and occasionally it comes in close contact with the cornea, now and then adhering to it by the pupillary margin, and generally by a single point. It has

often been remarked that, when the iris of one eye is affected, the disease frequently attacks the other, and sometimes both eyes are affected simultaneously.

Causes of iritis.—Cold is, no doubt, the most frequent cause of iritis; it may be also produced, as has already been stated, by the extension of inflammation from other tissues, as well as by external injuries, and the application of too stimulating remedies for the cure of acute external inflammation. It is alleged by most authors, and is very generally believed, that iritis is most frequently excited by the action of mercury; and it is rather a curious circumstance that mercury is, nevertheless, exhibited for the cure of the disease which it is alleged to have excited. This erroneous impression seems to have originated in the fact that people, when taking mercury, have been attacked with iritis. If mercury were a cause of iritis, I ought to have been very familiar with the disease, when the use of mercury was more in fashion than it is in the present day; it ought then to have been a hundred times more frequent than at present; but this is not the case. There can be no doubt, however, that iritis is apt to occur when a person, under the influence of mercury or any other debilitating remedy, has been exposed to cold.

Treatment of iritis.—At the commencement of the attack, one determined bleeding will do more good in checking the diseased action than repeated small bleedings. The quantity of blood to be drawn must be determined by the peculiarity of the case, and by the circumstances already so fully mentioned. Subsequently, recourse is to be had to topical bleeding, repeated or not according to circumstances, and blistering. After the violence of the inflammation has been reduced by one general bleeding, our chief dependence is to be placed on the use of mercury, so as to affect the system very rapidly. This is a most important improvement in the treatment of iritis, for which we stand indebted to Dr. Farre; but it seems to have been known to Beer and other German oculists, long before its introduction into this country. The plan which I generally follow is to give a grain of calomel every hour during the day, and five grains at bed-time in a pill, with a grain or two of opium: perhaps Dr. Robertson's plan is preferable—to give two mercurial pills every hour, combined with opium, if they affect the bowels with griping or purging. As soon as the system becomes affected with mercury, the patient experiences a very considerable abatement of the pain, as well as of the feeling of fulness and tension of the eye; the sight becomes improved and clearer; the redness diminishes; the iris assumes its natural colour; and the irregular and contracted state of the pupil, as well as the effused lymph, (if any exist,) begins to disappear. I can most conscientiously join those who state that they have often seen cases of iritis in which it was to be regretted that mercury had not been given, and that they never had occasion to regret having prescribed it. When the "*hydrargyrophobia*" was in greater vogue than at present, I knew several surgeons who were *temporarily* affected by it till they lost the eyes of the patients from iritic inflammation, which they had never done before when they used mercury. They bitterly regretted having forsaken a plan which they had previously

found so generally successful, to adopt another from the false assurances of its *invariable* success. Dr. Robertson thinks that mercury can scarcely be praised too highly in this disease, which, when allowed to proceed, more especially after lymyh has been effused, too frequently ends in the loss of the finest sense we possess. When once the pupil has been obliterated by the effused lymph, and time has been allowed to glide on, it is next to impossible to restore sight by any remedies we possess, for it becomes so completely organized, that even mercury loses its influence over it. The only resource that remains for the patient is the formation of an artificial pupil, at all times a difficult operation, and in such cases exceedingly apt to be unsuccessful from the recurrence of inflammation of the iris. Indeed, no attempt should be made to form an artificial pupil as long as the slightest susceptibility to inflammation exists; perhaps it ought never to be performed till one or two years after the occurrence of the iritis. In some constitutions, Dr. Robertson assures me he has derived great benefit from the use of colchicum, particularly in gouty and rheumatic habits, in which iritis is by no means unfrequent; so great, indeed, has been his success with this remedy, that he generally tries its effects before having recourse to the mineral. It is only, however, where the disease has not proceeded far that he has been thus successful with this medicine. When lymph has been effused, we have no resource but mercury. He has tried iodine in such cases, and he thinks with some benefit, but they are not sufficiently numerous and precise to allow him to give a decided opinion with regard to its utility. He would, however, *recommend its employment, together with that of the colchicum, to those who can see nothing but poisonous qualities in mercury.*

The extract of belladonna is to be rubbed over the eyebrow and forehead, or on the temple or cheek, early in the disease ; or a strong solution of it may be inserted between the eyelids every second or third hour. If no effusion have taken place, the pupil will be regularly and considerably dilated in the course of a short time ; but if adhesions exist between the iritis and other parts, the dilatation will, of course, be only partial. It is often necessary, when lymph has been effused, to continue the belladonna for some length of time after other remedies have been discontinued, in order the better to secure the natural functions of the iris. When the inflammation is severe, scarcely any dilatation is occasioned by the belladonna: its use will, however, prevent the pupil becoming still more contracted; but as the inflammation subsides, the advantage resulting from its application becomes more apparent. Some say, that as soon as the dilatation of the pupil is produced, the pain and other symptoms disappear, from which they infer that belladonna is a powerful remedy in destroying the inflammation; but this is not the case ; the dilatation merely indicates the cessation or diminution of the inflammation, towards which it does not contribute. The extract of hyoscyamus seems to possess the same qualities as that of belladonna; so that, should the one lose its powers, the other may be substituted.

AMAUROSIS.

The term amaurosis, as at present used, is employed to denote a partial or total loss of vision affecting one or both eyes, arising from various causes which destroy the functions or structure of the optic nerves and retina. The symptoms of amaurosis are so very various, depending upon the cause of the affection, that it is impossible to give a good general description of the progress and termination of the disease in this work, from want of space. I shall therefore be obliged to deviate from the general plan, and commence the subject by describing the causes, as far as they are known, upon which amaurosis depends.

Causes of amaurosis.—1. Amaurosis may be produced by inflammation of the retina, which is fortunately a rare disease, as the severity of the symptoms occasions great suffering to the patient, and is frequently followed by loss of vision. The inflammatory action may be acute or chronic, a primary or a secondary disease; generally it is a secondary disease, the inflammation spreading from the choroid coat. 2. It may be produced by congestion of the vessels of the retina. 3. By congestion of the vessels of the brain, as in apoplexy. 4. By destruction of those parts of the cerebral mass, upon the healthy state of which vision depends, blindness being well-known to be the consequence of many affections of the brain—as of inflammation with extensive effusion into the ventricles—inflammation of the substance of the brain—effusions at the base of the brain—and tumours pressing on the parts on which vision depends; blows, also, on the supraorbital region, have been known to produce the disease. 5. Narcotics, and the abuse of ardent spirits, are so well known as the causes of temporary loss of vision, that they need not be mentioned. 6. Amaurosis has been known to be occasioned by gastro-intestinal irritation, produced by worms—by indigestible matters—and by particular articles of food. During the time of Bonaparte's political influence on the continent, he prohibited the importation of our colonial produce, and we are told, by Professor Beer, that amaurosis became more frequent than it had been formerly, owing to the substitution of vegetable matter, called chicorée, for coffee. 7. Amaurosis is sometimes vicarious with cutaneous affections, and with discharges of various kinds. 8. Some cases are on record, where it took place during pregnancy. 9. It is also said to occur during dentition, whether in consequence of determination of blood to the head, or of disordered state of the stomach and bowels does not appear.

Symptoms of amaurosis.—It will be seen, from the preceding statement of the various causes of amaurosis, that it is impossible to devote a sufficient number of pages in this work to a minute description of a disease, the symptoms of which must be so very various, occurring under such different circumstances. I may mention, however, that imperfect vision, pain in the eyeball and in the head, flashes of light and illuminated sparks, dark spots, or other optical

illusions, appearing before the eye, accompanied with a preternatural state of the pupil, which is generally dilated and immovable, announce the existence of this disease. But this state of the pupil is not always present, and when present does not, exclusively considered, justify the inference that the eye is amaurotic, such states being also produced by the condition of the iris itself and the ciliary nerves, independently of disease of the retina. An irregular, dilated, and commonly immovable pupil, together with the loss of its jet-black colour, and a tremulous motion of the diseased eye, are the more common appearances of amaurosis. Sometimes amaurosis comes on suddenly; at others gradually and partially, the patient recovering vision entirely, and losing it again and again, till at last it becomes permanently destroyed. Squinting with the diseased eye takes place in amaurosis, but it is not in general permanent; it is only remarked for a short time, after a person looks at another object, it being some time before the muscles of the diseased eye are able to place it in the same direction as the other.

Treatment of amaurosis.—The remedial agents must vary according to the cause of the disease. It is quite evident that, in the first three causes enumerated—viz.: inflammation of the retina, congestion of the vessels of the retina and congestion of the vessels of the brain—depletion by opening a vein, and applying leeches or cupping-glasses, more or less actively pursued, must be had recourse to; the chief circumstance of consequence is promptness. In the fourth case, viz.: disease of the cerebral parts on which vision depends, as concussion, inflammation and tumours, I have to remark that, in the two former states of the brain, the treatment necessary for the removal of such diseases must be had recourse to, but in the latter no treatment can have any effect. In the cases produced by narcotics and intoxicating liquors, the amaurosis is only temporary; if the patient recover from their effects, the sight, for the most part, is restored. In cases depending upon gastro-intestinal irritation, the offending cause must be removed, and the bowels subsequently attended to. Should the disease be connected with cutaneous affections, and with discharges, bleeding may produce relief, but it will be only temporary: the chief dependence must be placed, either on restoring the cutaneous disease, or the discharge, or using means to enable the constitution to do without them, viz.: by the occasional application of leeches, but especially free purging, and a dry, unstimulating diet. Occurring during pregnancy, it will, in all probability, vanish, like many other unpleasant symptoms, after delivery; but a minute investigation should be made in case the amaurosis should depend upon some of the other causes, when suitable remedies are to be used. If the disease should ever take place during dentition, leeching and purging will be necessary; but lancing the gum will be found to be the most certain remedy.

Nux vomica has been long known to possess considerable powers in paralysis, and since its active principle, strychnia, has been discovered, it has been found of more service in the same set of affections. Strychnia has been lately tried in France, in amaurosis, by Lembert, and in some cases with marked benefit. It is evident,

however, that, as a cure is not to be looked for in paralysis of a limb if its structure be destroyed, or the brain and spinal marrow or principal nerves be diseased past recovery, so neither can we expect to cure amaurosis by strychnia, or any other remedy, if the structure of the eye be destroyed, or if any organic lesions exist in those parts of the brain which are known to be connected with vision. But I have no doubt strychnia will be found serviceable in amaurosis depending upon different functional derangements. It has been lately introduced into this country, and has been used in the Royal Infirmary of Edinburgh, by Dr. Shortt and Mr. Liston. The manner of employing it is to sprinkle a quarter of a grain daily upon a newly blistered surface on the temple, increasing the quantity gradually till some manifest effect is produced. The blister requires to be renewed every third or fourth day; a little smarting is felt on the application of the strychnia, and it has produced erysipelatous inflammation of the part. The constitutional symptoms occasioned by the strychnia are headache, agitation, and tremors of the whole body; sometimes shooting pains in the eyes, and occasionally cramps and convulsions have followed. When any unpleasant symptom takes place, the dose is to be lessened or intermitted. It is stated that the best antidote is the application of the acetate of morphia to the blistered part, or the internal use of opium. The reputation of the remedy is likely to be very much injured by the indiscriminate and empirical use which may be made of it.

The experiment has been tried by Dr. Shortt, and with complete success in three cases; but out of five cases treated by Mr. Guthrie, in the Westminster Ophthalmic Infirmary, in one instance only was evident and considerable benefit observed.

I have lately had occasion to try strychnia in a case of amaurosis in a young gentleman. The disease succeeded a severe blow on the left temple; considerable inflammation of the corresponding eye followed, and vision was destroyed. The organization of the affected eye looked perfect when he fell under my care; the pupil contracted on the application of light; and he could always perceive the difference between night and day. Daily, for a week, a quarter of a grain of strychnia was applied upon a recently blistered surface on the temple. No effects were produced except preventing strabismus. During four days, half a grain was used daily. One day half a grain was applied twice; a pricking sensation was felt in the hands and feet: on this occasion, during sleep, he was observed to be affected with slight spasmodic twitches and general startings. For two days after this, half a grain was applied daily, and on the third day a whole grain was used without any benefit.

CHAPTER IV.

DISEASES OF THE EAR.

In this chapter I shall treat, and that shortly, of Otitis and Otorrhœa.

OTITIS.

The symptoms of this affection may be considered under three heads, viz.: 1. Common earache; 2. Inflammation and suppuration external to the tympanum; and, 3. Inflammation and suppuration of the internal ear, which are sometimes connected with caries of the petrous portion of the temporal bone, the disease spreading even into the brain.

1. *Earache.*—This affection most frequently occurs during infancy and childhood; but adults are by no means exempt from it. It is a very painful, but not a dangerous disease, and is often ushered in with threatening symptoms, such as violent headache, fits of screaming, flushed face, quick pulse, great restlessness, and sometimes delirium.

2. *Inflammation and suppuration external to the tympanum.*—This disease is generally accompanied by more severe symptoms, and unless the inflammation be immediately checked, is of longer duration. It generally commences with rigors, followed by smart fever, flushing of the face, headache, severe paroxysms of pain darting through the ear, and occasionally some degree of delirium; the ear is tender to the touch, and sometimes pressure cannot be borne. On examination, the inner membrane is found to be swollen, and of a red colour; and, in consequence of the swelling and inflammation, more or less deafness is produced, with an occasional hissing sound.

3. *Inflammation of the internal ear.*—The symptoms, both local and constitutional, are generally, although certainly not always, more severe; and it is more important to subdue the inflammation in an early stage. If allowed to go on unmolested, the disease advances rapidly or slowly, according as the inflammatory action is acute or chronic, partial or extensive; the tympanum becomes ulcerated and destroyed together with the lining membrane of the different parts of the internal ear; the small bones are detached and discharged, and the hearing, on the side affected, becomes irreparably lost. When the bone is affected, the matter has a corresponding appearance and odour; and as the disease advances in the bone, chronic inflammation of the

membrane of the brain succeeds, subsequently affecting the brain itself; so that, on dissection, the bone is found to be carious, with serous or purulent effusion, and extensive softening of the base of the brain. In some instances, the disease is very insidious in all its stages, attended with very little pain, and perhaps no discharge from the ear, till at last violent pain suddenly takes place, speedily followed by delirium and coma. In other instances, in which the attack is very acute, the painful symptoms cease, and coma gradually steals on; so that the patient may be supposed to be recovering and enjoying sleep, when, in fact, he is in the very jaws of death. Sometimes spasmodic symptoms, and even convulsions, precede death. All modern writers on the brain notice such cases, and several interesting examples are recorded in Dr. Abercrombie's work on the brain, as well as in that of M. Itard, entitled "Traités des Maladies de l'Oreille."

Causes.—All these varieties often take place in the course of ulcerated sore throats, as only during the progress of the exanthematous diseases, where there is for the most part an affection of the throat. The three varieties may also be produced by cold, particularly when applied to the part. Thus I have seen some severe cases, from the ear having been exposed to a small current of air; but a more common cause proceeds from the bad tricks which children have of putting pieces of paper, peas, &c., into the external ear. Another frequent cause of the first two varieties, and perhaps occasionally of the third, is the pernicious and disagreeable habit of picking the ears by means of various well-known contrivances. These complaints sometimes arise from a cutaneous inflammation, generally of an erysipelatous character, which extends into the ear. A collection of indurated wax in the ear, producing irritation and inflammation of the part, the larvæ of insects, and even insects themselves, sometimes produce serious inconvenience and pain.

Treatment.—The treatment of earache is well understood in the nursery; medical men are therefore seldom consulted, unless in severe and obstinate cases, to which the following observations will apply. If the pain and other symptoms be not very severe, and should the inflammation of the inner membrane be slight, fomentations assiduously applied during the day, and a soft light poultice during the night, together with the use of a small quantity of laudanum, mingled with oil dropped into the ear, will generally suffice. When the symptoms are severe and the pain excruciating, I have seen the greatest benefit produced by opening a vein in the arm; but I have only thought it necessary to try this in cases where the symptoms were violent, and the disease of frequent recurrence, and in none of these instances has it ever returned. Besides fomentations, the application of leeches is serviceable, to be repeated according to circumstances, and followed by a blister behind the ear if necessary. It is also found advantageous, before dropping in laudanum and oil, to use an injection of milk and water, which will assist in softening and removing indurated wax, if any be collected. It is almost unnecessary to mention that the regimen should be moderately, if not entirely antiphlogistic; and, in severe cases, a brisk action

is to be kept up on the bowels: I have seen good effects from the use of antimony, particularly in cases complicated with rheumatism, or produced by exposure to cold.

As soon as an abscess is observed it should be opened; if not opened early, or if it be situated too deep, considerable additional suffering may be expected from the slowness with which the matter will form and escape, owing to its being situated in a hard and unyielding structure. If allowed to take its own course, a troublsome fungous ulceration sometimes follows, and a copious discharge of matter, which occasionally continues for years.

OTORRHŒA.

A DISCHARGE of offensive matter from the ear is at all times very unpleasant, more particularly so when it is habitual and in large quantity. Sometimes the discharge consists of an increased quantity of the natural secretion in a very fluid state; at other times it is more or less mixed with pus. It may be the consequence of increased activity in the secreting vessels, but more frequently depends upon chronic inflammation of the lining membrane of the ear, and occasionally upon deep-seated inflammation and caries of the bones.

In treating cases of this description, attention should be paid to the above-mentioned circumstances; and it should be also remembered, that after a discharge has existed for some time, it becomes, as it were, necessary to the constitution, and cannot be checked without creating some tumult in the system, which may terminate very unpleasantly. Therefore, certain preparatory measures should be taken before the suppression of the discharge is attempted. Perhaps the best method of doing this is to apply repeated blisters behind the ear, to keep the bowels open by gentle laxative medicines, to use a light and a dry diet, avoiding slops, and a greater quantity of liquid than is sufficient to prevent thirst. After this system has been pursued for some time, then we may apply injections of an astringent nature; and, if necessary, exhibit acetate of lead internally. In some instances, it may be well to keep a small blister open, or to apply tartar-emetic ointment to some other part of the body to produce an external irritation. Should headache take place, or a tendency to lethargy, a few leeches ought to be applied behind the ear, or cupping-glasses to the neck, followed by a blister, together with smart purgatives. In some instances, in which it might be unsafe to interfere with the discharge, the disagreeable fetor may be very much diminished, by injecting a solution of the chloruret of lime or soda, properly diluted.

PART VII.

DISEASES OF THE SKIN.

CHAPTER I.

GENERAL REMARKS ON DISEASES OF THE SKIN.

A KNOWLEDGE of this class of diseases is so necessary in a practical point of view, that I shall devote as large a space to their consideration as is consistent with the plan of this work. The study is important, from the frequency of their occurrence, from the little that is yet known respecting them, and from the connection, nay, I might have almost said the dependence, of cutaneous diseases upon the state of internal organs.

These diseases have, for many years past, excited great attention; and the late Dr. Willan has undoubtedly the credit of being the first to lead the way in the investigations which have taken place. On the continent, Alibert and Rayer have followed his footsteps; but it is to be regretted that Alibert should have concealed, that the spring which first set his mind in motion on this subject, was the knowledge of what had been previously done by Willan!

Willan's great merit consists not only in drawing the attention of medical men to a subject which had been quite neglected, but in classifying the different diseases, and in examining the writings of ancient medical authorities. It is incumbent, however, upon me to state, that the errors of his system are numerous, from carrying divisions and subdivisions of cutaneous diseases too far, and increasing the number of names, thereby complicating the study without simplifying the practice. Practical physicians will, I feel persuaded, agree with me in this statement, and their opinion is of more value than that of scientific bookworms. Our sole object in classifying and investigating diseases, is to render the treatment more successful and certain, which a too minute division decidedly counteracts. The practitioners who, according to my observation, are notoriously the most unsuccessful in the treatment of cutaneous affections, are those who, instead of taking a comprehensive view of the history of the case, and attending to the state of the digestive and other organs, embarrass themselves by making minute distinctions, and by endeavouring to force every disease into some of Willan's classes and orders.

Small-pox, measles, and the other exanthemata, are included in almost all the popular works on cutaneous affections, and classed along with other diseases with which they have no connection: as, for example, with purpura. I have already treated of the exanthe-

mata, in the first volume, as fevers attended with eruptions—but my pathological opinions respecting these and simple cutaneous diseases, are in some respects very similar.

In almost every instance of cutaneous affection which has fallen under my observation, whether attended by fever or not, I find ample evidence in the history of the case, of functional derangement of some internal viscus. In some, the stomach and bowels are at fault, as in urticaria, erythema fugax, many cases of lepra, &c.; while others are evidently connected with disease of the liver, mucous membrane of the lungs, &c. Erysipelatous inflammation is always the consequence of some internal disease, either functional or structural, sometimes of the stomach and bowels, at others of the lungs, and occasionally of the brain. This will be shown when treating more particularly of erysipelas, which I have placed in this part of the work, and not among the exanthemata, because it cannot be considered a specific disease, having, like small-pox and measles, a definite course, progress, and termination.

The principles which shall now be explained respecting cutaneous affections, are those which experience and observation have, from an early period of life, forced upon me, and which I have taught ever since I began to lecture, in the year 1823.*

Practitioners pay little attention, in general, to the seat of the cutaneous disease; and they have either very erroneous notions, or never think at all, of the nature of the affection. It may be briefly mentioned, in this place, that its nature is generally inflammatory; but that its seat is various, sometimes affecting the superficial vessels of the cutis which secrete the cuticle, as in recent cases of some of the squamous diseases; at others, the sebaceous follicles are the seat of the inflammation, it being frequently produced by the mechanical irritation of the sebaceous matter which collects in too large a quantity, so as to over-distend the follicle and irritate its vessels—as in acne, papulæ, &c.; whereas, in a third class of cutaneous affections, as erysipelas, small-pox, &c. the diseased action is situated in the substance of the *cutis vera* itself, the inflammation and suppuration extending to the subcutaneous cellular membrane, and in some instances even deeper still, affecting the muscles and other tissues, as in bad cases of erysipelas and carbuncle. I shall avoid speaking of the *rete mucosum*, because its existence, even in the negro, has been denied by good anatomists; as well as of a minute glandular distribution, which some think they have seen by the help of the microscope between the *cutis* and *rete mucosum*. Microscopic observations, like those performed by Mr. Chevalier, who describes the existence of these glands, are always liable to fallacy; and it is well to remind those who have much faith in them, of the dilemma in which the late Dr. Monro (usually called *secundus*) was placed, by an optical delusion, in the course of a very extensive set of experiments which he performed. He observed that all animal fibres were serpentine; he next proceeded with vegetable substances, and

* It gives me great pleasure to notice the work on the Diseases of the Skin, by Mr. Plumbe, of London, and to recommend it to my readers as the best pathological and practical treatise on this class of diseases which is to be found in any language.

he also found that their fibres were serpentine. Astonished at these observations, he next proceeded to examine mineral substances, and he was astounded by observing, that whatever substance he examined, it was composed of serpentine fibres. He either wrote, or was engaged in writing a paper upon the subject, when he discovered, through a scientific friend, that the serpentine fibres were all produced by a slight defect in the glass of the microscope, which saved him further trouble at the time, as well as subsequent embarrassment and chagrin. It is to be feared that considerable errors have crept into medicine, from the incorrect impressions conveyed by microscopic apparatus.

Some writers have described *papillæ* over the whole surface of the body, situated in the true skin; but I am inclined to agree with Mr. Plumbe, who states that he has never been able to discover any vestige of them; and if they do not exist, the diseases ascribed to this tissue should be erased from medical writings. Mr. Plumbe has used a very strong argument against the existence of the diseases which have been ascribed to the papillæ of the skin: "Every genus of this order (papillæ) makes its appearance on all parts of the body, at times, *except* where papillæ are really and easily found."—(P. 7.)

The skin performs several important functions:—1. The formation and repair of the cuticle, which is insensible, like the nails, and forms an outer covering to the whole surface of the body. 2. The skin performs the office of separating a large quantity of a limpid fluid from the blood, which escapes from the body by what is denominated insensible perspiration; and the proper performance of this duty must have a powerful influence upon the action of every other organ in the body. 3. It would appear that we are able to introduce many substances into the body by the process of absorption from the skin; so much so, that even minute quantities of strychnia, applied to a blistered surface, have frequently produced violent constitutional effects.

In this work I shall treat of cutaneous affections in the following order, without splitting the orders into so many different genera and species, as is usually done.

1. Erysipelas, or Rose.
2. Papular Diseases.
3. Pustular do.
4. Squamous do.
5. Vesicular do.
6. Purpura.

CHAPTER II.

ERYSIPELAS.

Erysipelas appears to have been noticed by the earliest writers on medicine, who frequently, however, confounded it with other diseases, under the general term of "*ignis sacer.*"

This disease has been divided into several varieties, viz.: idiopathic and symptomatic—erythematic—phlegmonous—erratic—bilious—local—malignant and putrid; and some of these have been again subdivided.

All unnecessary divisions of diseases, as I have already observed, are useless in theory and injurious in practice. Mankind differ as much in constitution as they do in expression of countenance; and it is well known that peculiarity of constitution produces shades of difference in symptoms and appearances, which defy the ingenuity of the ablest nosologists; but they, nevertheless, have exerted themselves in a wonderful manner to accomplish the task, retarding instead of advancing the study of true pathology. If all the time and talent that have been misused in devising nosological arrangements had been employed in discovering the nature and seats of diseases, our knowledge of pathology and of remedial agents would, in all probability, have been much further advanced than it is at present.

I shall treat of all forms of the disease under the simple term of erysipelas, while I shall take care to notice the peculiar, as well as the occasional symptoms, appearances and terminations which may seem to indicate corresponding alterations in the treatment. I am induced to follow this plan here, because it has met with the approbation of practical men of considerable standing in the profession, who have done me the honour to attend my lectures.

Phenomena of erysipelas.—This disease takes place in people of all ages;—I have seen it in new-born infants, as well as in extreme old age. It more particularly occurs, however, in certain constitutions, viz.: in those who are liable to affections of the skin, to gout, and who are subject to disorder of the stomach and bowels. It is a disease met with in practice in every degree of severity, appearing under the form of the slightest erythematic blush, confined to one spot, or under that of deep and intense inflammation of the skin, extending over the whole body. The inflammation may be severe, affecting not only the skin and subcutaneous cellular tissue, but also involving the muscles, and terminating in extensive suppuration, ulceration and mortification. In some cases the disease spreads

from the skin to deep-seated parts, while in others the inflammation appears to extend from within outwards, sometimes from the periosteum, when it is primarily inflamed, but more frequently from the tendinous aponeuroses forming the strong fasciæ which bind down the muscles. In such circumstances, the general phenomena of the disease and the local appearances differ considerably from those of simple erysipelatous inflammation. When the periosteum is primarily affected, severe gnawing pain, sleepless nights, &c., will be complained of for months, perhaps for years, before the skin partakes of the inflammation. When the fasciæ of muscles become inflamed, whether from a puncture or from the application of cold, deep-seated pain, tumefaction, tenderness to the touch, and severe constitutional symptoms, precede the redness of the skin. In contradistinction to erysipelas, these cases have been named, by Dupuytren and others, *erysipeloid diseases*, and appertain more to surgery than physic.

The first local symptoms of erysipelatous inflammation are a tingling or pricking pain, with some degree of heat, swelling, tension and redness of the part. Soon a pungent, burning pain is experienced, aggravated by motion or pressure; the swelling increases rapidly; the surface presents a shining appearance; on pressure the redness disappears for a moment, but immediately returns; and, as the disease advances, the part assumes a purple colour.

The constitutional disturbance manifests itself in the shape of febrile symptoms and general functional disorder, varying according to a number of circumstances preceding the attack of erysipelas—such as the extent and severity of the disease, as well as its duration and situation. If the disease have appeared after a long and debilitating illness, the symptoms will be different from those produced in a person who had been previously in good health. If the inflammation be superficial, the symptoms will be comparatively slight; if it be situated on the head and face, delirium and even coma may occur, which, in all probability, would not have happened if the disease had attacked an extremity, and were limited to the same extent of surface.

The external characters of the disease vary much according to situation, severity and duration;—affecting the head and face, the features swell much, as in small-pox; the conjunctiva of the eye partakes of the inflammation, as well as the membrane lining the nose, mouth and ears; vesication takes place, even in slight cases, or the parts become exceedingly hard, more particularly the ears; and if the inflammation be superficial, desquamation of the cuticle, after diminution of the redness and pain, marks the decline of the disease. In cases where the inflammation has been more intense and deeper-seated, doughiness or bogginess is left, which renders it probable that matter is effused. On some occasions, distinct fluctuation leaves no doubt of the existence of matter, which may be either circumscribed, as in phlegmonous erysipelas, or diffused, as in the diffuse inflammation of the cellular tissue that occurs in patients who are of a bad habit of body, and which arises sometimes from a prick in dissection.

The circumstances preceding an attack are also very various; erysipelas frequently comes on at the termination of fevers of long dura-

tion, as well as of inflammations of different organs, more particularly of the brain, lungs, and peritoneum; it also takes place in individuals who have laboured for years under different chronic diseases, medical or surgical. Those who have long indulged in the abuse of strong potations, as well as gourmands, are also liable to it. At other times it appears to be the immediate effect of cold operating on the general system, or of some indigestible matter in the stomach and bowels. In whatever circumstances erysipelas may take place, the attack is generally preceded by rigors or chilliness, alternating with flushes of heat, oppression at the præcordia, difficulty of breathing, cough, expectoration, pain in the back and loins, general uneasiness, delirium, a sense of weight in the head, headache, lethargy, and sometimes a state bordering upon coma, with high or low toned febrile action. These phenomena may exist with more or less severity for one day, or for twenty days, before the inflammation appears in the skin; there are no regular periods or stages, as in measles, scarlatina, and small-pox. Erysipelatous inflammation sometimes appears on a part for a few hours, and suddenly vanishes, showing itself perhaps in another situation; or if it do not show itself again on the surface, the constitutional symptoms become aggravated, coma or dyspnœa frequently follows, and sometimes even death itself.

Causes of erysipelas.—From the prevalence of erysipelas in particular years, a belief is pretty generally entertained of its being contagious, which has been much strengthened by the additional fact of the occurrence of a considerable number of cases at one time in particular hospitals. There is much stronger ground for believing that erysipelas is produced by epidemical influence. But the occurrence of the disease can, in the majority of cases, be much better accounted for by sudden changes of atmospheric temperature, along with considerable moisture, together with the state of the bowels, and indulgence in particular articles of food.

It is proper to state, that I deny altogether the idiopathic nature of erysipelas, and that I believe it to be an occasional symptom of different diseases, which diseases may frequently occur, under atmospherical, epidemical, and contagious influences.

In a great majority of instances, if the particulars of the cases be inquired into, it will be found that no communication, direct or indirect, had taken place with others labouring under erysipelas. Sometimes it attacks nurses and others who have had an anxious attendance upon the sick, labouring under various diseases, as peritonitis, pneumonia, different kinds of fevers, fractured limbs, and injuries of the head. Some may have been attacked, no doubt, with erysipelas, when attending patients labouring under that disease. But such an event does not take place more frequently than during an attendance on patients affected with other diseases. I have seen a great number of cases of erysipelas, and have been greatly interested, from the earliest period of my professional life, in the investigation of its nature and seat; but have never met with a nurse or an attendant who was attacked with erysipelas when attending a patient labouring under that disease, although the confined, crowded, and extremely filthy state of the apartments, on very many occasions, seemed but too well

calculated to contaminate the atmosphere, and thereby to promote the generation and communication of contagion. If erysipelas were as contagious as is represented, we ought certainly to see erysipelas producing erysipelas in the same determinate manner that small-pox and measles are known to produce these complaints; but I have never observed such a phenomenon.

That erysipelas sometimes appears as an epidemic, cannot be denied, and on many occasions it is said to spread by contagion in hospitals; but if it were an idiopathic disease, and contagious, it ought to spare none, or at least few who have an ulcer, or any abrasion of the skin. It ought to spread more or less slowly from one to another, so as at last to affect almost every one who approached within the sphere of the contagion. We find, however, that it only attacks individuals here and there, frequently at a distance from each other, who have been in separate wards, and who have never come once in contact. This is very different from what occurs in small-pox, measles, and a few other diseases which are known to be contagious, and which are always marked by symptoms peculiar to themselves. In these there is an eruptive fever, which continues for a certain number of days before the eruption appears. This goes through a regular course of advancement and recession, and all the other phenomena only vary in intensity. Each disease is recognized under every circumstance of age, sex, and constitution. Neither small-pox nor measles can be generated by any of what are called the common causes of diseases not contagious, such as exposure to cold, damp and fatigue, affections of the mind, &c.

Erysipelas sometimes does not appear in the course of fevers, inflammations, and other morbid conditions of the system, till perhaps the end of the third or fourth week; at other times it occurs on the second or third day, and at all intervening periods. This is certainly very unlike the acute eruptive diseases which are known to be contagious; besides, erysipelas has no regular and determinate course as the others, which attack the same individual only once in a lifetime, while erysipelas may affect a person twenty times. Let me ask if any one has succeeded in producing erysipelas in a healthy person by introducing matter taken from an erysipelatous surface? This has been stated, but I believe it to be a mere assertion: but even if this could be answered in the affirmative, it is no proof of the specific and contagious nature of erysipelas, because the same affection has followed scratches received during dissection. It has followed the application of leeches and blisters, as well as injuries produced by minute splinters of wood, and punctures made by perfectly clean sewing needles. In no point of view, then, can erysipelas be said to be a specific disease, or to resemble other diseases which are known to be contagious.

When erysipelatous epidemics have prevailed, I have always remarked that they have occurred either under sudden vicissitudes of weather, attended by considerable moisture, or during the autumn after a hot summer, when there was a great abundance of fruit. In the first circumstance, fevers, and acute and subacute inflammations, also prevail, particularly bronchitis. In the last, the functions

of the stomach and bowels suffer; irritation of their mucous membrane ensues; fevers and diarrhœas also prevail; and the erysipelas, in both cases, although a frequent occurrence, is a mere symptom.

The reason why erysipelas should be occasionally very prevalent in hospitals, and be attended with greater fatality than in private practice, can be easily explained. In this country, from the pride of being independent, it is only the most destitute of the poor—servants at a distance from their friends—or country people, who desire a consultation of doctors—who can be prevailed upon to go into an hospital. In hospitals, patients are generally too much crowded together; there is great irregularity of temperature in the wards; and sufficient attention is not paid, except at the hour of visit, to ventilation.

These circumstances, and many others which could be adduced, enable us to account in a more satisfactory manner for the prevalence of erysipelas in hospitals, than by supposing, as too many have done, that the disease lies in ambush, embedded in the lime, mortar, and wood-work of the wards, watching favourable opportunities to seize on flesh and blood!

Appearances on dissection in erysipelas.—The part which had been the seat of the inflammation, will be found after death to have lost much, if not the whole of its redness, but not its swelling. Upon making an incision, a bloody serum will be found infiltrated into the cellular substance. The skin will be often seen thick and hard, in the same state as it is observed to be when a person has died twenty-four hours after a blister had fully risen; or, if suppuration have taken place, pus will be found infiltrated instead of serum, in some places distributed generally through the cellular tissue; in others, circumscribed little abscesses exist. In the most severe degree of phlegmonous erysipelas, the parts will be very tender, easily torn, and a large collection of fetid pus will be found, with more or less of the cellular tissue detached, and perhaps mortified, the disease even extending into the muscles. In subcutaneous cellular inflammation, more extensive destruction will be discovered; small abscesses will be found, but pus and a dark-coloured ichor will be seen generally and deeply diffused among the muscles, blood-vessels, &c.; partial mortification and sloughing will have taken place here and there; and, in some dissections, the muscles will be seen tender, and altered in appearance, resembling, in many cases, the last stage of putrefaction. I have seen the blood-vessels also extensively diseased in their inner coats, and the lymphatics as well as veins containing a puriform fluid.

Besides the above appearances, traces of extensive disease in the membranes and substance of the brain, pleura, pericardium, and peritoneum have been seen. But of all the tissues in the body, the mucous membranes are most frequently found in a state of inflammation, and in many instances the fatal termination has been distinctly traced to bronchitic inflammation.

Some years ago, I was requested to visit an infant three days old who had shown symptoms of great suffering from the moment of its birth, which was attributed to colicky pains in the abdomen. On

examining the abdomen, the commencement of erysipelatous inflammation was discovered, which, by the following day, had extended nearly over the whole trunk and thighs. Soon afterwards it began to sink, and died in about forty-eight hours after the first appearance of the external inflammation. On dissection, the most extensive ravages of disease were discovered in the abdomen, the effects of peritoneal inflammation—viz., considerable exudation, and the agglutination of the intestines to each other.

My friend and pupil Dr. Yates, when attending my dispensary, was requested to see a child one month old, on a Saturday evening. He found the abdomen tumefied and tense; there was an erysipelatous spot about the size of a half-crown on the inner part of the right thigh near the groin; the child appeared to him to be dangerously ill, but did not seem to be in much pain. Dr. Yates was informed that it had been taken ill on the preceding Thursday morning, after having passed a bad night; that the bowels were confined; and that she cried violently at times, and gave evidence of abdominal suffering. By the following afternoon, the erysipelatous inflammation had extended over the whole abdomen, the child was in a moribund state and died on the following morning.

Dissection.—The abdomen was considerably distended. The surface of the abdomen and thighs showed the remains of the erysipelatous inflammation, and there were, besides, much tumefaction and discoloration of the integuments at the lower part of the chest. On opening the abdomen, the intestines, which were moderately distended with flatus, appeared very vascular, as well as that part of the peritoneum which lines the cavity. Flakes of coagulable lymph of a yellow colour were spread over the intestines, and interposed between their convolutions, in some places forming slight adhesions. On displacing the intestines, a large quantity of this matter mixed with serum was found, a layer of yellow-coloured lymph covered the whole of the anterior and inferior surface of the left lobe of the liver, which adhered not only to the parietes of the abdomen, but was also glued to the stomach. The liver, when cut into, presented a very dark appearance, and the gall-bladder was nearly empty. The omentum was also covered with the above mentioned exudation. The stomach distended with air, was found to adhere to the diaphragm as well as to the liver. The colon was much contracted, and on being slit open, its mucous membrane was found very vascular, much elevated here and there, and coated with a dark, thick mucus.

The viscera of the pelvis were found slightly matted together by recent depositions of lymph. The ovaria were larger and softer than natural, and, with the uterus, were covered with coagulable lymph; the left broad ligament was attached to the peritoneum at the brim of the pelvis, by an interposed mass of lymph.

In the thorax, the pleura costalis was very vascular on both sides, and slight recent adhesions were observed with the pleura pulmonalis, by means of large masses of lymph precisely similar to those met with in the abdomen and pelvis.

The following case by Dr. Gartshore is extracted from the 2d

volume of the Medical Communications. "The child of —— Warwick, in June 1773, was observed to be uneasy and hot, to vomit a yellow fluid frequently, and to have fewer stools than is usual for a child of that age. A gentle emetic was first given, after which manna was copiously poured down, and glysters frequently exhibited, notwithstanding which, his bowels were difficultly and scantily evacuated. Two days after the abdomen was observed to be swelled, tense, painful to the touch, and had an inflamed appearance, which extended to the scrotum. Gentle aperients, glysters, fomentations, and the semicupium often repeated, were of no avail. He died on the twelfth day from his birth, and the fifth from the attack.

Dissection.—On opening the abdomen, we found the appearances very similar to what we had often observed in the true puerperal fever—viz., a purulent exudation covering the surface of the peritoneum, and an adhesion of many of the viscera to this membrane and to one another from the diaphragm downward, with some extravasated fluid in the abdominal cavity. On laying open the scrotum, that also was swelled and inflamed, and we found purulent matter upon the surface of the epididymis and testis on each side; the testes themselves appearing inflamed. But though the chylopoietic and spermatic organs seemed to have undergone superficial inflammation, there was no appearance of any tendency to mortification.

Underwood, when noticing the appearances on dissection in the bodies of several children who had died of erysipelas, states that "the contents of the belly have frequently been found glued together, and their surface covered with inflammatory exudation, exactly similar to that found in women who have died of puerperal fever. In males, the tunicæ vaginales have been sometimes filled with matter, which has evidently made its way from the cavity of the abdomen, and accounts for the appearances of the organs just now described; in females the labia pudendi are affected in like manner, the pus having forced a passage through the abdominal rings." (Diseases of Children, vol. I. p. 36.)

Some years ago, I was asked to see a father and son labouring under erysipelas of the head and face, as pure examples of idiopathic erysipelas. In both cases I was able to satisfy the gentleman who had been previously attending, that there was a general affection of the mucous membranes—that of the lungs in one, announced by the dyspnœa, cough and wheezing—and that of the stomach and bowels in the other, announced by thirst, very red tongue, tenderness and tumefaction of the abdomen. Both cases presented most unpromising appearances; proper remedies were applied; stimulants withdrawn: one recovered, but suffered during several years from the effects of chronic inflammation of the mucous membrane of the air-passages, and alimentary canal. On opening the body of the fatal case, traces of inflammation of the membranes of the brain were discovered, viz., vascularity and effusion; and, on slicing the brain, it was found to contain a larger quantity of blood than usual. The pericardium was attached to the heart at every point. The mucous membrane of the trachea and bronchia was found dark-coloured

from vascularity, and the tubes were filled with tough exudation of a reddish colour.

The mucous membrane of the stomach was red, vascular, and soft, easily separated, and covered with a thick tenacious exudation; this was also the condition of the mucous membrane of the intestines, particularly of the ileum, where the vascularity was much greater than in the stomach, and appearances were discovered indicating the commencement of ulceration.

In the year 1823, I was requested to see a woman with erysipelas of the abdomen, which had commenced about a fortnight after abortion. The whole surface of the belly was affected, the inflammation was of a deep purple colour, with sloughing at the umbilicus. Although this woman possessed considerable property, she was living in a state of abject misery, neglected by a brutal, drunken husband, and had been long suffering in mind, as well as in body. A very imperfect account could be obtained, either of her previous or present symptoms. On the following day some of the mysteries of her case were removed by the separation of a slough at the umbilicus, and the discharge of a large quantity of urine. The woman sunk under her sufferings; and on dissection, the peritoneal surface of the fundus of the bladder was found strongly attached to the peritoneal lining of the abdomen corresponding to the umbilicus; the bladder appeared to have been enormously distended and neglected, till at last the urine found an exit by this process of nature. This valuable preparation is in my museum.

The following abbreviated case of erysipelas is extracted from the pathological work of Tacheron.—A man was seized on 1st February, 1808, with anorexy, nausea, headache, severe pain of neck, and difficult deglutition. These symptoms gradually increased for some days, the face becoming swollen, inflamed and painful, with severe diarrhœa. He had cough and expectoration, which afterwards became bloody, and the patient died on the 19th. The following appearances were found on dissection: "In the head there was effusion of serum in considerable quantity (℥iss.) in the ventricles, between the membranes on the surface of the hemispheres, and also at the base of the brain. In the thorax several old adhesions were found between the surfaces of the pleura on both sides. The middle lobe of the right lung was reddish, hard, and did not crepitate; in consistence it resembled liver, and adhered to the portion of the mediastinum next the heart. On cutting into this lobe, a thick, grayish, puriform fluid oozed out; the rest of the lungs being healthy. The pericardium adhered in every part to the heart, but particularly on its right side, where it could not be separated without tearing its substance. The heart was not much larger than natural; there was a well marked ossification of one of the mitral valves, which appeared almost entirely detached. At the base of the aortic valves, there were also observed points of ossification, and cartilaginization. In the abdomen the intestines were found distended with gas; but, as well as the stomach, were in other respects healthy. The liver was larger than natural, and had contracted preternatural adhesions with the diaphragm; the convex surface of

its left lobe was covered with lardaceous substance, which entered the substance of this viscus to the depth of two or three lines. The gall-bladder contained polyhedrous concretions of the size of onion seeds, and of a dark-green colour; the cystic and choledic ducts were also filled with these substances. The spleen was three times its ordinary size, and so tender and soft, that the slightest pressure reduced it into a pulp. The kidneys were more vascular than natural."

The two following dissections of erysipelatous subjects, are extracted from Dr. Hastings' work on the lungs:—

"Dissection of case 5th, (page 228.)—The mucous membrane lining the bronchia and air-cells, was found very much inflamed. The tubes were filled with frothy serum, which in some places was mixed with a substance very like pus. There were several small tubercles in the structure of the lungs, but none of them appeared inflamed. There were elongated adhesions between the pleura pulmonalis and costalis. Abdominal viscera healthy.

"Dissection of case 6th. A considerable quantity of fibrin was found in the cavity of the abdomen. The intestines were generally glued together, and the peritoneum was highly vascular. When the thorax was opened, the lungs did not collapse. The pleura was not inflamed. The mucous membrane lining the trachea, bronchia and air-cells, was highly vascular, and the tubes were filled with a bloody serum. The right auricle and ventricle contained more blood than natural."

Pathological remarks on erysipelas.—Doubts have been already stated as to the existence of idiopathic erysipelas, when it does not proceed from external injury; and I am inclined to believe that when it does occur after external injury, it is even then, in most instances, only symptomatic of some internal affection, which may be a disorder of function, or one proceeding from structural lesion of some internal organ. Erysipelas appears to be an inflammation produced by one of those salutary efforts of the constitution, by which disease is sometimes removed or translated from one tissue to another: in this instance, from an internal organ to the skin, which has comparatively a less important part to act in the animal economy. In point of fact, erysipelas ought to be regarded very much in the light of a natural blister. But I shall now enumerate the points on which these opinions rest, and afterwards proceed to adduce the evidence.

1. The constitutional disturbance, which exists in all cases before the appearance of the erysipelatous inflammation, shows erysipelas to be merely an occasional symptom of some other diseased state of the system.

2. The mitigation of the internal disturbance which frequently follows the appearance of the cutaneous inflammation; and the reproduction of perhaps worse symptoms upon the sudden recession of the erysipelas.

3. The appearances on dissection.

4. The relief afforded by treatment founded on these opinions.

1. In proof of the first point, that constitutional disturbance exists in all cases prior to the appearance of the cutaneous inflammation, it

may be mentioned, that I have never yet seen a case of erysipelas, however slight, which was not preceded by constitutional symptoms. Renauldin, in his short but able article on erysipelas, in the "*Dictionnaire des Sciences Medicales,*" in giving an account of the symptoms and march of the disease, says, "It is rare that idiopathic erysipelas manifests itself, without having been preceded by some phenomena which denote an approaching alteration of health. But these precursory signs, being common to many diseases, do not announce an erysipelatous eruption, more than another of the exanthemata, or some other fever. It is thus that a person feels wandering pains in the limbs, spontaneous lassitude, cold, shivering, agitation, anxieties, and is generally out of order; he soon complains of disgust at food, nausea and inclination to vomit, violent headache, want of sleep;—a burning heat succeeds to the cold, and spreads over the whole body," &c.

In the previous page, in speaking of idiopathic erysipelas, Renauldin appears to entertain the same opinions that are here advocated; for, in his division of erysipelas into different kinds, he states, that the following division, which he has borrowed from Burserius, appears to him much more natural and useful than any other: "1. Idiopathic erysipelas, primitive or essential, that is to say, that which takes place spontaneously, without having been preceded by any other malady, *and which is produced by an internal cause* (*et qui nait d'une cause interne.*) 2. Symptomatic or secondary erysipelas, which depends upon another affection, and goes through its course with it: as phlegmon, œdema, every kind of continued fever, and different internal affections, sometimes of an acute, sometimes of a chronic nature. 3. Accidental erysipelas, which is occasioned fortuitously by a manifest external cause, acting immediately upon the skin; as the scorching rays of the sun, a superficial scald, the application of cantharides, or any other acrid and irritating substance, injuries, &c."

Cullen has given the following history of the symptoms:—"Erysipelas of the face comes on with a cold shivering, and other symptoms of pyrexia. The hot stage of this is frequently attended with a confusion of head and some degree of delirium; and almost always with drowsiness, or perhaps coma. The pulse is always frequent, and commonly full and hard. When these symptoms have continued for one, two, or at most three days, there appears on some part of the face a redness, &c. (Vol. i. p. 255.) Although Cullen specifies "erysipelas of the face," yet it is well known that this affection, attacking any other part of the body, is preceded by a similar train of symptoms.

Sydenham, in his letter on the plague of 1655 and the following year, observes, "that erysipelas began much in the same manner as the plague, viz.: with a shivering, followed by a feverish heat; so that those who never had the disease before think it is the plague, till it fixes itself in the leg or some other part."

These paragraphs are purposely introduced, in order that I may not be suspected, by those who are yet inexperienced, of having

dressed up a statement of the precursory symptoms to suit my own purposes.

Cutaneous inflammation, produced by a blister or a scald, will most undoubtedly excite general irritation, and more or less fever. In this case we have ocular proof to guide us; but in erysipelas we have the general commotion of the constitution first, which I have known to continue for ten, or twelve, or thirty days before the erysipelas appeared.

Cullen himself does not seem to have been well satisfied with the prevailing doctrines respecting erysipelas. In describing the different species of this affection, at page 75 of his Nosology, after mentioning the erysipelas pestilens of Sydenham, he observes, in a note, "This and the following species (erysipelas contagiosum) seem to be nothing but fevers with a symptomatic erythema;" and I find, in the next page, that Cullen entertained doubts regarding the idiopathic nature of several other cutaneous affections. Treating of miliary fever, for instance, he says, "That it is never idiopathic, I dare not affirm, in opposition to the opinion of all physicians from the middle of the seventeenth century to the present day, and contrary to the sentiments of some respectable modern physicians: but, as I know that experience, in this case, is often fallacious, and that physicians, for the most part, are but a herd of imitators, I am forced to remain doubtful."

No one can have been any length of time in practice without having met with instances of erysipelas occurring in individuals whose constitutions were destroyed by long-continued indulgence at table and drunkenness—in whose bodies there were abundant evidences of functional or structural disease of many important viscera; therefore, it is unnecessary to quote cases in proof of this.

That this disease frequently occurs during the progress of severe internal disorders, the records of medicine fully prove; several cases in my own practice have been already mentioned, when describing the appearances found on dissection, and similar cases have been quoted from Gartshore and Underwood. In addition to these facts, it may be mentioned that the late Dr. Gordon, of Aberdeen, in his able work on Puerperal Peritonitis, published in 1795, states, (at page 75,) that "one of the most favourable symptoms is an erysipelas on the extremities, or abscesses on different parts of the body; for such are certain signs of a salutary crisis." And in a note, (at page 58,) he observes: "This critical erysipelas most commonly fixes on the extremities, but, in a few instances, on the external surface of the abdomen, which happened in a case of puerperal fever which I attended in the year 1788. The case alluded to is the wife of William Walker, at Newbridge, whom I attended at the same time with Thomas M'Roberts' wife, whose history is given in Case VI. In both cases the crisis was by an erysipelas, which, in the latter, fixed on one of the upper extremities, and, in the former, on the integuments of the abdomen."

Cullen, in treating of pneumonia, states that "sometimes the disease disappears on the second or third day, while an erysipelas makes

its appearance on some external part, and, if this continue fixed, the pneumonic inflammation does not recur." (Vol. I. page 149.)

When treating of hepatitis, Cullen also observes that it "would seem to be sometimes cured by an erysipelas appearing in some external part. (Vol. I. page 171.)

From the repeated observations of such facts, I cannot avoid considering erysipelas in the light of a natural blister; and it is very probable that the ancients were first led to apply external irritants and the actual cautery, by observing the beneficial effects of erysipelatous inflammation occurring under severe internal disease.

2. The second point of evidence on which these opinions are founded, is the mitigation of the internal disturbance which frequently follows the appearance of the cutaneous inflammation; and the reproduction of bad, nay, perhaps, of worse symptoms, than had previously existed, upon its sudden recession.

These facts are so often witnessed, that I feel obliged to receive them as a part of the medical evidence of the case.

Sydenham's third reason for considering erysipelas to resemble the plague, is, "The expulsion of the malignant matter to the skin on the third or fourth day, with an abatement of the symptoms."

Hoffman, in treating of erysipelas, observes, that "it sometimes exhibits a manifest mark of health; other diseases, especially a convulsive asthma, and a convulsive colic, have been removed by an attack of erysipelas." In another passage he states, "But those who die of this disease, are carried off by a fever, which is mostly joined with a difficulty of breathing—sometimes with a delirium—sometimes with drowsiness, &c."—The same author again remarks, that "it is rendered very dangerous by improper treatment. I have seen erysipelas *strike in*, after taking a vomit and a strong purgative, when an inflammation of the stomach, and death, have followed. Bleeding also has struck it in, and rendered it wandering with much greater inconvenience. I have also observed, that after being repelled in the leg, by an application formed of camphor, red lead, and bole, it has been followed by a high fever, and intolerable pain of stomach, a great difficulty of breathing, bilious vomiting, loss of strength and appetite.—These symptoms have not gone off, till the erysipelas had been invited back to its former seat by a blister and antispasmodics and mild sudorifics; and I certainly know, (continues Hoffman,) that an erysipelas of the head, having been treated by repellent, cooling, binding, or too spirituous applications and camphorated liniments, has brought on a vertigo, lethargic disorders and quinsey, delirium and palsy of the tongue; which evils have frequently proved fatal to persons in years, and scorbutic habits."

"A gentleman," says Dr. Swain, the accomplished translator of Sydenham's works, "who, by the cold air, suddenly struck in the erysipelas of his face, had all the symptoms of an inflammation of the brain, and was in the most imminent danger, appeared to be snatched from death by bleeding in the jugular vein, and besides that, applying two large blisters to both sides of his neck, bleeding him in the arm, and giving him a strong purge, all which was done in the space of an hour."

Mr. Abernethy noticed a case of this kind in his lectures. "A stout healthy young man had an attack of erysipelas on his hand; he plunged it into cold water, and was soon seized with insensibility; he fell down in a state of torpor, and soon died."

This gentleman is also represented to have said, in his lectures, "I'll be hanged if erysipelas is not always the result of a disordered state of the digestive organs. I never see it come on if the digestive organs be right, and it goes away as soon as they are put right. Now what is the medical practice? they powder the part a little, and they give bark, and so on !! "

"It has been observed," says Wilson Philip, in his work on Simple and Eruptive Fevers, Vol. I. page 362, "that if the typhus has commenced before the appearance of this eruption (erysipelas,) the symptoms of *synocha* are often recalled by it. They are not only recalled but maintained; for the typhus, which supervenes towards the end of an erysipelatous fever, is less considerable, in proportion to the preceding symptoms, than in other varieties of synochus." And at page 367, he observes: "Besides, the erysipelatous, like other eruptions which appear in continued fevers, has been known suddenly to recede; an alarming train of symptoms, of which debility is the characteristic symptom, supervene." In another place, he also remarks: "This is also to be remembered, that when retrocession takes place, the patient is seldom out of danger till the eruption is recalled, which is done with greater difficulty the more he is debilitated."

It may be said that the appearance of the erysipelatous inflammation does not *always* produce mitigation of the internal disease. The simple answer to this objection is, neither does an artificial blister, applied for the express purpose of translating the diseased action to the surface, which I maintain the erysipelas is intended by nature to effect. In severe inflammation of an internal organ, a blister, however large, has but little effect, if applied before the disease is very much subdued by depletion. In like manner, I may be allowed to say respecting erysipelas, that if the internal disease exist in a greater ratio than the cutaneous inflammation, then little or no constitutional relief can be expected.

At the period when the erysipelatous inflammation begins to decline, particularly under improper treatment, it is frequently observed that the functions of the brain or lungs, or perhaps both, appear to become suddenly and seriously affected, accompanied by oppression at the præcordia, and other alarming symptoms. In such circumstances, it is said, in ordinary medical language, that the disease has spread, or extended itself from the skin to internal organs; others speak of it as a translation or metastasis. Cullen denied the doctrine of translation, and was rather inclined to adopt the idea of the extension of the inflammation. Thus, when the erysipelas attacks the head, and when the brain becomes affected, it is said to be in consequence of the extension of the inflammation through the contiguous parts. There can be no doubt that a fair translation does occasionally take place in inflammatory complaints, particularly when connected with erysipelas; so much so, that we actually find a variety of erysipelas in the books, termed "*errati-*

cum." In general, however, attentive observation has long convinced me, that in erysipelas, diseased action had existed in the internal organ before the external inflammation appeared, during what may be termed the eruptive fever, and that when the cutaneous inflammation occurred, acting the part of an effectual contra-irritant, it mitigated, but did not altogether remove the original disease. In erysipelas, the attention of the patient and also of the practitioner is attracted by the burning heat and pain of the external inflammation; but the internal disease becomes again apparent when the effect of the external inflammation subsides. Here again we cannot fail to discover additional proof of the analogy between a natural and an artificial blister.

Before quitting this part of the subject, a few remarks may be made regarding the mitigation of symptoms upon the appearance of the erysipelas, although it is repeating nearly the same observations which were made in the first volume, when treating of the General Pathology of Eruptive Fevers. The relief will not strike the eye of a symptomatical physician, who cannot see the *pathological* mitigation of symptoms, because the patient, who may have been previously lethargic or comatose, now complains most vehemently. Formerly there may have been little complaint, and little or no febrile movement; now, however, there may be great anxiety, restlessness, pain, with febrile symptoms well developed; but upon minute examination of the particulars of a case of simple erysipelas, these will be found to depend principally, if not entirely, upon the external inflammation. Here again we observe the analogous effects of a common blister, which very frequently aggravates the patient's suffering, while it is mitigating the disease.

3. The third point on which these doctrines are founded, is the appearances found on dissection; and a triumphant appeal may be made to those dissections which are already recorded under the proper head. I may here take an opportunity, however, of shortly stating the appearances found in the brain of a man affected with erysipelas. A respectable spirit dealer was taken into the surgical hospital, affected with spontaneous erysipelas of the right arm; he had been several days ill. When Mr. Syme saw him, there were symptoms indicating violent inflammation of the brain. Immediately before my visit, the diseased part had been scarified, from which twelve ounces of blood were abstracted. The inflammation on the forearm was severe, but above the elbow it was superficial, and did not extend quite to the axilla. He was continually talking, and could scarcely be restrained in bed, declaring he wanted to be up, for he had no complaint whatever; his eye was bright and lively; the expression of countenance displayed no signs of sinking; tongue parched and furred towards the root; pulse 98, and soft; considerable rigidity of the flexor muscles of the right arm. We were of opinion, that the man was in great and immediate danger; but more from the inflammatory action in the brain than from the erysipelas. The head was ordered to be shaved, and cold applied. Before this was done, he became more furious, and continued so till within an hour of his death, during which short period he was comatose; the

rigidity was observed to take place in both arms, and to increase till the time of his death. After great difficulty the friends agreed to allow the head to be examined, but the head only; and, as had been predicted, great vascularity was discovered in the membranes of the brain, but particularly at its base; the brain itself was generally soft, especially the middle lobes, and more particularly still, the *corpora striata*, and especially that on the left side, which was reduced into a state of complete ramollissement; the white substance of the brain was generally of a brownish hue—an appearance which is known to be produced when its vessels contain much blood. A small cavity, containing a minute portion of blood, was found in the substance of the middle lobe on the left side.

4. I have now to bring forward a most important part of the evidence in proof of the views here advocated, viz.: the relief afforded by proper practice.

Treatment of erysipelas.—It is truly lamentable to reflect how fatal erysipelas has always been, and continues to be, not only in public hospitals, but in private practice. It is not my intention, and certainly it is not my interest, to give offence to any one, but I cannot resist expressing an honest opinion, that much of this fatality is the result of bad practice, founded upon erroneous pathological notions, or, perhaps, if one may be allowed to judge from the vacillating measures too often employed, upon no fixed notions whatever. When engaged in lecturing or in writing, I think myself bound in duty, as well as in honour, to adopt the maxim of Aristotle, when he said, "Plato is my friend, but truth much more." However highly a medical man may be respected, and whatever friendship may be felt towards him, such circumstances will, I trust, never prevent me from expressing an opinion respecting any particular view or mode of practice which he may pursue, particularly when it is destructive to human life.

Many of my medical acquaintances are as much afraid of erysipelas as they would be of the plague: others, from the dread of typhoid symptoms, and of mortification and putridity, aggravate the disease by improper remedies.

The symptoms which are called typhoid are often the consequence of the intensity and depth of the external inflammation, running into extensive destruction of parts, by diffuse suppuration and mortification. This cannot be denied; and when the case arrives at these stages, patients have but little chance of recovery under any plan of treatment; but the question comes to be, How are these bad consequences to be prevented in subsequent cases? The answer is easy, and the practice simple, provided medical men would use the common sense with which they are endowed, and give up a prejudice that has been inculcated on their minds from the earliest period of their lives—forgetting that there is any thing mysterious in erysipelas—and learning to treat each case that comes before them upon its own individual merits.

Some take large quantities of blood, indiscriminately from every patient, because they have seen the practice successful in one or two instances. Others give the most powerful stimulants and tonics in

every case, because they have seen that plan succeed in a few instances. A third set depend upon opiates, or some other *one* particular remedy. A fourth class will be found to draw blood, but not in sufficient quantity, and perhaps they repeat the operation in small quantities without mitigating the disease, while they do great harm by debilitating the patient; and in order to counteract this they give stimulants too soon. Some timid practitioners will be found to do nothing but to keep open the bowels, and sprinkle the diseased part with flour. Often have I had occasion to commiserate the wretched patients, who with dry, parched tongues, were doomed to swallow beef steaks—and others, consumed by burning thirst, compelled to take wine and even brandy! Some practitioners make incisions into erysipelatous parts in all circumstances, while others decry the practice, except when matter is formed, as in phlegmonous erysipelas.

Typhoid symptoms, besides being produced by mortification, and extensive destruction of the affected parts, are frequently occasioned by the continuauce or concentration of acute or chronic diseased action in a vital organ, as seen in the cases already recorded under the head "*Appearances on dissection.*" The next question comes to be, after this information is obtained, How can these results of diseased action be prevented in subsequent cases? The answer is neither so easy, nor the practice so simple, as in the case of the external inflammation, where that only has to be subdued; because it is now fully established that erysipelas occurs complicated with a great many diseases of internal organs, and that inflammation of these (even of the brain itself,) may go on, and be beyond the reach of art, without exciting such violent symptoms as to make the patient or his friends, nay, even some medical men, aware that his life is in the least danger. I cannot but agree with my late lamented friend Dr. Armstrong, when he stated that "pure surgery is like a vampire, whose daily food is human blood," and deprecate the conduct of those pure surgeons who boast of enjoying immense wealth from medical, as well as surgical practice, and at the same time do not blush to confess their ignorance of what may be called medical pathology; nay, who even decry every part of the profession but the practice of pure surgery. With regard to the great doctors of London, Mr. Abernethy used to tell his pupils what they do and say about erysipelas. "I will tell you (said he) what the *doctors* say about that; they say you had better not meddle with it at all. You may powder it a little if you please, but do not attempt to repel it, for if you do, you will have it affect some other part, perhaps some affection of a vital organ may take place. Now this is true enough, (continued he,) for if you try to drive it away, if you put on your cold washes, or play any of your surgical tricks, why, you have a metastasis, as they call it, and the man dies!"

General bleeding was practised in erysipelas by Sydenham, and has since been followed by many practitioners; but either they have not been able to support the practice by sound reasoning, or bleeding has been injudiciously employed, and has therefore frequently fallen into disrepute. Bateman says, in his Synopsis, page 131, "Blood-letting, which has been recommended as the principal re-

medy for the acute erysipelas, is seldom requisite; and unless there is considerable tendency to delirium or coma, cannot be repeated with advantage, at least in London and other large towns." "Venesection (says Mason Good) was formerly recommended, and has been so of late by *few writers*, but upon mistaken principles. I can conceive few cases in which it can be serviceable, and the application of leeches always exasperates the efflorescence."

I know no remedy so decidedly and immediately efficacious as general bleeding, if it be performed sufficiently early in the attack, and in constitutions not greatly debilitated by previous disease or bad habits: whereas, nothing but bad consequences can be expected to result from general bleeding in erysipelas, when the disease, having passed its first stage, is about to terminate in extensive suppuration, or in gangrene, or when it has taken place towards the termination of an acute or chronic inflammation of a vital organ, or at the termination of fevers. General bleeding may be attended also with bad consequences when employed in the following circumstances: 1. When the bleeding is not carried far enough to arrest the disease, at the same time that it destroys much strength. 2. When not followed up at a sufficiently short interval by a second general bleeding—a local abstraction of blood—or by purgatives, contra-stimulants, &c.

In the year 1824, I was requested to see a young man, residing near Leith Fort, who had part of the leg and the whole of the thigh affected with erysipelatous inflammation, the disease rapidly extending over the abdomen. The part affected was very red, painful and tumefied. The constitutional symptoms were severe. The disease was attributed to his having knocked his knee against the edge of a grate; no contusion was to be perceived, but he stated, that for some time he had been unwell, feeling drowsy through the day, and restless at night, being often chilly, with want of appetite, and other symptoms of impaired health. He had been thus affected for perhaps ten days or a fortnight before the slight accident.

A vein was immediately opened, and about twenty ounces of blood abstracted, when a tendency to syncope took place, and the arm was tied up. Upon looking at the inflamed part immediately after the bleeding, no trace of redness could be observed, except in a circle of about two inches round the part on which the blow had been received. Dr. T. P. Lucas, now in the royal artillery, who was present at the time, cannot forget the impression this case made upon his mind. The treatment was followed up by antimony, laxatives and the antiphlogistic regimen. A small abscess was opened in the course of two days after the bleeding, and the patient made a rapid recovery.

A hard-working woman, aged 70, frequently much exposed during laborious occupation as a water-carrier,* was seized in December, 1823, with what she called a severe cold. Her voice was altered; she had a cough, severe headache, sickness and oppression at the præcordia, together with constant chilliness. These symptoms

* The last of her class—the old "*water cadies*" of Edinburgh.

existed for some days, attended by loss of appetite and want of sleep; but she thought they would wear away. At length she felt heat and acute pain in the integuments of the upper part of the face and head; general swelling soon followed, severely affecting the ears, which were quite hard to the touch. Even those symptoms were allowed to continue for three days, before she applied to my dispensary for advice, when, at length, the symptoms became alarming, and the night previous to my seeing her, she was delirious. I found her labouring under great headache, general oppression and fever. The skin was hot and dry; tongue loaded; thirst; pulse quick and hard; together with considerable prostration of strength. One of my pupils (Dr. Henry Lucas) was requested to bleed her to the near approach of syncope; but not having succeeded in making a large orifice, and being, perhaps, rather afraid to take away much blood from a woman of her advanced age, he did not bleed her so as to make any impression on the disease, or upon the constitution; but he came immediately to inform me of his proceedings. Another gentleman, who was further advanced in the profession, (Mr. Munro,) returned with Dr. Lucas, and bled the patient till syncope took place. The swelling and redness of the parts immediately disappeared; the thickening of the ear only being left, but which went off in the course of a day or two. The general oppression, fever, &c., were also immediately subdued—passage was obtained from her bowels before bed-time, when she got a large opiate; she passed a good night. A solution of tartrate of antimony was given to act as a contra-stimulant, but of this she took only two doses. In four days she was convalescent, walking about the house; and made an excellent recovery.

Many important cases could be quoted showing similar results, even in some instances where fears were entertained that the disease had advanced too far, from the appearances of debility under which the patients laboured. I have never experienced bad effects from opening a vein; but care has always been taken to restrict the employment of this remedy according to the circumstances already noticed.

The application of leeches upon the inflamed part stands next in importance to general bleeding. Their number is to be regulated by the age and constitution of the patient, and also by the intensity, extent and duration of the disease:—to an adult with ordinary strength, I would scarcely think of applying fewer than twelve or eighteen. This practice I have been in the habit of adopting ever since the year 1811, and with uniform success. But I apply them only when the disease is in its first stage, and, contrary to the predictions of many individuals, neither ulceration nor mortification has ever ensued. Medical gentlemen have seen the patients twenty-four hours after the application of leeches, when they could scarcely see marks of the bites. Previously they did not believe that any except bad consequences could ensue from such practice.

The application of leeches possesses advantages over scarifications in the first stage of erysipelas, and before either hardness of the skin or suppuration has taken place. More blood can be evacuated by

the leeches, unless the incisions be made very deep, and patients will be more easily persuaded to allow the application of the leeches than to have scarifications made. But, in the other circumstances already mentioned, viz.: the hardness of the part, or the existence of matter, the knife is to be used in preference. Should suppuration have taken place beneath a fascia, the incisions ought to be extensive, in order to give it free vent; but I have seen profuse hæmorrhage, on several occasions, from punctures, which could not be restrained. The patients would, I believe, have died of the disease in any circumstances; but they began to sink immediately, and never recovered the loss of blood. In one of these patients the part was carefully examined by the late Dr. Dease, surgeon to the forces, and Mr. Marshall, now assistant surgeon in the 87th regiment, and, I believe, my learned and facetious friend, the late Surgeon Martindale, of the 17th foot, with a view to discover if any large vessel had been wounded, but none could be found. Indeed, we thought it would be so, and that the dark-coloured blood, which flowed in a large stream from the wound, had been previously effused into the cellular tissue.

It is necessary to obtain free motions from the bowels, at first, by purgative medicines, and this may be subsequently effected by the use of antimony, which cannot be too highly extolled, from the effects it produces as a contra-stimulant in this disease. It is a remedy which may be frequently trusted to exclusively in very slight cases of erysipelas, where there are no headache, delirium, difficulty of breathing or oppression at the præcordia, no pain on pressure in the abdomen, and no diarrhœa. The reader will, therefore, perceive that I neither think it necessary to bleed nor to apply leeches, unless compelled by the constitutional symptoms, or the severe pain in the inflamed part. In many cases, which fall under my notice, where an internal organ is suffering from diseased action, I trust to the leeches, without having recourse to general bleeding, particularly when afraid that the disease may be too far advanced for the lancet.

Opiates are often of considerable benefit in erysipelas, although they have aggravated the external irritation in several instances in which they have been prescribed, and particularly in one case where the disease affected the whole body. The use of opiates appears to be most advantageous in cases which have passed into suppuration or mortification, but in which there is no tendency to coma. Some practitioners have great faith in emetics; but they seem to be serviceable in very recent cases only, where the disease depends upon some acrid or indigestible substance taken into the stomach; and, by the speedy evacuation of which, the progress of the erysipelas will, in many instances, be checked.

Blisters applied to the part affected have, I understand, been much used in France, where they are highly extolled; but I cannot speak from my own experience of them.

With respect to tonics and stimulants, there can be no doubt of the great advantages occasionally derived from their employment in certain cases where the disease is so far advanced before medical aid is obtained that the strength and vital powers have begun to sink—where suppuration has taken place, and the matter already evacu-

ated—or where dead parts are undergoing the process of separation from the living.

The best local applications are warm fomentations in the first instance, and should the part show a tendency to suppurate, light poultices may be applied alternately with fomentations. Cold astringent applications and evaporating lotions will sometimes be found to soothe the patient's sufferings, by removing the pungent heat for the time. I would recommend, however, that they should not be used until the bowels have been well opened, or till bleeding and other antiphlogistic means have been employed. Speaking of cold applications, Renauldin declares they ought to be entirely proscribed, and that he could cite many examples of their baneful effects; and he actually quotes such instances on the authority of Hagendorn, Hoffman and Fabricius ab Aquapendente.* In truth, it will be seen, from the preceding statements, that erysipelas must be treated upon very different pathological principles from those stated in the London Medical and Physical Journal, by Mr. Earle, who considers erysipelas to be "*essentially an affection of the skin.*" I shall continue to quote the opinion of this clever surgeon till he adopts wiser views, should he continue to anathematize me in every number of the Medical Gazette.

* Dict. des Sciences Med., p. 267.

CHAPTER III.

PAPULAR DISEASES.

Under this head I shall speak of the diseases which Willan has termed Strofulus, Lichin, and Prurigo, without splitting them into the same number of varieties.

Willan has divided strofulus into five species, viz.: S. intertinctus, S. albidus, S. confertus, S. volaticus, S. candidus; but I shall not treat of them separately, because they are not, even according to Bateman, "very important objects of medical practice."

With respect to the second class, lichen, I shall speak of it also under one head, as Bateman himself admits that "there is scarcely any limit to the varieties of these papular affections." Were I to follow the artificial classification, I should have to treat of Lichen simplex, L. pilaris, L. circumscriptus, L. agrius, L. lividus, L. tropicus, L. urticatus.

As to the third class of this order, I shall describe only one variety, prurigo, instead of four or five, as the same treatment is to be followed in all, whether it occur in youth or old age, upon the neck or *pudenda muliebris.*

By the term papular eruption, a number of small elevations under the cuticle is meant, generally having an inflamed base, sometimes, although seldom, containing a fluid, or suppurating, and commonly terminating in desquamation of the cuticle.

STROFULUS.

Strofulus is a papular affection of the skin, to which infants aud children are liable, and, in common language, is known by the term "gum;"—if it is reddish, it is called "the red gum," if whitish, the "white gum," and so on. It is a form of eruption depending either upon irritation in the primæ viæ, or upon teething, and is most commonly met with in those infants who are fed with the spoon too early.

Treatment of strofulus.—I have always observed that those children thrive best, and have fewest complaints, who get least physic, and who are brought up at the breast; I would therefore strongly recommend, that, in general, spoon-meat should not be given to children for the first three months, and physic as rarely as possible. Should this eruption appear, care must be taken not to

expose the patient to cold or damp air, and ablutions with tepid water are to be had recourse to twice a day. When the child is asleep, it should not be covered with too many bed-clothes: and should it appear during the period of dentition, the gums must be scarified occasionally. If fever takes place, the usual remedies should be exhibited, and the diet regulated.

LICHEN.

This disease is to be regarded as strofulus occurring in adults. Dr. Willan has defined it, "an extensive eruption of papulæ affecting adults, connected with internal disorder, usually terminating in scurf; recurrent, not contagious." I have no doubt that the different varieties of lichen depend partly upon gastro-intestinal irritation, and partly upon determination of blood to the surface, as occurs during cold weather, and when the body is over-heated, either by too much clothing or violent exercise. The great characteristic of the disease is tingling or itching, aggravated upon going to bed; and the purest example of it is to be found in that variety which is called "prickly heat." It sometimes occurs in old age, when it is attributed to debility of constitution, which, I am convinced from experince, is not so frequently the cause as indigestible food.

Treatment of lichen.—Regular attention to the bowels, avoiding every acrid and indigestible kind of food, and violent exercise, together with the use of the tepid bath, and the local application of common vinegar, or the juice of limes, constitute the treatment.

PRURIGO.

This is a disease resembling lichen, excepting that the papulæ possess more of a chronic than an acute character, and that the itching is more violent and intolerable; indeed, I have considerable doubts whether it ought not to be considered as an aggravated form of lichen. The chief form under which we see the complaint, is, in females, in and about the labia pudendi; the desire to relieve the sensation by scratching is very difficult to suppress, and it is increased by exposure to heat, the action of walking, &c. It may be produced in this region of the body by the causes already mentioned when treating of lichen, as also by ascarides in the rectum, and the acrid nature of discharges from the vagina.

Treatment of prurigo.—The general principles of treatment must be the same as those described under the last head, with the following additions, when it attacks the parts of generation—viz.: frequent ablutions, sometimes using astringent washes, and occasionally throwing them into the vagina; and if there be much irritation and swelling, the recumbent posture is very necessary. In such cases, particularly when the inflammation of the part runs high, I have seen the best effects from one general bleeding. If ascarides be suspected to exist in the rectum, enemata with turpentine should be employed.

In extreme cases, when the parts are very tender, considerable benefit has been derived from the application of a solution of the nitrate of silver to the part, of the strength of six grains to the ounce. An alterative course of mercury, either in the form of blue-pill, or that which goes under the denomination of Plumber's, is sometimes beneficial, as is also Harrogate water. A minute examination should be made to ascertain if any pediculi exist, which often create intolerable itching and red papular elevations. The best method of destroying these is by applying a little calomel, mixed with hog's lard; the precipitate produced by throwing calomel into lime-water; or a little mercurial ointment.

CHAPTER IV.

PUSTULAR DISEASES.

In this class I shall treat of Impetigo, Porrigo, Scabies, Ecthyma, Rupia, Acne and Sycosis. The last two have been included by Willan in his seventh order Tubercula; and I have excluded one disease which he has comprehended in his order Pustulæ, viz., variola, because it ought to be classed among the fevers with eruptions, where I have placed it in the first volume.

A pustule is known by an elevation of the cuticle, with an inflamed base, containing pus, which is formed sooner or later, if the disease be not cut short.

IMPETIGO.

Impetigo may be regarded as a pustular eruption, the pustules being small, irregularly circumscribed, with but a slight elevation of the cuticle, and terminating in scabs. It is produced and accompanied by active inflammation and considerable irritation of the parts affected, which terminate in a chronic action of the vessels engaged in the disease. In the first stage, the eruption is vesicular, but, like small-pox and other similar diseases, it becomes pustular, and terminates either in the formation of scales, presenting an appearance like *lepra vulgaris* and *psoriasis*, or when there is a number of pustules accumulated in one part; the matter is discharged, and dries, forming extensive scabs, which irritate the surrounding parts, particularly if removed incautiously. Willan and Bateman describe five varieties, viz.: Impetigo figurata—I. sparsa—I. erysipelatodes—I. scabida—I. rodens; four of which differ from each other only in the intensity and extent of the diseased action and the shape and distribution of the pustules; and they seem to have confounded this disease with scabies. Their fifth variety, the "*Impetigo rodens*," Bateman admits he has never seen, but describes it to be a cancerous ulceration extending deeply and extensively, and which is said to commence with a cluster of pustules. Impetiginous disorders are not necessarily accompanied by fever, neither are they contagious, nor, it is said, communicable by inoculation.

Causes of impetigo.—Dr. Willan believes that this disease is frequently preceded by constitutional disorder, such as pains in the head and stomach; but Mr. Plumbe is of opinion, that when these

exist, they are owing to accidental circumstances; and that the disease is always occasioned by local irritation, such as the application of alkali to the skin, &c. My experience leads me rather to agree with Dr. Willan, admitting, at the same time, that the exciting cause may be, in many cases, fairly attributed to the local application of substances which irritate the skin, as sugar, lime, pepper, &c., but which would produce no local effects were the constitution not strongly predisposed to cuticular inflammation. The predisposition is, in general, to be sought for in the condition of the mucous membranes, and sometimes in the functions of the liver, kidneys, &c.

Treatment of impetigo.—Fomentation, when there is much inflammation, together with the tepid bath, gentle laxatives repeated daily, attention to the diet, and avoiding irritating the part by scratching, and the rough or incautious removal of the scabs, are all points of importance. At the same time, care should be taken to avoid even a chance of the reapplication of the irritating cause. In the acute stage, I have often seen it serviceable to take a little blood from the part, either by means of a fine pointed lancet, or a sharp needle; and if pus be formed, it may be evacuated by the same means with benefit. When the inflammation becomes chronic, stimulating and astringent washes may be used, such as lime-juice, common vinegar, solutions of the sulphates of zinc, alumina, or copper, or even, what is still better, if there be much pain and irritation, of the nitrate of silver. Cases may occur in which certain well-known ointments, as those of the acetate of lead, nitrate of mercury, &c., may be found useful; but I have generally observed that greasy applications rather retard the cure.

PORRIGO.

Porrigo is a contagious pustular disease, which principally affects the young, and may be divided into two kinds, one of which is mild, depending upon some constitutional irritation, and affecting the head and face of children who are generally of a full habit of body. The other variety affects the scalp, often extensively, and is, in particular constitutions and in circumstances of neglect, very intractable.

I shall first treat of all the mild varieties, under the term *porrigo larvalis*, (commonly called *crusta lactea*,) for, notwithstanding what has been stated by authors, the affection called *porrigo larvalis*, and *porrigo favosa*, differ so very little, either in their causes or in their appearance, that I consider it unnecessary to give a separate description of each.

I shall afterwards notice the true ring-worm of the scalp, which is termed by some authors simply *porrigo*, by others *P. furfurans*, *P. lupinosa*, *P. scutulata*.

"The porrigo (says Bateman) is a contagious disease, principally characterized by an eruption of the pustules, denominated *favi achores*, unaccompanied with fever. The several appearances which the disorder assumes, are reducible to five or six specific forms.

"1. The porrigo *larvalis*, or *crusta lactea* of authors, is almost

exclusively a disease of infancy. It commonly appears first on the forehead and cheeks, in an eruption of numerous minute and whitish *achores*, which are crowded together upon a red surface. These pustules soon break, and discharge a viscid fluid, which concretes into thin yellowish scabs. As the pustular patches spread, the discharge is renewed, and continued also from beneath the scabs, increasing their thickness and extent, until the forehead, cheeks, and even the whole face, become enveloped, as by a mask, (whence the epithet *larvalis*,) the eyelids and nose alone remaining exempt from the incrustation. The eruption is liable, however, to considerable variation in its course; the discharge being sometimes profuse, and the surface red and excoriated—and at other times scarcely perceptible, so that the surface remains covered with a dry and brown scab. When the scab ultimately falls off, and ceases to be renewed, a red, elevated and tender cuticle marked with deep lines, and exfoliating several times, is left behind; differing from that which succeeds to impetigo, inasmuch as it does not crack and form deep fissures.

"Smaller patches of the disease not unfrequently appear about the neck and breast, and sometimes on the extremities, and the ears and scalp are usually affected in the course of its progress. In general, the health of the child is not materially affected, especially when the eruption does not appear in the early period of lactation; but it is always accompanied with considerable itching and irritation, which, in young infants, often greatly diminish the natural sleep, and disturb the digestion, whence much debility sometimes ensues; the eyes and eyelids become inflamed, and purulent discharges take place from them, and from the ears; the parotid, and subsequently the mesenteric glands, become inflamed; and marasmus, with diarrhœa and hectic, cuts off the patient.

"Most commonly, however, the disease terminates favourably, though its duration is often long and uncertain. It sometimes puts on a healing appearance for a time, and then returns with severity. Sometimes it disappears spontaneously soon after weaning, or after the cutting of the first teeth; and sometimes it will continue from two or three months to a year and a half, or even longer. It is remarkable, however, that whatever excoriation may be produced, no permanent deformity ensues." (Bateman on Cutaneous Diseases, p. 158.)

The only additional observation I shall make respecting the *porrigo favosa*, is, that it occurs in adults, particularly in females, and affects principally the scalp, the hair falling off, and becoming of a lighter colour. In both affections, small glands in the neck and behind the ears enlarge, and sometimes suppurate. The worst cases of the disease called porrigo furfurans occur after fevers, particularly the eruptive, and also when a scurfy state of the scalp has existed for a considerable time previous to the attack.

Treatment of the milder forms of porrigo.—As these diseases occur under some constitutional irritation, local applications are not beneficial till the original causes are removed. If they depend on teething, great attention should be paid to relieve the irritation of the gums, by dividing them freely as the teeth advance; and also

to the diet, that it be light and easy of digestion; as well as to keep the bowels in a proper state. Every care must be taken to keep the parts clean, and to avoid the application of all ointments, at least in the first stages, when there is acute inflammation. When the inflammation runs high, immediate advantage may be derived from leeches; and I have had no hesitation in applying them to the face. When the inflammation is considerable, but does not run so high as to require leeching, benefit is obtained by bathing the parts with warm saturnine lotions. Should the scabs, from neglect or other causes, become extensive or hard, they should be carefully removed by means of tepid fomentations or poultices. Under the best treatment, the disease will return with each pair of teeth; and not only does it trouble children when getting their milk-teeth, but also occasionally when cutting the permanent ones. In many of the cases which occur after eruptive and other fevers, the state of the tongue, the thirst, the appearance of the secretions, and the tumefaction and tenderness of the abdomen, evince that there is considerable irritation or inflammation of the mucous membrane of the stomach and bowels. In such circumstances, the patient may be placed under the following treatment:—Gentle aromatic laxatives, repeated according to the state of the bowels; a diet consisting of bread and milk, arrow-root, sago, whey, &c.; the application of leeches to the abdomen;—the tepid bath; and sometimes an eruption of pustules may be produced upon the belly by means of antimonial ointment.

Mr. Plumbe states, at page 121 of his excellent work on "Diseases of the Skin," that, in much neglected cases, a perfect cure has seldom been produced, except when "the operation of plucking the hair from the diseased part has been diligently followed up, and every other possible means taken to check inflammatory action." I must confess that such cases are very rare in this country, so much so, that in my dispensary practice for many years, the patients averaging about four thousand annually, no such intractable instances have occurred, notwithstanding the reputation for dirtiness which the Scotch have acquired in the minds of their English neighbours!

Appearances of the most severe forms of porrigo.—The following description of the disease is compiled from the work of Mr. Plumbe, who has devoted much time and attention to affections of the skin, and more particularly to this disease.

"The degree of obstinacy evinced by a larger portion of cases of this disease, the interruption it frequently occasions to the education of children, (its known infectious nature preventing their admission into schools,) combine with other circumstances to give it a peculiar interest." Mr. Plumbe thinks that there are two particular forms of the disease which produce all the varieties mentioned by authors, and that both occasionally arise spontaneously, or are the result of infection, and that the one may produce the other.

In the first form, the hair falls off, leaving sometimes, but not always, circular patches, the margin being clearly defined, and exhibiting a line of scurf considerably thicker than that in the centre. In the centre of the spots, the skin is scurfy, and the hair thinned, and easily extracted by the finger and thumb. What remains of it

is unhealthy in appearance, some hairs being thin and delicate, others being the remains or stumps of those which have been broken, or dropped off. There is a downy substance just rising above, and mixing with the scurf, evidently formed by feeble attempts at the production of new hair. The spots vary in number and in dimensions, and on the hair being removed, exhibit a red and slightly inflamed appearance. Here and there this form of the disease will be observed in an incipient state, and is known by small discolorations of a yellowish red colour before the hair begins to drop off. The spots show no pustular appearance at the margins, and enlarge slowly in diameter till they unite; but if stimuli, in the form of ointments, have been applied, a more active condition often takes place, and minute achores form not only on the margins, but on other parts, accompanied by irritation, heat and itching. The pustules discharge their contents, and form scabs of a light straw colour, under which extensive abrasions of the cutis are sometimes found.

Spots of the same nature may be seen on different parts of the body, at the commencement of the affection of the scalp, and for some time after, but they generally disappear before its termination.

This is the usual appearance of the disease in children, whose general health is unimpaired, and skin not particularly irritable; but in opposite conditions, small pustules, instead of vesicles, are perceived, which dry and form a circular scab. The ring of pustules enlarging in the same manner as that of the vesicles, and their contents drying, and adhering to the margin of the scab already formed, increase its bulk and diameter. The scab becomes a source of increased irritation, and the pustules under its margin are enlarged and more elevated, raising its edges, and giving the appearance of the P. lupinosa.

The other variety of porrigo never assumes the circular, circumscribed form of the one just described; but is diffused over a considerable space, and is pustular from the beginning on the scalp. It can, like the other, be identified with an affection of the skin of other parts, which is partly vesicular, and partly consists of papulæ of different sizes.

The pustules are thickly dispersed over the head, and a hair occupies the centre of each, the skin in the interstices being red and inflamed. This form of the disease is accompanied by fever and irritation; and derangement of the digestive organs will be found to have existed, generally, for a long time previous. The absorbent glands at the back of the head and those of the neck inflame, and sometimes, though rarely, suppurate. Inflammation of the cellular membrane, under the scalp, takes place here and there, forming abscesses which burst and soon heal, but leave the parts which they occupy bald ever after.

As the pustules are ruptured, and their contents distributed over the adjacent parts of the scalp, these parts become inoculated, the disease spreads, and yellowish scabs are formed of an unpleasant odour and aspect, which, unless frequent ablution be had recourse to, rapidly accumulate.

These descriptions, according to Mr. Plumbe, comprehend every thing essential to the history of porrigo, (except as regards the P.

favosa and P. larvalis,) as it occurs in the better classes of society, where cleanliness is particularly attended to, the general health not materially injured, and where the disease is not aggravated and its character changed by the improper use of stimulant applications; and, under these circumstances, both will frequently disappear spontaneously by the continued employment of ablution. But, under other circumstances, both forms may terminate in that most obstinate and intractable one—the P. furfurans of Bateman, which seems to be the result of long-continued irritation. Its principal distinguished feature is the copious production and rapid exfoliation of morbid cuticle, which, from its branny form, is readily entangled by the adhesive matter of the pustules forming a sort of cement. The union of the morbid cuticle, which is secreted in great quantities, with the matter of the pustules, increases the mischief by matting the hair together, and preventing the application of remedies. Upon examination in this state, after cleaning the scalp by the long-continued use of warm water, the interstices of the hair exhibit an erythematous redness, and appear altogether deprived of cuticle; the passages by which the hairs arrive at the surface are enlarged, the covering which they receive from the cuticle is destroyed, and its place occupied by a glutinous fluid, which may be seen exuding, and surrounding each individual hair. The quantity of this secretion varies at different times, and the proportion which it bears to that of the exfoliations of the cuticle, determines the consistence and adhesiveness of the diseased part; and hence, when small in quantity, the latter is more dry, harsh and shining.

In this state of the disease, and also under all other circumstances, when the accumulated secretions are considerable in quantity, the term "scalded head" is generally applied.

Treatment of the most severe forms of porrigo.—Cleanliness, and preventing the formation of hard scabs, are of still more importance in the cases now under consideration than in those of a milder character; and when scales have formed, they are to be softened by means of fomentations and a poultice of linseed meal. Gentle mercurial laxatives are also serviceable, assisted by the daily use of Harrogate water. The diet must depend entirely upon the state of the constitution, as to whether it ought to be very nourishing and somewhat stimulating, or the reverse; but in all cases the stomach must not be overloaded, and the diet should be dry. The use of the tepid bath will be found very advantageous.

It would be impossible to give an account of all the local remedies which have been used for the cure of porrigo; therefore I shall merely enumerate some of them. Coarse soft soap, sulphur ointment, or both conjoined; ointment of the cocculus indicus—of the oxide of zinc—of calomel—of the red oxide of mercury—of nitrate of mercury—of tar—of nitrous acid—muriate of ammonia—of acetate of lead and opium—hellebore—turpentine—mustard—stavesacre—dulcamara—black pepper—cayenne pepper—galls—savine, &c. Lotions of acetate of lead, sulphates of zinc and copper, infusions of tobacco and tar-water; equal parts of the spirits of wine and oil; and also the same proportions of vinegar and oil, muriate of mer-

cury, in alcohol, in water and lime water; the black wash, a solution of nitrate of silver, and tincture of the muriate of iron; blisters. Some recommend the part to be powdered with sulphur; the direct application of a stick of lunar caustic; adhesive plaster; the oil-silk cap, and pitch cap.

In addition to the constitutional remedies for the cure of the true vesicular circumscribed ring-worm of the scalp, I find few cases resist the nitrate of silver, applied by rubbing it carefully over all the diseased parts, and re-applied as soon as the dark-coloured exfoliation separates.

In the other form of the disease, the formation of scabs will be prevented, at least in a considerable degree, by wearing a wax-cloth or an oil-skin cap; when this is done, however, the patient should have two or three changes of caps for the sake of cleanliness, and to avoid an almost insufferable smell. Mr. Plumbe has been very successful, by removing the roots of the hair with a pair of pincers, which is a merciful alternative for the old pitch cap; and should any local inflammation be excited, he recommends the use of a cooling lotion.

SCABIES OR ITCH.

This disease, as Bateman admits, almost bids defiance to any attempt to reduce it to an artificial classification, as it appears sometimes in the form of pustules, vesicles and papulæ, the one variety often running into the other. In all of these forms it is accompanied by a constant and almost irresistible itching. It is contagious, but is not attended with fever; all parts of the body are liable to it, except, perhaps, the head, particularly the wrists, between the fingers, the flexions of the joints, &c.

Causes of scabies.—It has been universally attributed to contagion, but it appears to me that this cause has its limits, and that it depends as much, if not more, upon a state of the constitution the consequence of diet. It seems to be almost endemic in some remote districts of this country, in Ireland and in France, where sulphur, the sovereign remedy, has no effect in exterminating it, because it is an eruption produced by unwholesome food. In the army it is rare to see an old soldier affected with itch; the subjects mostly affected are recruits, recently joined, who had either brought the disease into his majesty's service with them, or had caught it from other recruits, they themselves being predisposed to it by a change of diet and habits.

[It seems now to be established beyond contradiction, that the itch is accompanied by an insect. This has long been the popular opinion, and has also been maintained by many medical authors, and Degeer gave to the supposed insect the name of *Acarus scabiei*. The absolute discovery is due to M. Renucci, who, by experiments at the Hospital St. Louis at Paris, succeeded in obtaining great numbers of acari, which were at once submitted to inspection by means of a microscope. As to its existence no doubt whatever remains; but an intelligent writer has inquired whether it is the *cause* of the

vesicle, and if so, how? "Is the vesicle caused by the deposition of the eggs, the development of which determines inflammation—or by the deposit of a poison by irritation produced by its members, or by its bite? Or does it show itself in the individual merely in consequence of the attraction produced by the itch matter, or the filth attached to the person?" Leaving these points to be decided by future investigation, we shall merely add a description of the insects by M. Raspail:*

"The *Acarus scabiei* seen through the microscope, presents the form of a tortoise; a shining surface, more transparent in the centre than at the circumference, of a white opaque colour. Its other shades would appear to be the result of the divison of luminous rays passing through the lens. The head, which may be considered a perfect retracting sucker, is provided at each side with two articulated feet, terminating at the tarsus in a funnel-shaped prolongation. The insect is armed with four additional feet, longer than the former, but without the funnel-shaped appendage: this articulation is not at the sides like those of the horse-acarus, but underneath the belly: on the back is perceived a number of eccentric lines at short intervals, and having the appearance of joints. The belly presents several dark-coloured spots: the body and legs seem furnished with a quantity of hair of unequal length."]

Treatment of scabies.—This is so well known, that medical men are rarely applied to. The specific powers of sulphur, applied externally in the form of ointment, and taken internally in half-drachm doses with an equal weight of cream of tartar, soon cure the affection. Three or four days are generally sufficient. Other remedies have also been extolled, as the root of white hellebore, diluted sulphuric acid, and the muriate of mercury, all of which have been used with benefit. In obstinate cases, Dr. Robertson has seen much benefit arise from mixing half an ounce of powder of white hellebore with four ounces of sulphuric ointment.

ECTHYMA AND RUPIA.

Perfectly agreeing with Mr. Plumbe, that these are merely varieties of the same disease, I have thought it right to consider them together, particularly as they occur under the same states of constitution, and are to be treated in the same manner. Indeed, Bateman observes, when treating of rupia, (at p. 237:) "For practical purposes it might have been included with the ecthymata, as it occurs under similar circumstances with the ecthyma luridum; but the different *form* of the eruption, for the sake of *consistency of language*, rendered the separation necessary." According to Bateman, we have five species of ecthyma, and three of rupia, the one differing from the other only as to the age of the patient, and the colour and form which the eruption takes. Ecthyma and rupia may be defined to consist of an eruption of inflamed pustules, commonly of a large

[* A full account of this discovery, with an admirable engraving of the insect, is contained in the American Journal of the Medical Sciences for February, 1835.]

size, raised on a hard circular base, of a vivid red colour, and succeeded by a thick, hard, dark-coloured scab, usually distinct, and arising at a distance from each other. This kind of eruption is indicative of some state of distress under which the constitution labours, and though it is not attended with actual fever, yet a degree of general irritation or erythism is often present with it. Occasionally the eruption is confined to the trunk, but sometimes spreads to other parts, seldom, however, being seen on the face or hands.

Causes of ecthyma and rupia.—According to Mr. Plumbe, "Anxiety of mind, accompanied by great bodily exertion, fatigue, low living, the debilitating effects of previous fever; in short, any thing reducing the energies of the constitution beyond a certain extent, is capable of producing it. Almost the whole of the cases which I have had an opportunity of observing, have occurred in young people; the majority in young men, who, with constitutions originally not of the strongest class, had imprudently indulged in excesses and irregularities to a great extent, accompanied by privation of rest and other depressing circumstances. Very frequently, in such cases, it is mistaken for a venereal eruption, and the patient himself is readily made to believe in an opinion which his habits have made so probable. If mercury be had recourse to under these circumstances, the disease is much aggravated," &c.

Pathology.—From a careful consideration of all the cases of this kind of disease which have fallen under my notice, as well as from what I have read, I cannot help regarding the pustules above described as efforts of nature to translate disease to the surface; that they depend upon irritation, and the remains of inflammation in the mucous membranes generally; and that they are not produced by mere debility of constitution, as is generally supposed.

Treatment of ecthyma and rupia.—According to the above views the treatment is simple, and consists in the daily use of the tepid bath; mild laxatives, occasionally combined with a mercurial preparation; light nourishing diet, avoiding beef tea, and all other forms of animal food, till the tongue improves in appearance, and the stools look more natural. In the course of some days the sulphate of quinine will be found very serviceable; but it is not to be employed until the tongue becomes quite clean. On some occasions I have seen benefit derived from a blister applied on the lower part of the chest, more particularly when the sound of respiration announced the presence of a bronchitic affection.

A few years ago a gentleman was under my care with the worst form of rupia I had ever seen; every part of the surface of the body was affected. He went to London for advice, and consulted several eminent medical gentlemen. Every one condemned the employment of mercury in any form. I was decidedly opposed to it. He remained in a bad state for two years, when he was seized with iritis in a severe manner. Dr. Robertson was then consulted, who placed him under an immediate course of mercury, to affect the system rapidly. As soon as the mouth began to show the usual effect of mercurial action, the disease of the skin began to decline, as well as that of the eye, and the patient was soon cured.

ACNE.

Bateman has divided this simple disease into four varieties, viz.: acne simplex, punctata, indurata and rosacea, thus creating distinctions without differences, the only effect of which is to embarrass students. This affection has also obtained the name of slow suppurating tubercles; and it appears to me that the reason why it is called a tubercle, and classed as such in all the books on cutaneous diseases, except Mr. Plumbe's, is that a hard, painful, circumscribed body is felt under the skin, which is perceived for a considerable period, now and then becoming painful, and continuing in this state for many months, and at last suppurating, perhaps only from having been frequently irritated.

There cannot be the least doubt that the pathological views of Mr. Plumbe concerning acne are quite correct. They accord with the opinions upon which I have acted for a number of years, viz.: that acne is a diseased condition of the sebaceous follicles. In the slighter cases the sebaceous matter concretes, distends the follicle, irritates it, and produces inflammation; slight suppuration takes place, a pimple is formed, and sebaceous matter is discharged, with or without a small quantity of pus. In the severer cases a higher degree of inflammation is produced, involving the surrounding cutis; the suppuration is more extensive, and slower in its progress, and perhaps the part suppurates again and again until the follicle is emptied, or its structure is completely destroyed.

The parts chiefly affected are the forehead, the sides of the nose and the shoulders. The age at which acne most frequently occurs is that of puberty, alike affecting males and females.

Causes of acne.—Although acne be not preceded by fever, and notwithstanding that it seems to be produced by the sebaceous matter, yet it is not difficult to show that it is connected with the state of the constitution, not only from the age at which it occurs, and the bad habits of drinking and gormandizing which frequently induce it, but also from the state of the tongue and the digestive organs. It occurs, likewise, under diseased states of menstruation, and under sedentary habits.

Treatment of acne.—This may be divided, as in other cases of skin diseases, into constitutional and local. The first consists in attention to the bowels and diet, and taking all the ordinary means to improve the powers of digestion, including the warm bath. The local treatment consists in avoiding stimulating applications during the inflammatory stage, and puncturing the part to prevent suppuration and allow a free passage to the sebaceous matter, without injuring or destroying the follicular structure. This has the effect, also, of preventing any permanent hardness, which so frequently happens when the process of suppuration is very slow, or when it does not take place at all. If matter have formed, the lancet should be used to allow its escape, and gentle pressure applied at the same time to force out the hard sebaceous matter. I know many females

who bear marks from the disease, before the plan of early puncturing the pimples was adopted. Individuals liable to this affection should pay scrupulous attention to diet and to the state of the bowels; they should employ friction with a flesh-brush, a piece of flannel, or a soft towel, and use the warm bath twice or thrice a week, and daily ablution.

SYCOSIS.

This affection scarcely deserves a separate consideration from acne. I agree with Mr. Plumbe that it is produced by follicular obstruction, and consequent inflammation occurring in parts covered with hair; and its principal seats are the chin in men, and the head in both sexes, particularly the margin of the hairy scalp, in the occiput, around the forehead and temples, and near the external ear, which is also liable to be included in the disease. Sycosis is more troublesome than acne, as are all eruptive diseases situated on parts covered with hair.

Treatment of sycosis.—The constitutional and local treatment recommended in acne must be followed up, with this addition in severe cases, that not only is the point of the lancet necessary, but the forceps also, to extract any hair which may appear to be a source of irritation; and it is particularly necessary on the chin, where, on many occasions, the root of the hair itself will be found in a diseased thickened state. The extraction is seldom attended with any pain.

CHAPTER V.

SQUAMOUS DISEASES.

Under this designation I shall consider the following diseases:—Lepra, Psoriasis and Pityriasis, which latter I might, perhaps, without any disadvantage, altogether pass over, because I consider it as the mildest form of lepra. I have not included ichthyosis, or fish-skin disease, because it is exceedingly rare; it has the same pathology as lepra, and similar treatment is applicable to this affection. One form of it, ichthyosis cornea, is a surgical disease.

LEPRA.

By this term is designated a disease exhibiting red, inflamed, elevated spots and patches, in many cases not larger than a split pea, which yields almost daily crops of scurf or scales, and is rarely, if ever, accompanied by a vesicular or pustular appearance, unless such formation be accidentally produced by roughly tearing out hairs. After seeing the disease once, the scales can never be mistaken for scabs formed by the drying of pustules or vesicles, unless the affection have run into the state called psoriasis, which falls next to be described. Willan and Bateman have divided the disease into three species, lepra vulgaris—alphoides—and nigricans. The first two ought to be regarded as different degrees, or perhaps rather stages, of the same affection; while the last species, nigricans, differs in the colour and state of the constitution at the time; and I heartily agree in the following remarks of Mr. Plumbe: "That they may be dispensed with, with advantage, is obvious, inasmuch as they have had their share in creating the confusion elsewhere alluded to, and discouraging the student in the prosecution of his inquiries. It is to little purpose that preceding authors have expended so much time in investigating the confused records of ancient times, to determine what was meant by the term, and to ascertain the correct history of the disease, if new difficulties in its study are to be invented by encumbering it with useless and multiplied names"—(page 128.) On looking minutely at the part affected, it is observed to have a shining hard surface, owing to a somewhat transparent, smooth, polished scale, which separates in a day or two, and to be encircled by a dry, red and slightly elevated border. When the scales are removed, the skin underneath appears smooth, red and shining, and generally free from cuticular

lines. As the diseased spots extend, fresh scales are produced, having a somewhat different appearance from those formed at the beginning of the disease; they do not extend uniformly over the diseased surface in one continued scale, but separate more like scurf. The disease very generally commences on the extremities, at parts where the bones lie nearest the surface, but I have often observed the eruption appear first on the surface of the abdomen, breast and shoulders. The head, face and hands often become involved in the disease, and in very severe cases, the nails of the fingers and toes are much thickened, incurvated at the extremities and sometimes fall off. When the disease covers a considerable portion of the body, a large quantity of scurf is found in the bed in the morning, which is rapidly reproduced.

More or less of an itching or a tingling sensation is experienced by the patient when heated by exercise, or in bed; but when the disease becomes extensive, with considerable inflammation, extreme soreness, stiffness, and sometimes severe pain are produced, more particularly at the flexures of the joints, where the skin often cracks, discharges serum, and, in fact, runs into the state termed psoriasis. The parts likewise swell so much in these circumstances, that I have seen a limb fully more than a third above its natural circumference.

It is surprising to find Bateman stating, at page 28, that, in the worst of these circumstances, "there is no constitutional disturbance." If by this expression he means to say that there is no fever, the statement is correct; but there is frequently considerable and severe *constitutional disturbance* without the existence of febrile symptoms; and when speaking of the causes of this disease, I shall endeavour to describe the actual constitutional derangements upon which the disease appears to depend.

Causes of lepra.—Leprous disorders are very often met with among the poor in all countries, but they are more frequent and severe in warm climates, and in countries where the poor are most destitute. I do not believe that they originate in want of cleanliness, but certainly, when once produced, it renders them more intractable. All causes which have a tendency to produce functional diseases of the chylopoietic viscera may be ranked as causes of lepra in particular constitutions. Sometimes, and most frequently, it is produced by unwholesome and indigestible food, particularly such articles as yield little nourishment. Affections of the mind may likewise give rise to it. The rich are not exempt from this disease, and it frequently attacks those with gouty constitutions. For many years past, I have paid considerable attention to disorders of the skin, and a great many cases of lepra and psoriasis have fallen under my observation: gastro-intestinal irritation has been discovered in all the cases but one; and in that one, there were great mental anxiety and despondency, with hepatic derangement. There can be no doubt that the disease, in the first instance, is seated in the vessels of the cutis which are employed in producing the cuticle, and that its nature is inflammatory.

Treatment of lepra.—In detailing the treatment, I shall describe the different plans which experience and pathological considerations

have led me to follow with great success, and I shall notice these under different heads.

1. In all cases, it is necessary to attend to the bowels by gentle, but frequently repeated laxatives, occasionally combined with calomel, and assisted also by the daily use of Harrogate water. The diet must likewise, in all cases, be attended to; and it will be found that the disease often depends upon one particular article of diet, varying in different constitutions, as dried-fish, shell-fish, salted meats, new bread, coarse and unwholesome bread, potatoes, onions, garlic, salads, cheese, oat-meal, sweetmeats, bitter almonds, nuts, various kinds of fruits, particularly if the skins or husks be swallowed, broths and soups, different kinds of malt liquors, cider, wine, spirits, &c. Indeed, the diet is of such vital consequence, that I consider it necessary, in many obstinate cases, to make my patient write down a daily list of every article which he has put into his stomach, so that, by comparing his condition with the food he has been using, we are, between us, able at last to detect those articles which disagree. It is also necessary to take care, that while the patient has sufficient clothing, his skin is not kept too hot; and I have sometimes found it of service to cause linen to be worn next the skin instead of flannel. When it can be managed, the inner garments should be changed daily, particularly in severe cases; and this is still more necessary when the disease takes on the appearance which constitutes psoriasis. When the patient goes to bed, care should be taken that his feet be warm, and that he be not over-heated by too many bed-clothes. The tepid bath should be used daily, or when that is inconvenient, the whole body should be sponged twice a-day with soap and warm water, or vinegar and water.

2. If the inflammation of the skin be very severe and extensive, I commence by taking blood from a vein in such quantity as may be necessary, attending to the state of the constitution as well as the extent of the inflammation, and afterwards proceed with the plan above described; and there are few cases which resist these means.

3. In old or very intractable cases, where these remedial means have been tried without success, recourse should be had to sulphureous baths and fumigations, which can scarcely be praised too highly; but they must not be used when the inflammation is acute. When these cannot be obtained, some benefit may be derived from the external application of Harrogate water, several times a-day.

4. In still more intractable cases, where the above remedies have failed, or where sulphur baths cannot be obtained, considerable benefit will be derived from the use of lime-juice, externally as well as internally; but I place more dependence on the employment of an alcoholic solution of the oxymuriate of mercury, in the proportion of four grains to the ounce, beginning with from five to ten drops twice or thrice a-day, and increasing each dose to twenty, thirty or forty drops, of course attending at the same time to the diet, bowels and clothing.

5. Should these plans fail, recourse is to be had to arsenic, which is placed last in the list of remedies, because its use is frequently attended by more constitutional disturbance. But I have seen it fail

in cases where the other plans have afterwards succeeded. For some years past I have only had occasion to employ it twice, on both occasions without success: in one instance it was persevered in till the patient was nearly poisoned. Maddar or madaar, an Indian remedy, was also tried in this case, but only with temporary benefit. Various ointments, such as that of tar, nitrate of mercury, and carron oil, have been employed, but, according to my experience, not with much success.

A most injurious plan is followed by some, of putting all patients affected with lepra, and other skin diseases, on farinaceous food, with which they stuff themselves in such a manner as to increase the functional derangement of the stomach and bowels, thereby producing a more inveterate affection. Many instances of this kind of maltreatment fall annually under my care, in which a change to animal diet has generally effected a beneficial change in the character of the disease; an interesting case of this nature I shall soon notice, when treating of psoriasis. In addition to what has been said already respecting diet, it may be shortly remarked, that in cases where inflammation of the skin runs high, an abstemious diet should be recommended, but, generally speaking, a moderate quantity of animal food is necessary. In no case should the patient be allowed to *load* the stomach, and he should be cautioned particularly against taking more than a small teacupful of soup of any description; he must likewise altogether avoid taking that "animo-vegetable decoction" called Scotch broth. The tongue should be frequently examined as well as the stools, as from both of these we may draw conclusions respecting the effects of diet and medicines. Tonics are often serviceable, as well as a moderate allowance of such stimuli as are found to agree best with the patient, and which he can afford.

PSORIASIS.

According to Bateman, "Psoriasis or scaly tetter occurs under a considerable variety of forms, exhibiting, in common with lepra, more or less roughness, and scaliness of the cuticle, with redness underneath. It differs, however, from lepra in several respects. Sometimes the eruption is diffuse and continuous, and sometimes in separate patches of various sizes; but these are of an irregular figure, without the elevated border, the inflamed margin, and the oval or circular outline of the leprous patches: the surface under the scales is likewise much more tender and irritable, in general, than in lepra; and the skin is often divided by rhagades, or deep fissures." And he might have added, that when the inflammation runs high, and extends deep into the substance of the cutis, there is often a very considerable discharge from these fissures, and even from the general surface, forming extensive scabs; but this, for the most part, never takes place except in mismanaged cases. I have seen the eruption leprous in one part of the limb, and psoriatic in another, particularly between the fingers, and at the flexures of the joints. Lepra may be converted into psoriasis by bad management, and

particularly by the application of irritating substances to the diseased parts. Psoriasis may be converted into lepra by a general bleeding, thereby mitigating the local inflammation. From all the facts which experience has enabled me to collect, psoriasis is to be regarded as an aggravated form of lepra, and by treating it upon corresponding principles, I have been very successful in curing the affection.

Willan and Bateman have divided psoriasis into four varieties—viz.: the *guttata—diffusa—gyrata* and *inveterata;* but I shall avoid such distinctions, as no good practical results can be expected from them.

This disease, like lepra, may be very partial; but I have seen several cases where the whole of the extremities were covered with psoriasis, while the trunk of the body, the face and the head were affected with lepra. I shall now relate the case recently alluded to, (p. 689.)—A gentleman of a healthy, strong constitution, accustomed to good living, and engaged in an extensive speculation, experienced a great and an unexpected reverse of fortune. Possessed of highly honourable feelings, he was determined to pay off every shilling of debt, by reducing his establishment and altering his style of living, and, it is to be regretted, by denying himself many of the common necessaries of life. For upwards of two years he lived almost entirely upon fish and potatoes, and he employed himself so assiduously at his business, that he never went out to take exercise except when obliged. In the course of time, a leprous eruption appeared upon his arms and legs, but it gave him little trouble, and he did not apply for medical advice; by and by it appeared here and there upon the trunk of the body, still it attracted little of his attention. One day he slipped his foot and sprained his ankle, which swelled much, and was attended with pain. He sent for a doctor, who confined him to bed, leeched the part affected, put him upon the strictest antiphlogistic regimen, and prescribed a dose of salts daily. Under this treatment the leprous eruption extended rapidly; his appetite became bad, the tongue foul and loaded. At the end of a month the surface of both extremities was inflamed, and the disease was now converted into psoriasis, with excessive discharge, swelling and itching. All kinds of local applications were tried without benefit; and when I was consulted, the gentleman was in the following condition:—His legs and arms were much swollen, painful, and so itchy that he was deprived of rest; they were covered with scabs, which were produced by the partial drying of a profuse discharge of fetid serous fluid, which seemed to ooze from every pore of an intensely red, shining and highly inflamed cutis. So profuse was the discharge that it soiled the bedding, and notwithstanding every precaution, no means could be devised to prevent the linen from sticking to the affected parts, the separation of which produced great pain, aggravated the local inflammation, and frequently caused bleeding from the parts. The trunk of the body, the face and scalp were also affected with that form of *lepra* termed *vulgaris.* His strength was destroyed, partly by the remedies and the diet, and partly by the constitutional irritation and want of sleep, but principally by the constant profuse discharge. He had now been con-

fined, for the most part to bed, for about 140 days. The pulse was quick and weak; he had constant singing in his ears, giddiness upon raising his head from the pillow; and for some days he had always fainted upon getting up for necessary purposes. Notwithstanding the quantity of salts and other purgatives taken, his bowels were in bad order, the stools were scanty, very dark in colour, and fetid; the tongue was swollen, rough, fissured, and covered with a thick crust. The following treatment was adopted. The carron oil was changed for a warm solution of sugar-of-lead to the parts affected, which was applied by means of bandages kept wet with it: a few doses of calomel were exhibited; and he was allowed some wine and water. From this time he enjoyed good rest; the tongue improved so much in two or three days, that he was allowed a small quantity of animal food; the heat, inflammation and discharge were so much diminished in the course of three or four days, that the saturnine lotion was discontinued, and the limbs were enveloped in fine oil-silk. He made such a rapid recovery, by the assistance of small doses of blue pill and Harrogate water, that he considered himself quite well in the course of three weeks; and although he has since had several slight relapses, they were attributed to errors of diet, and inattention to the bowels. Exactly a year afterwards, the disease returned in a severe form on the extremities, but was speedily cured by one general bleeding and the employment of the local remedies. Five years have now elapsed, and this gentleman is in the enjoyment of excellent health and has had no return of the complaint.

Treatment of psoriasis.—The above case shows the treatment that I would recommend; and the only circumstances which ought to be mentioned in addition to what has been stated respecting lepra, are the greater necessity for cleanliness, and the application of oil-silk to the affected part.

PITYRIASIS.

This is a very superficial affection, consisting of irregular patches of slender scales, which repeatedly exfoliate and recur, but which neither form crusts nor are accompanied by fluid excretion or excoriations; and it is stated not to be contagious. The most frequent situation of pityriasis is the scalp, and when it attacks infants, it is commonly called "dandriff;" Willan and Bateman have given it the term *pityriasis capitis*. It is now and then observed in adults, particularly those of dark complexion. Cleanliness, in this instance, prevents the disease from being troublesome; and it may be easily removed, even when the scurf is pretty thick, by washing the part with soap and water, and a soft brush daily, or using a solution of the carb. sodæ. When neglected, however, it runs into a state much resembling the worst forms of porrigo.

Pityriasis in a severe form now and then occurs in adults, producing considerable discomfort to the individual. According to Mr. Plumbe, different parts of the body become the seats of much itching and tenderness; and when friction is employed, scabs of considerable

thickness fall off, the parts below exhibiting a red, shining, glossy, and sometimes slightly moist surface. The skin of the chest and back are the common seats of this form of the affection; but the hairy scalp and its margin also partake of it. The colour of the parts, when covered with the diseased cuticle, is of a lightish yellow, or copper hue; when the cuticle is removed, it approaches more to red; but the cutis at no time appears of the colour consequent on common abrasion. The figure of the patches is very various; "here and there are spots of from half an inch or less, to two or three inches in diameter, approaching, perhaps, to a circular form. These will, perhaps, be found around the margin of a larger patch, the outlines of which are as irregular as the outlines of a map of an island. The colour of these larger patches also varies from time to time in different parts, from a light straw to a reddish colour; hence the terms *Pityriasis versicolor*, *P. rubra*, which Willan and Bateman have formed into varieties."

Causes and treatment of pityriasis.—I have seen a limited number of cases of this disease which required any treatment; and therefore I shall make free to quote the pathological and practical remarks of Mr. Plumbe. He says the disease, as occurring in adults, pretty uniformly attacks individuals of delicate health, and diminished energy of circulation. In such states of the system, the cutaneous vessels partake of the general debility, and have the disadvantages of their locality, as furtherest from the centre of circulation; and being exposed, at the same time, to vicissitudes of temperature, they are incapable of the formation of sound cuticle, and produce instead the delicate and ill-formed substance described. "The state of the circulation and system, in all cases which come under our notice, proves this view of the case to be correct. I have never seen a single case, (says he,) where want of energy was not apparent, and very few where the supply of this was not followed by speedy recovery. Violent and distressing impressions on the mind; original debility of constitution, the depressing effects of long-continued illness in warm climates, &c., are found very commonly to have been co-existent with the first appearance of the disease."

The constitutional treatment which will be found most successful, is that which is in strict accordance with the above principles. Measures which tend to invigorate the system, will be always proper if not forbidden by organic disease. Bark, steel, sea-bathing, gentle exercise in the open air, ease of mind, nourishing food, and plenty of rest, constitute what is usually requisite on such occasions. Now and then the sulphur vapour bath has been rendered necessary, the cutaneous vessels having failed to recover their tone, though the general health had been much improved. When the scalp is much affected, and the scurf forms in considerable quantities, the free use of a solution of acetate of zinc, in equal parts of rose water and proof spirits, constitutes an agreeable and useful application. In addition to these remarks, it may be mentioned, that in the few cases which have fallen under my notice, the internal and external use of fresh lime-juice has been found beneficial, or common vinegar applied to the diseased surface.

CHAPTER VI.

VESICULAR DISEASES.

The following is Bateman's definition of vesicle: "A small orbicular elevation of the cuticle, containing lymph which is sometimes clear and colourless, but often opaque and whitish, or pearl-coloured. It is succeeded either by scurf or by a laminated scab." This author has divided his order vesiculæ into seven genera, viz.: varicella, vaccinea, herpes, rupia, miliaria, eczema, aphtha. Each of these he has subdivided into several varieties. Some of his orders, as varicella, vaccinea, miliaria and aphtha, are misplaced; I shall conclude all that I have to say on vesicular diseases under the term herpes.

HERPES.

Willan and Bateman have subdivided herpes into six species, viz.: *herpes phlyctænodes—zoster—circinatus—labialis—præputialis—iris.* According to the latter of these authors, this appellation is "limited to a vesicular disease, which, in most of its forms, passes through a regular course of increase, maturation and decline, and terminates in about ten, twelve or fourteen days. The vesicles arise in distinct but irregular clusters, which commonly appear in quick succession; and they are set near together, upon an inflamed base, which extends a little beyond the margin of each cluster. The eruption is preceded, when it is extensive, by considerable constitutional disorder, and is accompanied by a sensation of heat and tingling, sometimes by severe deep-seated pain in the parts affected. The lymph of the vesicles, which is at first clear and colourless, becomes gradually milky and opaque, and ultimately concretes into scabs; but, in some cases, a copious discharge takes place, and tedious ulcerations ensue. The disorder is not contagious in any of its forms."

Herpetic eruptions occur in various parts of the body. When on the lips and angles of the mouth, the disease is called *herpes labialis*—when in the form of a belt across the shoulder, or round the waist like a sash, it is termed *herpes zoster*, and, in common language, "shingles." When it has no certain seat, but sometimes appears on one part of the body, sometimes on another, with the exception of the situations already mentioned, the disease is termed *herpes*

phlyctænodes; but surely difference of locality is no reason why different appellations should be applied.

This class of disorders is, for the most part, if not always, accompanied by constitutional disorder, sufficiently marked to attract attention, such as that produced by subacute inflammation of the bronchial membrane. Hence, we find it taking place towards the termination of what are called catarrhal fevers, producing immediate constitutional relief, which the strongest remedial agents had, perhaps, failed to accomplish. I have also often seen the other forms of the affection, particularly that described as herpes zoster, occur in the course of bronchial inflammation; but more particularly when there were strong marks indicating a disordered state of the stomach and bowels.

Females appear to be more subject to this disease than males, and people who are delicate, more than the strong and athletic.

Causes of herpes.—Besides occurring under the forms of internal disease already mentioned, it has been referred to the suppression of hæmorrhoidal or menstrual discharges, sudden change of habits as to diet, but more particularly from an active to a sedentary life. It may be produced by particular articles of food.

With respect to the pathology of the herpetic eruption, its seat is in the superficial vessels of the skin, and its nature is inflammatory, the effect of which is effusion of serum, separating the cuticle by mechanical distension; we see similar effects produced by blisters and some other external irritants.

Treatment of herpes.—This is very simple, and consists in relieving internal disorder and subduing any constitutional disturbances that may exist. The lancet is not often required, but I have seen it sometimes necessary and very beneficial; in general, however, low diet, consisting of arrow-root and the like; gentle laxatives, repeated twice or thrice in the twenty-four hours; the warm bath and confinement to the house, will be advisable. The best local treatment is to open each vesicle early, and occasionally to apply fomentations. But, in the most severe form of the complaint, viz.: the *herpes zoster*, where the pain is very severe, the best effects will be produced by applying a dozen of leeches on the inflamed part; if done early, before many vesicles have appeared, the further progress of the disease will be stopped. I observe that Mr. Plumbe has, in two or three instances, applied small blisters to the uninflamed skin in the neighbourhood of the vesicles, not only with the effect of checking their extension, but producing a shriveling of those already formed. If it be not found necessary either to apply leeches or a blister, the best application, after opening the vesicles, is a poultice of linseed meal; and I can see no objections to the occasional application of a cooling saturnine wash.

When treating of syphilis, I shall speak of an herpetic eruption affecting the prepuce, which is consequently termed *herpes præputialis.*

PEMPHIGUS AND POMPHOLYX.

THERE can be no doubt but that the diseases described under these two names have, in all ages, been confounded with each other. The terms denote the existence of large vesicles, which are termed "bullæ," and, in common language, "blebs." The affection is called pemphigus when the blebs are preceded or accompanied by fever, and pompholyx when without fever and when the eruption is without an inflammatory base. The existence of pemphigus as a distinct disease was denied by Cullen and others, but it has been described by many authors. I have frequently seen large bullæ take place in the course of slight as well as severe fevers; but, instead of considering them entitled to any specific character, I have always looked upon their occurrence as an accidental circumstance, and have made no difference in the treatment of the original disease. With respect to local treatment, I have only to observe that the bullæ are not to be interfered with unless there be considerable local irritation and pain, when a small puncture may be made with a lancet, and perhaps a light poultice of linseed meal applied; but it is rarely necessary to interfere with them, unless, from the restlessness of the patient, they are ruptured, when the same application may be made to them.

Pompholyx.—As far as I can understand, this disease, as defined by Willan and Bateman, is of very rare occurrence; one case only has been seen in this city. It is in the person of a poor man, who appears to have no constitutional distress, and who is able to work hard for his daily support.

CHAPTER VII.

PURPURA.

I PURPOSE to treat, in this chapter, of that kind of purpura which is commonly known by the term *purpura hæmorrhagica.*

A number of diseases which appear on the surface of the body have been already described. Some of them terminate by suppuration, others by a secretion of serum; a third class by the formation of scales, &c.; and now we have to consider an affection where blood is poured out under the cuticle, forming appearances which are termed *petechiæ*, and upon the surfaces of all the cavities lined by mucous and serous membranes, forming dark-coloured spots, resembling, in every respect, those found on the cutis. Purpura is a disease which is accompanied by such threatening symptoms, that it has riveted the attention of almost every medical man who has seen it; but we are still in total ignorance of the pathology of the disease. The following description of *purpura hæmorrhagica* is taken from Bateman:—"The petechiæ are often of a large size, and are interspersed with vibices and ecchymoses, or livid stripes and patches, resembling the marks left by the strokes of a whip, or by violent bruises. They commonly appear first on the legs, and at uncertain periods afterwards, on the thighs, arms and trunk of the body; the hands being more rarely spotted with them, and the face generally free. They are usually of a bright red colour when they first appear, but soon become purple or livid; and when about to disappear, they change to a brown or yellowish hue; so that, as new eruptions arise, and the absorption of the old ones slowly proceeds, this variety of colour is commonly seen in the different spots at the same time. The cuticle over them appears smooth and shining, but it is not sensibly elevated; in a few cases, however, the cuticle has been seen raised into a sort of vesicles, containing black blood. This more frequently happens in the spots which appear in the tongue, gums, palate and inside of the cheeks and lips, when the cuticle is extremely thin and breaks from the slightest force, discharging the effused blood. The gentlest pressure on the skin, even such as is applied in feeling the pulse, will often produce a purple blotch, like that which is left after a severe bruise.

"The same state of the habit which gives rise to these effusions under the cuticle, produces likewise copious discharges of blood, especially from the internal parts, which are defended by more delicate coverings. These hæmorrhages are often very profuse, and

not easily restrained, and therefore sometimes prove suddenly fatal. But in other cases they are less copious; sometimes returning every day at stated periods, and sometimes less frequently, and at irregular intervals; and sometimes there is a slow and almost incessant oozing of blood. The bleeding occurs from the gums, nostrils, throat, inside of the cheeks, tongue and lips, and sometimes from the lining membrane of the eyelids, the urethra, and the external ear; and also from the internal cavities of the lungs, stomach, bowels, uterus, kidneys and bladder. There is the utmost variety, however, in different instances, as to the period of the disease, in which the hæmorrhages commence and cease, and as to the proportion which they bear to the cutaneous efflorescence.

"This singular disease is often preceded for some weeks by great lassitude, faintness and pains in the limbs, which render the patients incapable of any exertion; but, not unfrequently, it appears suddenly in the midst of apparent good health. It is always accompanied by extreme debility and depression of spirits; the pulse is commonly feeble, and sometimes quickened; and heat, flushing, perspiration, and other symptoms of slight febrile irritation, recurring like the paroxysms of hectic, occasionally attend. In some patients, deep-seated pains have been felt about the præcordia, and in the chest, loins and abdomen; and in others, a considerable cough has accompanied the complaint, or a tumour and tension of the epigastrium and hypochondria, with tenderness on pressure, and a constipated or irregular state of bowels. But in many cases no febrile appearances have been noticed; and the functions of the intestines are often natural. In a few instances, frequent syncope has occurred. When the disease has continued for some time, the patient becomes sallow, or of a dirty complexion, and much emaciated; and some degree of œdema appears in the lower extremities, which afterwards extends to other parts.

"The disease is extremely uncertain in its duration; in some instances it has terminated in a few days, while in others, it has continued not only for many months, but even for years. Dr. Duncan related a case to me, when I was preparing my thesis on this subject, which occurred in a boy, who was employed for several years by the players at *golf* to carry their sticks, and whose skin was constantly crowded with petechiæ, and exhibited vibices and purple blotches whenever he received the slightest blow. Yet he was, in other respects, in good health. At length a profuse hæmorrhage took place from his lungs, which occasioned his death. When the disease terminates fatally, it is commonly from the copious discharge of blood, either suddenly effused from some important organ, or more slowly from several parts at the same time. A young medical friend of mine was instantaneously destroyed by pulmonary hæmorrhage, while affected with purpura, in his convalescence from a fever, after he had gone into Lincolnshire to expedite his recovery; and I have seen three instances of the latter mode of termination, in all of which there was a constant oozing of blood from the mouth and nostrils, and at the same time considerable discharge of it from the bowels, and from the lungs by coughing; and in one it was likewise ejected

from the stomach by vomiting for three or four days previous to death. On the other hand, I lately saw a case of purpura simplex, in which the petechiæ were confined to the legs, in a feeble woman about forty years of age, who was suddenly relieved from the eruption and attendant debility, after a severe catamenial flooding." (P. 104.)

The result of the following highly interesting case of purpura hæmorrhagica, shows in a marked manner the benefit of venesection conjoined with purging. It is extracted from the first vol. of the Trans. of the Med. Chirurg. Society of Edinburgh:—A boy, aged 6, of a week and strumous constitution, with swelling of the glands of the neck, and a slight inflammatory affection of the eyes, was observed to be particularly unwell on the 24th April 1823, and the two following days. He was dull, thirsty, with flushed face, and manifested an inclination to set near the fire. On the 27th, spots like fleabites appeared on a great part of his skin, and soon increased considerably: some were small and red, and others large and of a purple colour. On the 28th, blood oozed from the mouth, with occasional bloody sputa. On the 29th, the urine became turbid, and of a reddish colour; he moved about occasionally, unwilling to remain in bed; and he even, on the forenoon of this day, walked a distance of at least a mile and a half for medical aid. Dr. Ebenezer Gairdner first visited this little patient on the afternoon of the 1st May, and saw at once that it was a distinctly marked case of the purpura hæmorrhagica of Willan. The whole body, the anterior part of both thighs, the conjunctiva of the right eye, the tongue, the Schneiderian membrane, were all affected with purple spots. Blood oozed from the gums, which were neither soft nor swollen; breath extremely fetid: and Dr. Gairdner was told that he occasionally vomited blood. There was fulness, with pain on pressure in both hypochondria, particularly in the left; the abdomen was rather tumid, and affected with obscure pain; belly costive; urine free, and in appearance the same as before described. Pulse quick and sharp; slight heat of skin. He seemed little oppressed, was attentive and acute, and expressed curiosity to know what were the marks on his skin. A saline cathartic immediately. Fifteen drops of dil. sulph. acid thrice a-day. To be bathed in tepid water morning and evening.

May 2d. Passed a bad night. There were now considerable oppression and hurried respiration. The hæmorrhagic symptoms had increased, with more petechiæ and vibices; pulse 110, wiry; skin hot and dry. Blood was immediately drawn to the extent of about 10 ounces, when the boy became suddenly sick, and vomited. Considerable difficulty was experienced in suppressing the flow of blood from the wound, and during the remainder of the day he lost some quantity, which could not, however, be estimated, notwithstanding which the pulse, at 4 o'clock P. M., was 124 and wiry; the skin was also hot. He was afterwards drowsy, and slept quietly for three hours and a half. The tepid baths and acid drops to be continued, and a powder containing three grains of calomel and the same quan-

tity of jalap to be given next morning, and repeated every three hours, until the full effect was produced.

3*d*. Blood still oozing from the orifice in the vein; there were less oppression and dyspnœa; the pulse, though quick and sharp, was less so than yesterday; tongue improved; little thirst; urinary and alvine discharges nearly as before. The acid drops, laxative powders, and the tepid bath to be continued.

4*th*. Pain under the *os frontis;* ecchymosis of the eye greater; the pain in both hypochondria increased with considerable tension; pulse 124, firmer. Another bleeding was determined upon; and when the bandage was loosened, the wound was still found open; the part corresponding to the compress had become ecchymosed, but without swelling. At first the blood only oozed out, and soon flowed, but not very freely; the patient became faint, so that only two or three ounces were obtained. At evening visit, it was found that there had been some draining of blood from the orifice; but the patient was then in a quiet, sound sleep; pulse the same as in the morning; skin rather soft, and not very hot; and it was stated, that he had been asking for food in the course of the day.

5*th*. Passed since yesterday a good deal of urine, which was now pale and limpid; pulse 102; heat moderate; tongue clean and moist; gums still tender; and during the night there had been some oozing of blood from them. Has taken a little light nourishment with some relish. Bowels opened by the powders; the stools were excessively offensive, and very black-coloured; some increase of pain, with tension of the abdomen, and in both hypochondria. Fomentations and small doses of castor oil. In the afternoon, the pain had increased, and he moaned much; during the day, several copious and grumous stools were passed; and at 4 P. M. he seemed much distressed. A mixture, with an ounce of bark infused in a pound of port-wine, with an equal quantity of water, was then ordered to be exhibited in small doses; castor oil to be continued. In the evening he passed more black fæces; he was relieved from pain, and had some sleep.

6*th*. Passed a good night; little or none of the bark infusion had been taken; he also refused the oil, therefore a laxative powder was ordered. The same dark-coloured fæces were passed from the bowels with less pain; no oozing of blood from the gums, nor in the sputa; pulse 98; temperature of the skin natural.

7*th*. Symptoms favourable. Much black fæces discharged.

8*th*. Stools of a natural appearance; petechiæ began to fade; pulse 96, not weak; appetite improving.

From this time he recovered rapidly. On the 14th he was out taking an airing; and on the 16th he was running about, and his parents thought him to be in better health than he had been before the accession of the present complaint.

The blood first drawn, coagulated very slowly, without separating any serum; on the following day it looked like a tremulous jelly, the top being of a greenish buff colour, interspersed with brownish spots. That which was afterwards discharged had, as it came from the arm, more the appearance and consistence of turbid lymph, or fluid in which some reddish colouring matter was in suspension; and the

cloths which were soiled did not present the usual stains of blood, but something like those of dirty water, interspersed with large stains of a reddish-brown colour.

The reader is referred to the volume of the "Transactions," for an interesting account of the analysis of the urine.

In the same volume of the "Transactions" will be found another interesting case of purpura, with an account of the traces of disease discovered on dissection. A girl aged twelve, of a scrofulous constitution, although otherwise in good health and spirits, with the exception of a chronic disease in her left wrist, was first observed on the 21st of June, 1823, to have a dark spot on her under lip, as if she had been putting a pen into her mouth. Next morning similar spots were observed thickly studded over her legs, and also a considerable number on her arms, but she made no complaint, and was amused at being thought sick, when she felt in perfect health. She walked about a mile, and returned with perfect ease. A laxative prescribed. Next day she was sitting up, unconscious of ailment; external appearance much the same as yesterday; pulse good; no heat of skin. Salts. About ten, on the evening of the 22d, she asked for supper, and was allowed some bread and milk. During the night she had two stools; she felt faint and giddy with the last, and required assistance on returning to bed; she was now seized with vomiting, and with a very severe pain in the right temple; the sickness was most distressing, and when raised up, vomiting supervened; the matter vomited was tinged with blood; and it was also observed, that the gums were readily excited to bleed. This was followed by great languor and exhaustion, and excited alarm of her immediate dissolution. Subsequently symptoms of oppressed brain came on, and she died at 3 P. M. of the 23d.

Dissection.—The appearance of the surface of the body remained unchanged. The pericranium was covered with petechial spots, as was the dura mater; on removing the membrane, the effects of a large effusion of blood were exhibited. In the right temporal region, a firm coagulum floating in bloody serum had forced its way through the broken down brain into the ventricle. The pleura and the peritoneum were found like the dura mater, studded throughout with the dark livid spots.

This case requires no comment. The patient had the able advice of Mr. William Wood of Edinburgh, a gentleman of great practical acumen, and large experience. It is evident, however, from the history of the case, that the bad symptoms came on suddenly about twelve hours before the death of the patient, in consequence of the effusion of blood which was afterwards found in the brain, and when no human means could have averted the fatal termination. How far a previous bleeding might have operated in preventing the cerebral effusion, it is difficult to determine; but I must own, that were such a case to occur in my practice, now that I have had the advantage of reading the result of that related above, I should feel little hesitation in opening a vein.

Another case of purpura hæmorrhagica was communicated by Dr. Fairbairn to the Medico-Chirurgical Society of Edinburgh, in

the second volume of whose "Transactions" it will be found recorded, and from which the following brief extracts are made.

The subject of this case was J. Henderson, aged 24, of robust constitution and regular habits. On the 18th November, 1823, Dr. Fairbairn found him complaining of deep-seated pain in the left breast, aggravated by frequent fits of coughing, and by a full inspiration; breathing hurried and laborious, with a distressing sensation of suffocation in the horizontal posture; countenance flushed and anxious. A copious discharge of dark venous blood oozed from the mucous membrane of the mouth, and a portion was also apparently expectorated from the lungs. Numerous petechiæ and vibices were observed upon the arms, neck and trunk, but they were in greater number on the legs, varying in magnitude from a mere point to the size of a sixpence. There were also a few spots upon the forehead; some of the spots were of a bright red colour, others were purple or livid, and a few of a dirty yellow. In the mouth, similar spots occupied the gums, cheeks, tongue and fauces; the tongue itself was covered with a dark fur; urine presented a grumous appearance; pulse 110, firm and sharp; increased heat; belly loose from a powder composed of jalap, which he had taken early in the morning.

The patient stated that he had, for several weeks previous to the attack, experienced considerable depression of spirits, general lassitude and pains in his limbs, which were stiff and swollen at night. He also felt pains occasionally darting across his head and chest; had a tickling cough, irregular shivering, followed by flushes of heat and partial perspirations. About the 12th Nov., six days before Dr. F. saw him, he first observed his sputa tinged with blood, which afterwards gradually increased. On the 16th, the discoloration of the skin made its appearance first on the legs, afterwards on his arms and trunk; it was only in the morning on which Dr. F. saw him that the dyspnœa and other symptoms above described came on. Bled to 26 oz. from the arm, which occasioned threatening syncope, with alleviation of the breathing, oppression and pain. No buffy coat on the blood, which, however, presented a colour resembling arterial, and coagulated slowly without separating any serum, the coagulum being somewhat soft and tremulous. Frequent doses of 15 drops of dil. sulph. acid to be given in cold water.

19*th*. Passed a restless night with fearful dreams and startings; pectoral symptoms somewhat alleviated, though he still complained of a corded sensation across the lower part of the chest. Considerable oozing of blood from the mouth; urine grumous, and rather scanty; no stool; pulse 112, and sharp; skin hot; tongue furred and streaked with blood. Eighteen ounces of blood were taken from the same wound in the arm, which nearly produced syncope, the blood exhibiting the same appearance as formerly. An ounce of Epsom salts immediately. At 8 P. M., Dr. Fairbairn found that his patient had had three hours of refreshing sleep in the course of the afternoon; but there was no mitigation of the pain, dyspnœa, and corded sensation in the chest. One loose fetid stool from the salts; oozing of blood from the mouth diminished; urine grumous, but the

quantity is increased; pulse from 115 to 120, sharp and wiry; tongue dry and furred; skin rather moist. An ounce of castor-oil.

20*th*. Had some intervals of sleep during the night, but awoke in great alarm; experienced darting pains in the head, occasionally with slight delirium; frequent hiccup; pectoral symptoms the same; very little discharge of blood from the mouth; petechiæ more numerous, especially on the inferior extremities; had two stools resembling pitch; urine scanty and grumous; tongue dry and furred. Blood to the amount of ℥xx was drawn, which produced syncope; buffy coat now apparent. A little wine and water, and beef-tea occasionally, till the state of collapse be removed, and subsequently decoct. cinchon. to be given in repeated doses.

4 P. M. Had some intervals of sleep since the bleeding; is perfectly sensible, though he cannot articulate distinctly; pulse small and irregular; skin covered with a cold sweat. The decoction had not been given as directed. Wine and beef-tea to be continued.

At midnight Dr. Fairbairn found him in a comatose state, insensible to surrounding objects; the breathing laborious, with frequent heavy moaning, and he expired on the morning of the 21st, being the sixth day from the appearance of the petechiæ.

The appearances on dissection, in this case, will be found at page 316.

The following is extracted from Dr. J. S. Combe's case of purpura hæmorrhagica, detailed in the 17th vol. of the Edinburgh Medical and Surgical Journal, (page 83.)

"19*th Sept.* 1820. Edward Canny, ætat. 10. Skin universally covered with petechiæ of a dark brown, almost black colour, varying in size from that of a pin-head to one-third of an inch in diameter, of form nearly circular, but, on the lower extremities, less distinctly circumscribed, and pale. The tongue, gums and fauces, as far as can be seen, are studded with spots, but not so thickly as on the outer surface. There is a constant and pretty copious discharge of *thin* pale blood from the mouth and nostrils. The petechiæ on the tongue bleed freely when touched. Pulse 116, small and rather sharp; skin hot; tongue white; breathing hurried, but he is able to draw a full inspiration. Appetite not affected; very thirsty; has severe pains in head and legs; very weak.

"The spots were first observed two days ago in the morning, and on the evening of the same day blood began to issue from his mouth; had passed a stool, in which bloody dots were perceived—ordered a brisk purgative, and 10 drops of acid. sulph. dil. aromat. thrice a-day.

"20*th*. Petechiæ present various shades of colour; blood oozing freely; pulse 120, small; had one stool, very fetid; skin hot, appetite good; urine scanty, very thick.—Rep. pulv. purg. et cont. acid. sulph. dil.

"22*d*. A number of the spots have run into large vibices; discharge of blood equally copious, and much attenuated, pulse 120, fuller. Vomited a little blood twice; complains of sickness on raising his head; severe pain in the head; bowels freely open; stools dark-coloured, fetid; urine said to be high-coloured and sparing in quan-

tity. Habt. iterum pulv. purg. et sumat. pulv. cinch. gᵐ x. cum. acid. sulph. diij. gᵗᵗ vii. quartâ quâque horâ. Let him have an ounce of port-wine every five hours.

"23*d*. Slept ill; pain in forehead; nausea, and occasional retching; great debility. Pulse 110, small; petechiæ and hæmorrhage as before; bowels freely open; urine scanty, turbid, and depositing a copious sediment; body emits a most offensive fetor.—Cont. omnia.

"24*th*. He is in an alarming state; oppressed with nausea: vomits on the least exertion. Has not taken his medicines; blood flowing more copiously from mouth; petechiæ have gone into large clusters on forehead, arms and legs. Pulse 120, hard; violent pain in the head; skin hot in the trunk, but cold on the extremities. Eight ounces of blood abstracted from external jugular vein. He became faint and vomited, and the pulse softer and fuller. The blood flowed in a small stream, and was of a very pale colour, more like the washings of flesh than common blood, coagulated slowly, without any separation of serum, and showed no buffy coat.—Ordered a purgative—discontinue the other medicines. On visiting him eight hours after, he was rather better; sickness much abated, and no vomiting. Pulse 110, soft; headache easier; bowels opened three times; stools more natural in appearance. There has been a copious flow of pale, limpid urine; the wound in the vein had not closed, from which he lost about ℥iss more of blood.

25*th*, 8 A. M. Dr. Combe was called in great haste to stop the caustic applied to the wound.—In other respects decidedly better; voice stronger; countenance more animated; headache relieved; no bleeding from the jugular. The patient's clothes and bed-clothes were quite soaked with blood; it was paler, and even more attenuated; no nausea or vomiting; urine very turbid. Ordered to be kept quiet, and to have any diet he chose, but no spirits. In the evening no blood had been discharged for the last two hours, either from wound or mouth. Habt. tinct. opii gᵗ xx. h. s. et pulv. jalap. gr. xii. cras mane.

"16*th*. Lost about ℥i of blood from the wound during the night; slept well; headache very slight; pulse 120, soft. No discharge of blood from nose or mouth; petechiæ fainter and more diffused. Bowels freely opened; stools natural; urine clear, and of a pale yellow colour.

"27*th*. Convalescent. From this time he went on doing well; and the spots having altogether disappeared, he was discharged on 7th October."

Causes of purpura.—According to Bateman, "the causes of this disease are by no means clearly ascertained, nor its pathology well understood." Twenty years have now elapsed since this statement was printed, and although many cases have since occurred, and several have been minutely recorded with the appearances found on dissection, we are still perfectly ignorant both as to its causes and pathology. It has taken place in individuals who were strong, enjoying good health, breathing a pure country air, with all the necessaries and comforts of life around them; and it has likewise attacked those of delicate habit, living in crowded situations on poor diet, and

subject to distress of mind; and it has also occurred in others who were left in a state of debility by previous diseases, some of an acute, others of a chronic nature.

In most of the cases which have been recorded, there has been severe pain or oppression in the chest, and in some in the head. In two cases, mentioned by Dr. Parry in the 5th vol. Ed. Med. and Surg. Journal, the blood was very much buffed; the proportion of crassamentum to that of serum was uncommonly great. In Dr. Fairbairn's case three bleedings were had recourse to—the first to twenty-six ounces, the second to eighteen, and the third to twenty; there was no buff on the two first; the blood was red like arterial, coagulated slowly, and separated no serum; but on the third bleeding, the blood showed a buffy coat. In Dr. Johnson's case, only a part of the blood drawn at the second bleeding exhibited a buffy surface.

In different cases the pulse has been variously described—as full, 70, full but not hard; 100, full and intermitting; quick, soft and small; very quick and weak; 100 and small; 110, firm and sharp; very hard and strong; 120, full. In almost all the cases the stools have been dark-coloured and fetid; some describe them as being of a dark green colour; and others, as black as pitch.

Appearances on dissection.—Petechial marks have been discovered on the surface of all internal organs; vascular turgescence, sanguineous and serous effusions have been observed in the head. The lungs have always been found diseased—congested in their substance, the air-passages filled with bloody effusion, and the mucous membrane lining the tubes of a dark colour. In the abdomen the mucous surface of the stomach and intestines has been found vascular, and spotted with petechiæ; the liver tender and more or less gorged. In one case mentioned by Dr. Bateman, the spleen was found enormously enlarged; and in another instance there was a large morbid growth, consisting of a fleshy tumour with a hard cartilaginous nucleus, weighing about half a pound, found in the situation of the thymus gland, firmly attached to the sternum, clavicle, pericardium and surrounding parts.

The following appearances were found in the case recorded by Dr. Fairbairn, thirty hours after death.

"The petechial spots over the body exhibited nearly the same appearances as before death. The sides of the neck and upper parts of the chest were swollen and livid, and there was a feeling of crepitus, with considerable œdema over the trunk. On removing the integuments from the fore and lateral parts of the chest, the cellular and muscular textures were in some places injected with blood, and emphysematous.

"The thorax contained about a pound of a fluid, resembling blood, of a very dark colour and viscid consistence.

"The lungs were somewhat collapsed, of a dark livid appearance, and contained a bloody serous fluid which occupied all parts equally; there was much less feeling of crepitus throughout their substance, and the spongy texture was less observable than natural. The bronchial tubes and trachea were filled with a similar fluid; and, beneath the internal coat of the latter, there was a slight effusion of

dark venous blood, which tinged the membrane of a deep purple shade. Between the folds of the anterior mediastinum and of the pericardium, there was effused into the cellular texture a considerable quantity of very dark blood, mostly in a clotted state, amounting to several ounces by computation. The pericardium contained the usual quantity of lubricating fluid; the inner surface presented its natural, smooth, glossy texture, but it had assumed anteriorly a deep or brownish-red colour, from the effused blood between its layers shining through it. The heart appeared pale and flaccid; there was no blood in any of its cavities. Under its internal membrane, particularly towards the valves of both sides, but more copious in the left, there was a similar effusion as in the trachea, giving a deep livid colour to the surface of the heart, and tinging its substance to the depth of half a line or a line.

"The inside of the aorta presented an increased tint of redness, apparently from the same circumstances, without evident thickening or change of texture.

"In the cavity of the abdomen the floating viscera were of a dark leaden colour, and less vascular than natural.

"There were a few petechiæ on the intestines. In the ileum there was slight inflammation, extending for a couple of inches, where one portion of the bowel had passed within another.

"In the stomach, towards the pyloric extremity, its inner membrane was thickly studded with petechiæ; whereas that portion surrounding the cardia, for about three inches, was distinctly emphysematous.

"The liver was paler than usual, and somewhat softened; its peritoneal proper coat was very easily peeled off; from its internal surface a bloody, serous fluid could be squeezed out. The spleen was of full size and softer than usual; and, when torn, effused a quantity of dark-coloured matter of a semifluid consistency.

"The right kidney seemed softer than natural; there was an effusion of blood under the internal membrane lining its pelvis, similar to that on the inside of the heart. The left appeared peculiarly blanched, and was also soft; but there was here no effusion.

"The bladder was pale and contracted, containing a few ounces of the same turbid-coloured urine as he had been lately passing.

"On removing the scalp there were two large ecchymoses, two on each side, over the superior attachments of the temporal muscles. The brain, with its membranes, appeared quite healthy; there might be about an ounce or so of clear serum in the ventricles and at the base of the brain.

"In the course of dissection it was remarked that there was a full proportion of adipose substance in every part of the body."

Pathology of purpura.—After relating two cases of purpura in the 5th vol. of the Ed. Med. Journal, the one occurring in a lady about 50, the other in a colonel of the army, who had been rather a free liver, Dr. Parry observes: "These cases strengthen an opinion which I more than twenty years ago maintained, and which a large subsequent experience has tended to confirm—that, in various diseases, among which may be reckoned inflammations, profluvia,

hæmorrhages, dropsies, exanthemata and other cutaneous eruptions, and even the generality of nervous affections, there is one circumstance in common, which is an over-distension of certain blood-vessels, arising, probably, from their relative want of tone, or the due contraction of their muscular fibres."

Dr. Duncan, jun., in the 72d number of the Edinburgh Journal, conceives that this disease may probably arise from the following circumstances:—

"1*st*. Increased tenuity of blood, allowing it to escape from the superficial extremities of the minute arteries.

"2*d*. Dilatation of the mouths of those arteries, allowing natural blood to escape.

"3*d*. Tenderness of the coats of the minute vessels, which give way from the ordinary impetus of the blood.

"4*th*. Increased impetus of the blood, rupturing healthy vessels.

"5*th*. Obstructions in the vessels, causing rupture, with natural impetus, and without increased tenderness.

"6*th*. Two or more of these causes may act simultaneously or successively."

Mr. Plumbe thinks that Dr. Duncan's third conjecture is unquestionably correct as regards the formation of cutaneous spots of purpura. "That this tenderness is the result of deficient nourishment in the superficial vessels is, perhaps, equally clear; and it may fairly be suspected that such deficiency is consequent on the congestion in the hepatic and gastric circulation."

My own experience in this disease has been very limited, but after a careful review of the whole subject, I cannot subscribe to Mr. Plumbe's opinion, for the two following reasons:—1. If the disease had any necessary connection with tenderness of the vessels, the consequence of deficient nourishment, it would be of far more frequent occurrence, whereas it is avowedly rare. 2. It is my impression that the state of the lungs in all stages of the disease, and more particularly in the early stages, has been hitherto quite overlooked. In one rapidly acute case which I was called to see, and which terminated fatally, the *râle crepitant* was heard in some parts of the chest, and the *râle muceux* in others. Although I have not been able to determine the true pathology of the disease, I think it possible that it may be owing to general functional derangement of many organs, which at last produces a great change upon the blood; and that it may be owing probably to disease primarily seated in the lungs.

It is pretty generally admitted that there is considerable analogy between the purpurous spots and the petechial which sometimes take place in fevers, in which there are also occasional discharges of blood from various organs; and I can state with the utmost confidence, that since my attention became directed to the investigation of the probable causes of petechiæ, I have not in one instance failed in detecting disease of the lungs, and particularly of the mucous membrane, by auscultation, and that the observations so made have been confirmed upon examination after death.

Treatment of purpura.—Under the mystery which at present

involves the nature and seat of purpura hæmorrhagica, it is impossible to enter upon this part of the subject without a feeling of embarrassment. Dr. Parry and others have, from certain notions, strongly supported venesection, while it has been condemned by some practitioners whose opinions are entitled to at least equal respect. Dr. Willan is one of those who recommended "a generous diet, the use of wine, Peruvian bark and acids." There is one point, however, on which almost all practitioners agree, viz.: the advantage of keeping up a free discharge from the bowels.

It is strongly impressed upon my mind, from a review of the cases, that there are some instances like those recorded by Dr. Parry, Dr. E. Gairdner and Dr. Combe, in which the patient's only hope of safety depends upon venesection; and that there are other instances, as those probably from which Dr. Willan drew his practical conclusions, which require an opposite mode of treatment. Daily experience also convinces me that there is a third set of cases in this, as in almost all diseases, which requires a combination of bleeding and stimulants, and that it is not inconsistent with sound notions of pathology to bleed first, in order that we may be able to stimulate, and to stimulate for the purpose of enabling us to draw blood. Bleeding is always a dangerous remedy when employed late in severe diseases; and I fear considerable errors have happened from drawing blood too late in purpura. A few years ago, I directed a vein to be opened in the arm of a girl affected with purpura; she died the same night; and in Dr. Fairbairn's case, the man, although previously strong, never recovered from the last loss of blood, and died in a few hours afterwards. The particulars of the case which I attended should have been detailed, but I was not allowed an opportunity of examining the body of the patient after death, although every exertion was made to obtain it. The case was so similar to others already published, that it is of no value without a minute dissection-report.

When the operation of bleeding is performed, a larger orifice should not be made than is actually necessary, and the patient ought to be visited at short intervals, as subsequent hæmorrhage frequently occurs from the vein, and a good deal of difficulty is sometimes experienced in suppressing it. The jugular ought not to be opened, unless in a case similar to Dr. Combe's where no vein was found in the arm.

Acids, particularly the mineral, have been highly recommended; but I am disposed to place more confidence in the vegetable, and especially fresh lime-juice, not only taken internally, but applied externally. Turpentine has also been found useful by Dr. Nicholl; vide 17th vol. Edinburgh Medical and Surgical Journal.

From the beneficial effects produced by the acetate of lead in other discharges, I am induced to hope it may be found serviceable in purpura hæmorrhagica.

Since writing the above, I was called to see a child, between two and three years of age, who lived in the same room with two other children affected with genuine small-pox. I found it feverish and lethargic, with constant vomiting; it had several petechial spots, and

although it had gone through the process of vaccination when a few months old, I was apprehensive of small-pox. Laxative medicines were ordered.

Next day the child was found in the same state. The petechial spots had increased in number and size, and had spread over the trunk and extremities; the skin was hot, and the pulse quick and strong; nothing was retained on the stomach; several attempts were made to give laxatives, but even small quantities of calomel were immediately vomited. Four leeches were applied to the instep.

On the third day the child was found convalescent; the leeches bled profusely; and although a tight bandage had been applied as directed, still the greatest difficulty was experienced in restraining the hæmorrhage. No petechial spots were now to be seen; but the foot was ecchymosed from the pressure of the bandage, on the removal of which blood again began to ooze from the leech-bites, which made it necessary to re-apply the bandage. There had been no stool for three days; but as the irritability of the stomach had now subsided, laxative medicines were given, the bowels were moved before night, and so little debility was produced that the child was walking about the room on the third day.

At the very moment I was engaged in completing this article for the first edition, I was favoured with a letter from Dr. J. S. Combe, in answer to a communication from me on this subject; from which the following cases are extracted. They are very interesting, as in both instances the disease occurred in connection with general acute rheumatism:—

"A remarkable case of purpura was pointed out to me (says Dr. Combe) by the late Dr. Kellie. The subject was a brewer's servant, big and plethoric, who, on the fourth day of an attack of acute and general rheumatism, was found covered with bright petechial spots; he also discharged some blood from the bowels. Active depletion was had recourse to, and he made a quick recovery." Dr. Combe further states, that he "lately saw a robust girl, aged 5, who had been attacked with a violent convulsive fit, and on recovery complained of severe pain of head. In the course of a few hours I saw her, and as small-pox prevailed in the neighbourhood, her friends considered it as such, and pointed out some spots on the skin; they were undoubtedly petechial, and covered nearly the whole body, with smart fever and vomiting. On the third day the extensor muscles of the head were so painful that she could not bend it forward without much suffering; in a few hours this was followed by acute pain of all the larger joints. The spots on the fifth day were fainter in colour, and disappeared in a few days after; but eight days more elapsed before the rheumatic affection had subsided. She was treated actively by venesection and purgatives."

Exudation of blood from the surface, without abrasion of the cuticle, commonly called Bloody Sweat.

Perhaps nearly allied to purpura is the transudation of blood from some parts of the surface of the body, which, in all the cases I have

heard of, has attacked females. It is a rare disease, and has been observed to be for the most part vicarious with the menstrual discharge.

In the former editions of this work, a very interesting history of a case of exudation of blood from the surface of the body was detailed; but I have since had reason to believe the girl was an impostor, and that she has deceived many medical gentlemen, to excite sympathy and obtain money.

PART VIII.

DISEASES OF THE URINARY AND GENITAL ORGANS.

CHAPTER I.

INFLAMMATION OF THE URETHRA, BLADDER, AND KIDNEYS.

INFLAMMATION OF THE URETHRA.

Under this head I shall treat of gonorrhœa; for although inflammation of the mucous membrane of the urethra may be produced by external injuries and other causes, yet this is rare in comparison to the disease produced by impure contact.

Gonorrhœa, (known also by the term blenorrhœa,) is an inflammatory affection of the mucous membrane of the urethra, the consequence of impure coition, and of which there are a great many varieties. The symptoms vary according to the extent and intensity of the inflammation, the peculiar constitution of the patient, and perhaps, also, the condition of the matter applied. A disease resembling gonorrhœa, may, it is said, be produced by inflammatory action extending from the kidneys and bladder—by calculi, highly acrid urine, excessive indulgence in sexual intercourse, long-continued abuse of spirituous liquors, the action of cantharides on the system, and the incautious introduction of instruments.

Symptoms and course of gonorrhœa.—A short time after impure connection, a sense of titillation is felt in the urethra, which soon amounts to itching, and is attended with frequent desire to make water. There is a feeling as if some urine were still left in the urethra, and a consequent effort is made to discharge it; the orifice is now observed to be red and swollen, and perhaps a small quantity of discharge is seen. By and by the desire to make water is more frequently renewed, and on each occasion the passage of the urine becomes more painful, sometimes almost intolerable, while the stream becomes smaller, notwithstanding the increased impulse given by the patient in bearing down. A pretty copious discharge of matter soon takes place from the urethra, which augments for some days, becomes thicker, puriform in appearance, and yellowish in colour; but when the inflammation is intense, it is greenish, and sometimes tinged with blood. It is denied that the matter is pus; we shall, however, commit no error if we consider it as a puriform fluid, analogous to that which is discharged from the inflamed surface of other mucous membranes. The glands and prepuce frequently become swollen, and although the swelling of the prepuce is generally owing to œdema, yet it is sometimes occasioned by the extension of inflammation from

the glans. Often, during the course of this disease, there are excessively painful erections, particularly during the night, the penis being sometimes bent one way, sometimes another, which condition is termed *chordee.* This disease generally goes on increasing in violence to the seventh, and sometimes even to the fourteenth day, and I have known the acute stage to continue even to the thirtieth. The decline of the acute stage is marked by the diminution of the *ardor urinæ* and the inflammation at the *meatus;* still, however, the discharge of puriform fluid may continue considerable under the chronic form of inflammation. Every act of sexual indulgence, the use of ardent spirits, errors of diet, the application of cold, and inattention to the bowels, frequently produce acute inflammatory action, by which means the disease may be prolonged for a considerable length of time.

This is a description of the disease as it usually occurs. Sometimes, however, it is seen in a much milder form, so much so as to give the patient little trouble, and occasionally appears to undergo a spontaneous cure. But there is a far more severe form of this affection, in which the pain, and probably the inflammation, extends throughout the whole urethra, affecting, in some cases, even the bladder, and occasioning pain in the loins; the calibre of the canal is very much diminished in consequence of the swollen state of its mucous membrane, and notwithstanding all the efforts which the patient can exert, the urine flows drop by drop, accompanied by most excruciating pain, and chordee is frequent and distressing. In the worst cases, Cowper's glands and the prostate partake of the inflammation, when a sense of heat, weight and fulness are felt in the perinæum, generally accompanied by dysuria and tenesmus, which more frequently, however, occur when the disease spreads to the neck of the bladder. This state occasionally terminates in abscess, fistula and permanent disease of the prostate. But a more frequent termination of gonorrhœa is stricture of the urethra, produced by a permanent thickening of the mucous membrane, or by an extension of the inflammation to the cellular tissue surrounding that part of the urethra most intensely affected. During the course of gonorrhœa, even when very slight, inflammation of the testes occasionally takes place, and also of the glands in the groin; and sometimes an herpetic eruption is produced upon the glans or prepuce, probably from the acrid nature of the matter.

The term *gleet* is used to express the existence of a discharge from the urethra, the consequence of a diseased condition in which the mucous membrane is left after acute inflammation. This discharge is generally attributed to chronic inflammatory action; it comes and goes, varies in appearance between serum and pus, but for the most part is muco-purulent. The least error in diet, the use of spirits, wines, acids, fruits and peppers, is followed by frequent desire to make water, some *ardor urinæ*, and increased discharge of matter; sometimes these symptoms exist to such a degree as to make the patient himself believe that it is a fresh attack. This state increases year after year till at last a permanent stricture is formed. Loss of health is often the consequence of disturbed nights, produced by pains

in the lower extremities, and by the patient being obliged to rise many times out of bed to empty the bladder, perhaps to void only an ounce of urine. Thickening of the bladder follows, with disease of the prostate, and perhaps, also, of the kidneys.

Symptoms of gonorrhœa in females.—The chief differences produced by this disease in the male and female are the following: In the latter, the inflammatory action sometimes affects the mucous membrane of the vagina; and I have seen several cases where there was reason to believe that the lining membrane of the uterus also became involved, giving rise to *leucorrhœa* and *menorrhagia* in their worst forms. From the small extent of the urethra in the female, which does not exceed an inch and a half in length and the simplicity of its structure, the symptoms upon the whole are not so distressing at the time as in the male, but the disease often leaves a severe form of prurigo, affecting the labia, the nymphæ and the clitoris.

I shall not stop to inquire whether this disease is, or is not, connected with syphilis, or whether it ever had a syphilitic origin.

Appearance of the urethra when affected with gonorrhœa.—Few opportunities of examining the state of the urethra in this disease present themselves. Sir Astley Cooper, however, had once such an opportunity in a criminal who had gonorrhœa at the time of his execution. "The inflammation had extended down to the bulb of the urethra; for an inch or an inch and a half down the urethra was exceedingly red, and there was some effusion of matter on the internal surface; the urethra was also red at the bulb but not of so deep a colour. The inflammation, therefore, (says he,) is not always confined to an inch, or an inch and a half down the urethra, but often extends over the bulb, and in this way produces strictures." In the case above alluded to, the gonorrhœal inflammation had extended seven inches down the urethra. Sir Astley Cooper thinks the inflammation to be of the erysipelatous kind, and that ulceration does occasionally take place in the mucous follicles, but never in the urethra itself; if that were the case, the mucous membrane would more frequently give way. (Vide Lectures, p. 462.)

Treatment of gonorrhœa.—This is, in many cases, a very intractable disease, and there is no telling where it will end. I have more frequently been annoyed and disgusted in conducting the treatment of gonorrhœa than of any other affection. We are often not consulted till the disease is far advanced, and great difficulty is experienced in keeping this class of patients under a proper degree of restraint.

There are two methods of treatment strongly recommended.—The one is to endeavour to alter the action of the part immediately, even during the acute stage, by means of stimulating injections, or the action of cubebs, a remedy which was introduced into this country a few years ago from the island of Java. There can be no doubt that cubebs is a very powerful, and, in many instances, an excellent remedy; but bad consequences, it cannot be denied, are often produced both by it and stimulating injections when indiscriminately used. There appears to be a time at the very commencement of the first

stage of the inflammation, when either remedy may prove beneficial, but this must be during the first hours, before the inflammation has extended, and previous to the formation of matter; but we seldom have such an opportunity. Were a medical man himself the patient, he might, indeed, apply these remedies at once, and successfully, particularly if his habit of body were in a good state at the time. Cures appear to have been effected when the first stage had been further advanced; but, perhaps, for one such event, there have been fifty failures, out of which several cases might be produced, where more violent inflammation and suppuration of the parts, and even inflammation of the testes, succeeded. Therefore, generally speaking, it is not in the first stage that these remedies are found to be so advantageous as in the chronic.

The other plan I shall give in the words represented to have been used by Sir Astley Cooper in his lectures:—"When the patient applies to you for his first clap, there will be generally a great deal of inflammation, and I advise you to give the sulphate of magnesia with the infusion of senna. An ounce of the sulphate of magnesia may be mixed with six ounces of the infusion of senna, and three tablespoonfuls given two or three times a day, so as to purge the patient very actively. You may afterwards give the submurias hydrargyri with extract of colocynth, but merely as a purge; for if it were to act as a mercurial, I would not give it at all. There is no necessity for giving calomel, unless you wish it to act on the liver, as well as on the intestinal canal. Having purged the patient pretty freely, you will direct him to take diluting drinks, of which he can hardly take too much. Two drachms of the carbonate of potash or the subcarbonate of soda should be taken in a quart of some diluting drink in the course of a day: capillaire or tea will answer this purpose very well: some advise the gum of acacia, but whether it does any good or not, I do not know. I have found the liquor calcis a very excellent diluent in this disease. Soda water is often useful, but it must be ascertained whether it produces irritability of the bladder; for, in some persons, it increases irritability. If it increase very much the inclination to make water, it should not be persisted in; if it do not produce this effect, it is a very excellent diluent. The penis should be suffered to hang for a considerable time in warm water, which will relieve the inflammation, and produce nearly all the good of a warm bath. When the *ardor urinæ* and pain from chordee are very severe, twenty drops of the liquor potassæ, with from three to five grains of the extract of conium, in the mistura camphorata, may be given with considerable advantage. This is the plan which you should pursue during the first week. You may then apply lint, dipped in the liquor plumbi subacetatis dilutus, to the part. Do not use an injection in the first instance, but pursue the plan I have pointed out to you during the first ten days."

Having frequently tried this plan of treatment without success, I had recourse to that which shall now be described, and I can recommend it strongly from its superior success.

1*st Stage.*—If the inflammation be severe and extensive, with much *ardor urinæ*, swelling of the penis and chordee, I open a

vein, particularly if the patient be young and robust, and if the pulse be full or hard, and in this manner make a speedy impression upon the inflammation. The bleeding is to be followed by the use of saline purgatives, given after the exhibition of a moderate dose of calomel combined with any other laxative in common use, the antiphlogistic regimen, and, perhaps, also a solution of tartar-emetic. By these means, the severity of the inflammation will, in general, be quickly subdued, and the first stage shortened. After this I have often seen the greatest advantage from the immediate employment of cubebs, the balsam of copaiva, as well as from astringent injections thrown into the urethra. In some cases where bleeding is inadmissible, and where the inflammation produces pain in the perinæum, much benefit may be derived from the repeated application of a dozen or two of leeches. *Ardor urinæ*, *dysuria* and *chordee* are most effectually mitigated, in cases not requiring the active treatment above recommended, by linseed tea containing a small proportion of the nitrate of potass, as also by anodyne injections thrown into the rectum. A very useful remedy is to be found in pills composed of equal parts of camphor and hyoscyamus, of which two may be taken every second, third or fourth hour, till the patient be relieved.

The tinctures of muriate of iron and iodine have been much praised.

2d Stage.—It frequently happens, however, that we are not consulted till the second or chronic stage has taken place. Even then, I have seen considerable advantage from the application of leeches to the perinæum, more particularly in old subjects, and when the inflammation had extended far down the urethra. It is in this stage that the effects of cubebs, balsam of copaiva and astringent injections are so beneficial, provided there be no tendency to stricture, to ascertain which, a bougie is to be introduced; and if one should be discovered, it will be in vain to use any remedy till it be removed. The usual injections employed are those composed of the acetate of lead or sulphate of zinc, at first in about the proportion of a grain to the ounce of water. Sometimes these substances are united, forming a solution of the acetate of zinc, the sulphate of lead being precipitated; the solution should be carefully strained before using. An infusion of green tea is also often serviceable. An essential oil of copaiva has been introduced into the practice, but it is by no means ascertained whether it possesses any advantages over the common balsams. An agreeable method of using copaiva is by making equal parts of the balsam and essence into pills, with the carbonate of magnesia, sixteen or eighteen of which are to be taken daily.

In treating the disease in females, the same principles are applicable; and when injections are ordered, care should be taken that they be not thrown into the vagina only, which generally happens unless instructions are given where to find the urethra. It has been mentioned already, that a troublesome prurigo sometimes affects the labia, nymphæ and clitoris, for the cure of which, it is necessary to pay great attention to the bowels, to use ablutions of the parts every second or third hour, with astringent washes; and in obstinate cases,

the application of a solution of the nitrate of silver is necessary. Confinement to the horizontal posture, and even general bleeding are called for, particularly when the parts are inflamed and much swollen.

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE BLADDER.

This disease most frequently affects the neck of the bladder, and is generally recognized by pain and swelling in the hypogastric region, the pain being increased by pressure, with a sense of internal heat and tension, frequent desire to make water, and extreme difficulty in passing a few drops, notwithstanding violent bearing down efforts; occasionally, indeed, there is complete retention. There are also considerable pain and burning heat in the urethra, sometimes, however, only at its orifice, with a sense of itching in its course. The bladder sometimes becomes greatly distended, and, indeed, it may be mentioned that the distension is sometimes the cause of the inflammatory action. If the disease is not soon mitigated, tenesmus, tympanitic distension of the abdomen, pains in the loins and febrile symptoms take place.

There is also a chronic form of inflammation of the bladder, which occurs in old people, and is often occasioned by stone, which terminates in thickening, and even ulceration of the mucous membrane, with very considerable hypertrophy of the muscular structure of the organ; and it is in these cases that the discharge of a large quantity of mucus takes place.

This disease terminates by what is called resolution, and by becoming chronic, when pus is sometimes discharged. Gangrene is exceedingly rare; peritonitis is a more frequent occurrence, owing more to the distension of the bladder than to the extension of the inflammation from one tissue to the other. Ulceration is rare. There is a fine specimen, however, of this termination of inflammation of the bladder, in my museum, which I owe to Mr. Fraser, surgeon of the flag ship of Admiral Napier. The subject of this interesting case was a Portuguese sailor, Francisco Jose, aged 40. The following statement is extracted from Mr. Fraser's communication:

"He complained of pain in the epigastric region, on 25th March at 7 P. M.—Stated that he had not voided urine for eighteen hours. Pulse feeble. On introducing the catheter, about one ounce of bloody urine was evacuated. Fomentations to the abdomen. Ten drops of muriated tincture of iron were given occasionally.

"26*th*.—Pain still continues, but is not aggravated by pressure. Much distension of abdomen; no urine voided since last report. The catheter again introduced, and a very large quantity of urine was evacuated. Fomentations continued, and an ounce of castor-oil exhibited.

"2 P. M.—Bowels not opened by the oil. Pain is now increased on pressure. ℥ss of oil repeated, with ʒi of sweet spirit of nitre; large poultice to abdomen. 7. 50. No alteration in symptoms. Again relieved by the catheter.

"27*th*. Passed a good night. Pain of abdomen relieved. Bowels freely opened. Pulse still feeble. 6 P. M. Declared that the medicine could do him no good, and that he would soon die. Has walked about during the day, and there was nothing very remarkable in his appearance indicative of danger.

"At 7 P. M., he was moribund, and died soon afterwards.

" 28*th*. *Sectio cadaveris*.—Viscera of abdomen and thorax healthy. About a pint of urine was found in the abdomen. The peritoneum, nevertheless, presented a healthy appearance. There was no unusual vascularity, no effusion or adhesions. The bladder very much contracted, presented an ulcer, about three-fourths of an inch in length, at the fundus, forcing a free communication between the cavity of the bladder and the abdomen. The prostate gland of natural size, and healthy in appearance."

Causes of inflammation of the bladder.—Individuals subject to gouty and cutaneous diseases, as well as those affected with dyspepsia, are liable to this complaint. The application of cold; the use and particularly the abuse of ardent spirits; the external or internal use of cantharides and small doses of turpentine, together with acrid urine, are also occasional causes of this disease, particularly in individuals who are afflicted with strictures in the urethra.

Treatment of inflammation of the bladder.—Bleeding, general and local; the hip-bath, gentle laxatives frequently repeated, emollient and mucilaginous diluents and opiates, particularly *per anum*, ought to be had recourse to, according to the severity of the disease and sufferings of the patient; but the introduction of the catheter into the bladder must be regarded as a principal remedy, and ought to be had recourse to as soon as possible. This is not only serviceable by drawing off, perhaps, a large collection of water, thereby relieving the distension, but sometimes by removing a small quantity of acrid, high-coloured urine, which mitigates the patient's sufferings immediately. In this case, also, the employment of camphor and hyoscyamus will be beneficial; and when the disease becomes chronic, I have seen cubebs and copaiva useful. In instances where we have good evidence that acrid urine is the cause of the disease, it will be found serviceable to inject tepid water into the bladder, provided it is not allowed to be retained; this means is also recommended when the inflammation becomes chronic. Rubefacients are serviceable, both in acute and chronic inflammation of the bladder. Tincture of cantharides given internally, and small doses of turpentine are beneficial in some cases, but are to be used only in chronic forms of the complaint of long standing, when we want to rouse a little action. It need scarcely be stated, that after there is evidence of stone in the bladder, the first opportunity should be seized, which the local and general symptoms will admit, to extract it by the usual surgical operation.

[The most frequent form of this disease follows the application of blisters, and is familiar by the name of *strangury*. In addition to the remedies already mentioned, external fomentations to the hypogastric region should not be omitted; or what is still better, the application of a bladder half full of hot water, between which and the

skin, a fold or two of flannel may be at first introduced. But in this, as in other diseases, prevention is better than cure; and after having witnessed much suffering from blisters, I have adopted the plan of guarding them by means of camphor and opium: thus, in a blister five or six inches square, I direct twelve grains of the former and four of the latter to be rubbed up with the ung. cantharid. before spreading it; and I unhesitatingly assert, that since I adopted this precaution, I have never met with a severe case of strangury, and very rarely with even a partial one.]

INFLAMMATION OF THE KIDNEYS.

The term *nephritis* has been applied to this disease, the causes of which are much the same as those of inflammation of the bladder. Gouty subjects, and others who are frequently troubled with rheumatism and lumbago, and also with eruptions, are often affected with nephritic complaints, as well as those who are subject to dyspepsia. The abuse of spirituous and malt liquors, the too frequent use of diuretics, the employment of cantharides, sudden changes of temperature, suppression of habitual discharges, and the recession of eruptions, retention of urine, external injuries, irritation produced by the presence of a calculus in the kidney, and inflammation of the urethra and bladder, extending to the kidneys by continuity of surface, are all exciting causes of the disease.

Symptoms of inflammation of the kidneys.—This disease generally commences, like other inflammations, with rigors, followed by pain and fever, which vary in intensity. The pain is generally severe and lancinating, but sometimes is obtuse, with a sense of increased weight, which is felt in one or both lumbar regions; it often extends to the bladder, the penis, the groins and scrotum, and sometimes even to the thighs; and is increased by pressure and motion, as well as by taking in a full breath, and efforts made at stool. In slighter cases the patient complains only of a sensation of heat and weight, sometimes of gnawing constrictions in the loins. The urine is scanty, and passed drop by drop, of a red colour, and sometimes is entirely suppressed. Besides these symptoms, there are often a feeling of faintness, nausea and bilious vomiting, borborygmus, oppression at the præcordia, hiccup, tympanitic distension of the abdomen; occasionally there is diarrhœa with tenesmus; at other times the bowels are constipated, and numbness and retraction of the testicle on the affected side are complained of;—if both kidneys be affected, there is retraction on both sides. There is likewise fever, and the pulse is generally hard. Sometimes the skin is covered with perspiration having a urinous smell; at other times it is dry and hot.

These symptoms are often variously combined, and are sometimes modified by the occurrence of great restlessness, headache, and the passage of bloody urine, which, however, on some occasions, is clear and limpid, although it may subsequently deposit a white sediment.

This disease is rarely fatal, although the bodily pain is, perhaps, fully as intense as in any other malady—the product of inflamma-

tion and accompanied by fever. It rarely terminates in extensive suppuration in the substance of the kidney, but I have sometimes seen small abscesses in individuals who died of the ordinary fevers of this country, which were treated as typhus fevers, and where no suspicion was entertained during life that any local disease existed. Sometimes the matter escapes and finds its way into the pelvis of the kidney, and from thence into the bladder; on other occasions, the inflammation seems to be confined to the lining membrane of the pelvis, which is found greatly enlarged and distended with pus, instances of which have fallen under my observation within the last few years; these were also treated as idiopathic fevers of the typhoid type. Cases are on record, where the suppuration has been so extensive, that the substance of the kidneys has been entirely destroyed. It is rare for the pus to escape into the cavity of the abdomen, and equally rare for the abscess to point externally; but instances have been known where the matter has found its way into the colon, one case of which I have seen. It is said that gangrene occasionally ensues, but such a termination must be extremely rare; it is probable that the natural progress towards decay has been mistaken for gangrene. When suppuration takes place, the more violent feelings subside; a throbbing sensation and a sense of weight are said to occur, with alternate chills, slight flushes of heat and profuse sweating.

In chronic inflammation, induration of the kidney is produced, and sometimes it is completely disorganized. This diseased condition of the kidneys shall be fully illustrated in a subsequent part of this volume, in the chapter on Dropsy.

Treatment of inflammation of the kidneys.—Antiphlogistic means, such as are recommended for the cure of other inflammations, are to be had recourse to. Copious venesection, repeated according to circumstances, and local bleeding, which is better effected in this particular disease by cupping the loins than by applying leeches, are highly necessary. Fomentations, applied as hot as they can be borne to the loins, are peculiarly soothing, fully more so than the general warm bath, which, however, is not to be neglected; gentle laxatives, particularly of the saline kind, are to be frequently repeated; linseed tea, or any other mucilaginous drink containing small proportions of the nitrate of potash, is to be taken, but diuretics are not to be exhibited until the acute stage is subdued. Large injections of tepid water *per anum* are often found to produce temporary relief, and should therefore be frequently used. Rubefacients, particularly mustard plasters, applied to the lumbar region, are found beneficial, but are by no means to be used till towards the end of the acute stage.

[ALBUMINURIA.]

[This malady has been familiar, for the past few years, by the name of *Bright's disease*, in compliment to Dr. Bright, who was the first to explain its pathological characters. It has also been called granular kidney, and albuminous nephritis.

Its principal and distinctive feature is the presence of albumen in the urine,—an element which this secretion does not possess in its healthy state.

With respect to the anatomical appearances in this affection, they are not easily defined, because they are so varied as to exhibit almost every pathological condition to which the kidney is incident. For example; on removing the proper investing membrane, the surface is seen to be of a pale or yellowish colour, or spotted or mottled with dark, chocolate-coloured stains. In other instances, the surface is rough or granulated. Sometimes there is atrophy, sometimes hypertrophy of the whole gland; but the former state is the result of the chronic affection, while the enlargement is attendant on the earlier periods of disease. If the kidney be laid open, all its parts are morbid in colour, consistence or proportion. The cortical substance is pale, or granulated or softened, according to certain stages of the malady. The medullary portion suffers similar changes; and the whole gland is either preternaturally soft and flabby or the very reverse; and small cysts are occasionally associated with these varied lesions. Dr. Christison, however, has defined the pathological character of albuminuria in the following brief description;—a morbid deposit in the substance of the kidney, generally in a granular form, occasioning atrophy of the proper renal structure, and indicated by more or less tendency to diminution of the solids of the urine, generally also by the presence of albumen, and frequently by the supervention of dropsical effusion.

After all, this disease is remarkable for its variable characteristics; for it is now well established that the albuminous urine may coexist with, and be consequent to, genuine nephritis; that it may exist without nephritis, but complicated with dropsy; and again, albuminuria may exist when neither of the preceding diseases is present.

Symptoms.—The access of this malady, in its acute form, is, for the most part, like that of acute nephritis,—fever, dull pains in the lumbar region, sometimes following the course of the spermatic cord to the testicle; the urine is scanty, highly charged with albumen, and sometimes tinged or mixed with blood; and these symptoms are sooner or later complicated with general dropsical effusion. Unless the disease is checked in its forming stage, it either terminates in coma and death, or puts on a chronic form. In the latter, the pains become dull and obscure, with anæmia, languor, indigestion and loss of flesh. The urine is either in excess or much diminished in quantity, presents the characteristic albuminurious quality and is, at the same time, deficient in urea.

To detect albumen in the urine, nothing more is generally necessary than heating it to the boiling point, when the adventitious material is either at once gelatinized in the tube or vessel, or falls in flocculent masses to the bottom. Another method is first to treat the urine with heat alone, and then with nitric acid. Heat is, in general, a sufficient test where the albumen is in quantity; but where the proportion is small, the acid becomes necessary for its detection.

Of all the secondary diseases, dropsy is the most frequent, and is

not unfrequently the first serious indication of the renal disease. Nevertheless, even this condition is not essential. "Instances occur where the disease runs a long course without any dropsical effusion; it is, however, the most frequent of all the causes of dropsy. Many dropsies consequent upon scarlatina are of the same nature. So, also, are probably all those where the œdematous parts are elastic, and do not pit on pressure. So, too, are most, if not all cases attended with diuresis, provided the urine be not saccharine."* Finally, by long continuance, the serous and mucous membranes become generally implicated, and diarrhœa, catarrh, internal dropsies, coma and apoplexy are among the train of consecutive affections.

Treatment.—My own experience with respect to that form of renal disease which is essentially complicated with albuminous urine, is very limited. I have not even attempted to test the urine for the presence of albumen, though I have met with various instances in which its presence could be safely inferred from other symptoms. I have been accustomed to treat such cases with gratifying success with cathartics followed by alterative doses of blue pill, or nitro-muriatic acid, or by a solution of the bicarbonate of soda with digitalis, together with such a regimen as the nature of the case appeared to demand.

An apartment of Guy's Hospital, London, has been appropriated to the exclusive use of this class of patients; and Dr. Bright has therein fairly tested the relative advantage of various modes of treatment; nor do I know a better source for practical information than the following extract from his last report. "In the first steps and the more acute forms of disease, bleeding may be considered the more important remedy; but this is, of itself, wholly inadequate to the cure, unless we purge freely, and at the same time call upon the skin to do its duty. Of all the measures for effecting this latter purpose, the strictest confinement to bed is the most effectual; and without that, I do not believe that in this climate we have a chance of cure. That preliminary, however, being adopted, antimonials are probably the best diaphoretics; but the liquor ammoniæ acetatis is likewise very useful; and a simple saline draught of citrate of potash or soda is, I believe, when diligently persisted in, of much avail; and the warm bath, in its various forms, may, in many cases, be brought to act most beneficially.

"Amongst the purgatives, I shall only mention that elaterium and jalap, with the bitartrate of potash, appear to me the most effectual. When the disease has made further progress, and has become chronic, perhaps organic, I should still recommend the greatest attention to the full effects of purgation, to the state of the skin, and to protection from atmospheric changes; and I am more and more impressed with the probability that if complete change of climate were tried, great benefit might result. There are certain remedies whose actions in this disease are less obvious than those to which I have referred; but many of them probably act by affording a degree of stimulant or

[* Christison, Library of Practical Medicine, III. p. 276. For a detail of the pathological appearances as revealed on dissection, see the chapter on Dropsy at the end of the present volume.]

astringent action to the kidney; of these I may mention the mineral acids as applicable in the declining stages of more acute attacks. The uva ursi, in its different preparations, in the chronic disease; the pyrola umbellata and the diosma crenata, where great irritability of the urinary organs exists:—a remedy which I have been led to adopt in many cases from the very favourable reports of Sir Benjamin Brodie; nor have I been disappointed of some good effects, though I should employ with greater confidence, a long-continued course of conium, soda and uva ursi. One thing, however, must be kept in mind,—that whatever remedy is given to overcome a disease so chronic and confirmed, must be administered with exemplary patience and perseverance."*

To these measures Dr. Barlow, also of Guy's Hospital, adds tartar-emetic. He gives this medicine in nauseating doses in acute albuminuria; but in smaller and merely diaphoretic portions in the chronic malady.

It has occurred to me that very small and even minute doses of spirits of turpentine in combination or mixture with alkalies, and each dose followed by a very free draught of cold water, would operate favourably after the urgent symptoms of the acute stage have been reduced. The preparations of iodine, also, and especially the iodide of potassa, deserve a more extended trial than they have hitherto received.]

[* Guy's Hospital Reports, in Braithwaite's Retrospect, Part I, page 55.]

CHAPTER II.

CALCULUS IN THE KIDNEYS—BLADDER—AND OTHER PARTS OF THE URINARY PASSAGES.

The urine is one of the most complicated fluids secreted by animals; it is composed of acids, alkalies, calcareous earth and other substances hereafter to be noticed.

The substances hitherto discovered in urinary calculi are lithic, sometimes called uric acid—phosphate of lime—ammoniaco-magnesian phosphate—oxalate of lime—cystic oxide, with a variable proportion of animal matter cementing their ingredients. According to the best authorities, it would appear that these substances seldom exist singly, yet some of them generally prevail in a sufficient degree to impart to each stone a peculiar character. Dr. Marcet has given the following classification:

1. Lithic calculus;—2. bone-earth calculus, principally consisting of phosphate of lime;—3. the ammoniaco-magnesian phosphate;—4. the fusible calculus, consisting of a mixture of the two former;—5. the mulberry calculus, or oxalate of lime;—6. the cystic calculus, consisting of the substance called by Dr. Wollaston cystic oxide;—7. the alternating calculus, or concretion, consisting of two or more different species arranged in alternate layers;—8. the compound calculus, the ingredients of which are so intimately mixed, as not to be separable without chemical analysis;—9. calculus of the prostate gland.

1. *Lithic calculus.*—So called from the preponderance of lithic acid, which substance was first discovered by Scheele. This is a hard, inodorous concretion of a brownish or fawn colour, sparingly soluble in water, but easily dissolved by solutions of either of the fixed alkalies. It is also soluble in nitric acid. When exposed to the action of the blow-pipe, it blackens, emits a peculiar animal smell, and gradually evaporates, leaving a little white alkaline ash.

2. *The bone-earth calculus, principally consisting of phosphate of lime.*—The existence of a urinary concretion, consisting entirely of phosphate of lime, was first pointed out by Dr. Wollaston, who gave the following description of its appearance: "Its surface is generally of a pale brown, and so smooth as to appear polished; when sawed through, it is found very regularly laminated, and the laminæ in general adhere so slightly to each other, as to separate with ease into concentric crusts." When powdered, this calculus is

very soluble either in the muriatic or nitric acids. Under the action of the blow-pipe it first blackens, but soon becomes perfectly white.

Dr. Marcet thinks that calculi entirely composed of pure phosphate of lime are very rare.

3. *The triple calculus, or ammoniaco-magnesian phosphate.*—Dr. Wollaston also discovered this triple salt as a constituent of urinary concretions, although calculous masses consisting solely of this substance are, perhaps, never met with. Calculi in which the ammoniaco-magnesian phosphate prevails, are generally whiter and less compact than those of the former class. An ammoniacal smell is emitted under the blow-pipe, the fragment diminishes in size, and, if the heat be strongly urged, an imperfect fusion takes place, leaving a phosphate of magnesia.

4. *Fusible calculus.*—With the exception of the lithic, this kind of calculus occurs more frequently than any of the others. It is also in general whiter, and more friable, sometimes resembling a mass of chalk. It likewise appears in the form of a spongy and very friable whitish mass, without a laminated structure.

5. *The mulberry calculus, or oxalate of lime.*—It was Dr. Wollaston who first discovered this substance in urinary calculi. Although named mulberry from its external resemblance to that fruit, yet we are assured by Dr. Marcet, that a number of calculi of this class occur, which, far from having the mulberry appearance, are remarkably smooth and pale-coloured; and it is conjectured that the dark colour of the tuberculated calculi may arise from imbibition of blood.

6. *The cystic oxide calculus.*—This calculus was first discovered by Dr. Wollaston, and resembles more nearly that of the triple phosphate of magnesia than any other sort; but is more compact, has no distinct laminæ, and appears as one mass confusedly crystallized; it has a yellowish semi-transparency, and a peculiar glistening lustre, like that of a body having a high refractive density. The solvents of the cystis oxide are too numerous to be particularized here; but it may be mentioned that it is not soluble in water, alcohol, acetic, tartaric and citric acids, or saturated carbonate of ammonia.

7. *The compound calculus in distinct layers.*—Calculi of this description are frequently seen in practice, and show lithic strata alternating with layers of oxalate of lime, or with its phosphate. Dr. Marcet has given a representation of a calculus, in which lithic acid forms the nucleus, pure phosphate of lime being next to this, and so on, the fusible crust at last enveloping the whole concretion.

8. *Compound calculus with the ingredients intimately mixed.*—This kind is comparatively rare; but Dr. Marcet states, it may be sometimes recognized by its more or less irregular figure, and less determined colour--by being less distinctly, if at all stratified—and by often possessing a considerable hardness. When exposed to analytical processes, confused results are obtained, which soon proclaim its compound nature.

9. *Calculus formed in the prostate gland.*—Calculi formed in this situation often give rise to symptoms which are mistaken for the effects of stone in the bladder. According to Dr. Wollaston, they all

consist of phosphate of lime, not distinctly stratified, and are tinged with the secretion of the prostate gland; the salt is in the neutral state, without a redundance of calcareous earth as in bones. Their external appearance is similar to that of the lithic calculi; but Dr. Marcet has shown of how much consequence it is, in a practical point of view, to be able to detect the difference. For full information upon these points, and upon all others connected with the formation of urinary calculi, I must refer the reader to Dr. Marcet's excellent work on calculous disorders, published in 1819.

Besides these, Dr. Marcet describes two other kinds of calculi, the names of which I shall only mention:—1*st*. The Xanthic oxide, which makes an approach to the cystic calculus, but gives a bright lemon residuum on evaporating its nitric solution, which is not yielded by the cystic calculus. 2*d*. Fibrinous calculus, so called from its possessing properties similar to those of the fibrine of the blood, and supposed to be formed by a deposit from the blood.

CALCULUS IN THE KIDNEY.

Symptoms.—Long-continued obtuse pain is felt in the lumbar region, shooting downwards, and producing a numbness in the thigh of the affected side, with painful retraction of the testicle, increased on taking exercise. There is a frequent desire to make water, which is discharged in small quantity at a time, and generally of a deep-red colour, often depositing a brick-coloured sandy sediment. A great many cases have been recorded where calculi of considerable size have been lodged in the kidney, without producing much inconvenience to the patient; a remarkable instance of which is given by Dr. Marcet. The state of parts is well represented in his first plate, which shows the pelvis of a diseased kidney much enlarged, and distended by a number of calculi closely pressed against each other; other calculi are seen in the enlarged infundibula. The patient died under Dr. Marcet's care at Guy's Hospital, of hydrothorax, "without any symptom having occurred which could lead me to suppose that there was any disease in the urinary organs." There is also a remarkable preparation in my museum, taken from the body of a woman who died of what was considered to be typhus fever; the kidney was enlarged, of scirrhous hardness; the ureter was destroyed, and a large calculous mass was found in the substance of the kidney. Had the woman lived long enough, it would have been discharged by stool. It was in the left kidney, to which the descending colon was strongly attached; several ulcerations are to be seen through the intestinal tube, communicating with the calculus. The woman had been long slightly ailing, and there can be no doubt that the febrile symptoms which occasioned her death were produced by local irritation; she had been for some time affected with diarrhœa, and occasionally the stools were bloody.

We are told by Dr. Marcet, that when a calculus is lodged in the kidney, a suppuration and gradual wasting of the organ take place, in which circumstances the disease is generally accompanied by long-

continued pain in the lumbar region, and by a discharge of purulent urine, not unfrequently attended by copious hæmorrhage.

Some years ago, I extracted a stone, weighing one ounce and 35 grains, from the bladder of a female, by dilating the urethra, which was effected by sponge-tents. The patient died some time afterwards from apoplexy, and on dissection, the arteries of the body were found generally ossified; one kidney was in a state of atrophy, its emulgent artery being very much diminished in size at its origin by an ossific deposition. The other kidney was considerably enlarged, although its structure appeared to be sound; and another calculus, the size of a small bean, was found in the pelvis, about to enter the ureter, which was much dilated through its whole course, and appeared as if it had formerly given passage to the nucleus of the large stone which had been previously extracted. The symptoms under which this woman had laboured for a number of years were not of so marked a character as to attract the attention of a great number of medical men in Edinburgh, who had seen her at different times. This, perhaps, may be fairly attributed to the combination of symptoms produced by the general disease in the coats of the arteries.

It would appear probable, that acute pain and great suffering are produced more frequently when a calculus is in its passage from the kidney through the ureter than at any other time; and I believe it is generally remarked, during the passage of a calculus, that the pain is excruciating, not only in the loins, but also in the testicle from its retraction; yet the pulse remains, for the most part, unaffected, which is a phenomenon also observed during the passage of gall-stones through the biliary ducts into the duodenum. In other respects, there is a close resemblance between the symptoms of stone and those sometimes occasioned by inflammation of these parts, when no calculous concretion exists.

Treatment of urinary calculus in the kidney, and during its passage from thence into the bladder.—It has already been shown, that calculi may exist in the kidney without giving rise to any very marked symptoms; nevertheless, when attending a patient complaining of dyspeptic symptoms, accompanied by pain in the lumbar region, it is our duty to examine the state and appearance of the urine. The remarks already made must be kept in recollection, and particularly that renal calculi are chiefly composed of lithic acid, the excess of which gives to the urine a red colour, and when there is any deposition on the sides of the vessel, it will be of a red or pinkish colour. In such circumstances, the use of alkalies will be found very serviceable, and more particularly Henry's calcined magnesia. The alkalies in common use are lime-water, the subcarbonates of soda and potash; and I frequently exhibit the liquor potassæ in milk. The warm bath, hot fomentations to the loins and rubefacients may be employed, and will frequently relieve the pain. Local bleeding by cupping may also be had recourse to when necessary. Opiates are serviceable in allaying pain, particularly when it is violent, and when suspicion is entertained of a calculus passing through the ureter; the dose must at that time be proportioned to the severity of the

sufferings; indeed, general bleeding is then frequently necessary. In both conditions, gentle laxatives are indispensable, assisted by large tepid injections.

STONE IN THE BLADDER.

Symptoms.—A frequent desire to pass urine, an uneasy sensation in the glans, and pain in the region of the bladder, are the chief symptoms complained of. The uneasiness in the glans becomes at last very acute. The urine varies in appearance, depositing sometimes a red, at others a white sediment; there is often a considerable quantity of mucus, sometimes tinged with blood, produced no doubt by constant irritation and inflammation of the mucous membrane of the bladder; the urine sometimes flows only drop by drop, with great straining, owing, perhaps, to the enlargement of the prostate gland, or to the stone being lodged in the neck of the bladder. Occasionally the urine flows in a full stream, but suddenly stops with violent pain, which is generally attributed to the stone pressing on the orifice. This inconvenience is frequently relieved by change of posture. Thus I have known several patients who were never able to make water, unless lying on one side; and instances are recorded by Sir James Earle, of patients who, "in order to evacuate their urine, were literally obliged to stand on the head almost in a vertical position."

The symptoms above enumerated are not always present, but come on at times in severe paroxysms, which are known by the term "fits of the stone;" these are occasionally produced and exasperated by exercise of any kind, but particularly by riding on horseback. Instances are recorded in which stones of considerable size have been found in the bladder after death without having produced much, if any previous suffering; but in these cases they have generally been found contained in cysts.

On dissection of patients who have died with calculus, the bladder is generally seen more or less thickened, diminished in size; and the mucous membrane is also frequently found extensively diseased, sometimes ulcerated.

Treatment of stone in the bladder.—A stone in the bladder, if small, may pass through the urethra, and this is a frequent occurrence; but when large, the only prospect of curing the patient is by means of a surgical operation, which this is not the place to describe. Various chemical agents, some of an acid, others of an alkaline nature, have been recommended to be thrown into the bladder, for the purpose of dissolving calculi; but as it has been already shown that the composition of urinary calculi is various, and that each may consist of different substances in distinct layers round a common nucleus, little benefit can be expected from their employment. Besides this objection, the introduction of such fluids must exasperate the patient's suffering in all cases by irritating the bladder, if used sufficiently concentrated to exert any solvent effect.

As palliatives, gentle laxatives, tepid injections thrown into the

rectum, opiates, perfect rest, the warm bath, and attention to diet will be found beneficial.

For further particulars respecting the treatment of stone in the bladder, and for many ingenious remarks concerning the operations of remedies, I must refer the reader to Dr. Marcet's work.

STONE IN THE URETHRA.

Symptoms.—At first this affection may be mistaken for stricture, but the impression will generally be removed by the introduction of a metallic bougie or a catheter. But even if neither of these be used, the nature of the case is soon unequivocally announced by a partial or complete retention of urine, by acute pain in the situation of the calculus, by the hardness of its feel, and by subsequent inflammation and tumefaction of the part.

This also is a case for the surgeon; but I may mention a plan which prevails among quacks, of giving strong diuretics to produce a copious secretion of urine, with a view of expelling the stone by creating a deluge; but this is to be regarded as a rash and dangerous practice, which no sensible man would venture upon, because it might render the operation of puncturing the bladder unavoidable.

STONES EMBEDDED IN THE PROSTATE.

Symptoms.—These are very obscure; their detection is difficult, and there is no decisive diagnostic. It may be mentioned, however, that there is generally a difficulty in making water, with uneasiness at the neck of the bladder; when the catheter is introduced, an opportunity may be taken of making an examination *per rectum*, when the prostate gland will be found enlarged. Surgeons, however, cannot always expect to be so fortunate as Sir A. Cooper, who, on one occasion, felt the stone grate against the catheter; but it is necessary, in all gravelish cases, to make a very minute examination.

With respect to the occurrence of calculous disorders, it may be mentioned, that males are more liable than females—that they chiefly affect the studious and sedentary—and it is rare to see an instance of stone in warm climates.

CHAPTER III.

SUPPRESSION OF URINE—RETENTION OF URINE—INCONTINENCE OF URINE.

SUPPRESSION OF URINE.

A PARTIAL and sometimes a total suppression of urine takes place in most cases of fever, and for the most part also in severe inflammation of various organs; and it has been already shown to be a consequence of inflammation of the kidneys. But as the term is now used, I mean to express a suppression of urine from failure in the secreting powers of the kidneys, sometimes, though not generally, accompanied by violent suffering. Suppression of urine, however, leads sooner or later to very serious consequences, more particularly by producing a cerebral affection, which, for the most part, terminates fatally. It also appears to be connected with dropsies, of which I shall speak under the proper head. Suppression of urine generally occurs in people who are past the meridian of life, although there are many exceptions. All the patients seen by Sir Henry Halford, before the publication of his paper in the 6th volume of the Medical Transactions, "were fat, corpulent men, between fifty and sixty years of age;" nevertheless, we sometimes meet with the disease in children. It is, I believe, most frequently observed in gouty habits after the long-continued application of cold, or subsequent to the suppression of an eruption or some habitual discharge. Dissection has proved that it is also the consequence of scirrhus and other disorganizations of the kidneys themselves.

In the genuine disease, there is no desire to make water; but I have seen two cases where almost total suppression had continued, in one for months, in the other for some weeks, and in which a pretty constant desire to make water existed, it being only once in two or three days, however, that a small quantity not exceeding two or three tablespoonfuls was evacuated, of such an acrid nature as to scald the urethra. There is neither pain nor tumefaction above the pubes denoting a full state of the bladder; but to determine the point, it is wise to introduce a catheter, which, at all events, has the effect of satisfying the patient. Nausea and constipation, and an occasional feeling of sinking, generally attend this complaint. The pulse and skin continue for some time natural, but the former is occasionally slower than usual, which always denotes danger.

In some cases, the symptoms are very distressing from the first,

there being frequent and violent vomiting, hiccup, restlessness and severe headache, with pain in the back. In the cases produced by disorganization of the kidney, it will be found, upon inquiry, that pain and a sense of heat in the loins have been much complained of previous to the suppression. It appears to me that a number of the cases of this disease, published by Dr. Abercrombie, in the 17th volume of the Edinburgh Medical and Surgical Journal, entitled "Ischuria Renalis," were really not cases of the disease, but of inflammation of other organs, attended, as is most frequently the case, with more or less suppression of urine; I more particularly allude to three out of the five cases which that gentleman has recorded.

It has been very generally remarked, that there is great sympathy between the functions of the skin and the kidneys, for, during warm weather, when there is a copious secretion from the skin, little urine is discharged; and in cold weather, when the determination to the skin is diminished, the urine is observed to be in larger quantity. In the disease now under consideration, there is sometimes profuse sweating, and in three of Sir Henry Halford's cases, the perspiration was observed to have a strong urinous smell.

For the most part this disease is speedily fatal, and seems to be so by producing diseased action in the brain, terminating in coma and death. In other cases, a train of symptoms denoting inflammation of the brain occurs with paralysis; and the first instance in which I ever remarked the combination of rigidity of the flexor muscles and paralysis, was in a case of this kind.

Sir Henry Halford states, in relating the history of one of his cases, that "the patient sat up in bed and conversed as usual, complaining of some nausea, but of nothing material in his own view; and I remember that his friends expressed their surprise that so much importance should be attached to so little apparent illness. The patient's pulse was somewhat slower than usual, and sometimes he was heavy and oppressed. I ventured to state, that if we should not succeed in making the kidneys act, the patient would soon become comatose, and would probably die the following night; for this was the course of the malady in every other instance which I had seen. It happened so; he died in thirty hours after this in a state of stupefaction." It must be observed, however, that the cases do not always terminate fatally, and that many run a much longer course.

Three cases have fallen under my care in men far advanced in life, in two of which the suppression was almost complete for two or three weeks at a time, without giving rise to any troublesome train of symptoms, and for many days it was entirely suppressed; I believe they are both still alive, at least I know for a certainty that one is. Dr. Parr, in his Dictionary, under the article "Ischuria," mentions a similar case, in which no urine was secreted for six weeks; and Dr. Laing, in 10th vol. Edinburgh Medical and Surgical Journal, has described a case in which there was a complete suppression of urine for nine days, and yet the patient got well.

Many years ago I saw a very interesting case, of which the folowing is a sketch:—A gentleman, aged 72, who had always enjoyed good health, with the exception of seven or eight severe attacks of

gout, under which he had formerly laboured, was seized with a partial suppression of urine for four months, when it became almost entirely suppressed. His illness continued for ten months, during which he fell off in flesh ; his strength diminished; and his temper became very irritable. During the last four months of his life, when the urine was almost totally suppressed, he complained frequently of headache and weakness of one side of his body. His face and head were often observed to be flushed, particularly when irritated and after meals. He had frequent desire to make water, (probably owing to disease of the prostate, which was found after death,) but rendered only a tablespoonful or two once in two or three days; nevertheless, he used to stand for an hour with the chamber-pot in his hand, supposing that he was making water all the time; and he had also a notion that he was always perspiring very freely, although there was never the least moisture upon his skin. During this time, and up to within a few days of his death, diuretic medicines and saline purgatives were assiduously administered, and he was encouraged by his medical attendants to take two or three glasses of strong gin and water daily, to assist the secreting powers of the kidneys. It was at this time that I first saw him, and found that he was dying from the effects of inflammation of the brain; besides other symptoms, there was paralysis, with rigidity of the arm. On dissection, the central parts of the brain were found in a state of ramollissement, with effusion into the ventricles, and great vascularity, not only of the membranes, but of the substance of the brain. There was no diseased appearance about the kidneys, but a flabbiness ; the bladder was much contracted; the prostate gland was enlarged, indurated, and contained a white calculus, in its substance, about the size of a large garden-pea. It is too evident, from the history of the case, that the patient was mismanaged, and that the affection of the brain was altogether overlooked.

Treatment of suppression of urine.—Much mischief is occasioned, in many cases of diminished secretion of urine, by the indiscriminate employment of diuretics. I believe this class of remedies is chiefly serviceable in promoting an increased flow of urine at the decline of the disease, after the functions of the kidneys have been considerably restored, when a combination of squills, calomel and digitalis, in the form of pill, in the proportion of half a grain of the two former substances and two or three of the latter, may be used and repeated three times a day. But should the mouth become affected, the calomel is to be omitted. Cream of tartar is also to be given freely, and may be occasionally changed for some vegetable infusion of known diuretic qualities, such as juniper, broom, &c. Balsam of copaiva, oil of turpentine, sweet spirit of nitre and tincture of cantharides, in small doses, are often administered, and sometimes with effect; but they ought to be given with great caution, and under the restriction already spoken of.

The principal point to be attended to is to excite the skin and the bowels in a powerful manner alternately, the latter by means of neutral salts dissolved in a large quantity of water. Practitioners should anxiously watch cases of this nature, in order to discover the

approach of any affection of the brain, which is to be combated upon the principles laid down in another part of the work. Should there be pain in the region of the kidneys, it may be relieved by local abstractions of blood—by the application of rubefacients, or even of blisters.

RETENTION OF URINE.

This term ought to be restricted to an inability to evacuate urine from the bladder, which may be more or less distended by the secretion. Retention of urine is sometimes the consequence of a diseased condition of the brain, spinal marrow or the nerves supplying the bladder itself; it is occasionally a symptom of stone in the bladder, but more particularly of disease of the prostate gland, and stricture in the course of the urethra. It is frequently produced by neglecting to empty the bladder in due time, when the organ subsequently becomes filled to such a degree as to be either paralyzed, or merely unable to act from over-distension.

The symptoms are, pain in the region of the bladder, with frequent and violent desire to make water, and bearing-down efforts, exactly as in labour. Occasionally there is tenesmus, and if the patient be not soon relieved, the pain extends along the course of the ureters to the loins. The distended bladder is to be felt above the symphysis of the pubis; sometimes its fundus reaches as high as the umbilicus. Generally there are constitutional symptoms, such as fever, thirst, oppression at the præcordia, together with an anxious expression of countenance, and occasionally severe headache.

The danger to be apprehended is not that the bladder shall burst, but that peritoneal inflammation shall ensue. Instances are stated where sixteen pints of urine have been evacuated from the bladder, which seems almost incredible, if we did not know how greatly the organ is capable of being distended. I have myself seen more than one instance where eight pints have been drawn off. When describing the appearances found on dissection in erysipelas, the case of a woman was mentioned, where the urine, during a second attack of retention, escaped at the umbilicus, in consequence of the fundus of the bladder becoming attached by adhesive inflammation to the peritoneum corresponding to the umbilicus, and ulcerative absorption taking place. I have now to mention that, four years previously, this woman had had retention of urine for four days before she was relieved by the catheter, and I was informed that sixteen pints of urine were then evacuated. It appeared, from the strength of the adhesion between the fundus of the bladder and the umbilicus, that it was at that period the adhesion had taken place.

We must keep in mind that a distended bladder sometimes takes place in women during the early months of pregnancy, in connection with a displacement of the uterus, termed "retroversion," in which case its cervix will press against the neck of the bladder or the urethra, and occasion a mechanical obstacle to the flow of urine. Retention of urine also sometimes follows delivery in consequence of the long continuance of the pressure to which the urethra and neck

of the bladder have been subjected, during the passage of the child's head.

Treatment of retention of urine.—The principal remedy is the introduction of the catheter; but as this is sometimes objected to by men from the apprehension of its being a painful operation and by females from natural delicacy, it is often necessary first to try other expedients. The chief of these are the use of the hip-bath, or hot fomentations to the region of the pubis; large, tepid and unstimulating injections into the rectum; the internal exhibition of camphor and opium or hyoscyamus, the tincture of the muriate of iron; or sweet spt. of nitre. When these remedies fail, it has been recommended to employ injections of the infusion of tobacco. The use of the catheter may sometimes be avoided by the simple expedient of pouring water in a continued stream from one vessel to another within the hearing of the patient; but this I imagine can be effectual only when the retention is produced by a spasmodic affection near the neck of the bladder, or by a general paralysis of the fibres of the organ. A medical gentleman lately mentioned to me, that he has rarely failed in relieving the retention, when there was no permanent obstruction, by giving doses of from ten to twenty drops of the vin. nicot. tabaci every second or third hour.

[The free administration of strychnine or of the tincture of nux vomica, will sometimes bring on contraction of the bladder, with consequent relief of all the symptoms. When, however, it becomes necessary to introduce the catheter, the operation is called for three or four times every twenty-four hours, as the difficulty recurs with every accumulation of urine. To obviate this difficulty, I have effected radical cures by allowing the catheter to remain several hours in the bladder, by which means the latter is enabled to contract upon itself, and gradually to recover its tone. I derived this hint from Dr. Hartshorne of this city, with whom I lately attended a gentleman whose bladder continued in a completely torpid state, in defiance of all our measures for relief, until the above plan was adopted. The result was a speedy and perfect cure.]

When called to a case of this kind, we must take a general view of the symptoms, the duration of the distension, the general condition of the abdomen, together with the state of the pulse, the heat of the surface, and the expression of countenance, in order to determine whether peritoneal inflammation exists. Should this be the case, general bleeding or the application of leeches must be had recourse to: and it must not be forgotten, that when the complaint terminates fatally, the event is, in general, produced by peritonitis.

In treating this affection, we must not be deceived and lulled into security by the patient's passing a small quantity of urine, as it sometimes dribbles away, when the bladder is ready to burst from over-distension.

INCONTINENCE OF URINE.

When a person cannot retain urine in the bladder, but constantly passes it involuntarily as quickly as secreted, he is said to labour

under incontinence of urine. It is a frequent attendant on paralytic disorders, which produce atony of the sphincter of the bladder; it may also be caused by acrid urine, stimulating the bladder to contract, as soon as it has entered it, and also by irritation about the bladder or urethra.

In the case proceeding from paralysis, the best remedies are the application of a blister to the upper part of the sacrum—the internal use of the tincture of cantharides, in doses of from ten to twenty drops three times a day, in a wineglassful of linseed tea, or a little mucilage—and also cold bathing. If it proceed from acrid urine, diluents should be employed, particularly linseed tea, together with cooling laxatives, and the introduction of the catheter will be found serviceable.

The incontinence of urine which proceeds from irritation or inflammation about the neck of the bladder and urethra, may also be produced by acrid urine, or by sand or gravel passing through the urethra. If there be a superabundance of lithic acid, alkalies should be administered, and in severe cases it is serviceable to throw tepid water into the bladder. Anodyne injections are also to be used. In all cases where there are pain and irritation in the urinary organs, the pills formerly mentioned, composed of equal parts of camphor and hyoscyamus, should be administered.

[I have been often consulted in reference to incontinence of urine in children, and have, in nine cases out of ten, been able to trace it to a bad habit, brought about by the negligence of nurses or other attendants. In some seemingly inveterate cases of this kind, I have completely overcome the disorder by having the subject of it waked at stated intervals during the night, for the purpose of evacuating the bladder. At first, not more than four hours should elapse between the evacuations; but the interval may soon be somewhat lengthened. By a persistence in this plan, the neck of the bladder becomes susceptible to the stimulus of the urine, the patient wakes accordingly for relief, and a filthy and most distressing weakness is thus speedily eradicated.]

CHAPTER IV.

HÆMATURIA, OR DISCHARGE OF BLOOD FROM THE URINARY PASSAGES.

It should be kept in remembrance, that when blood is passed by the urethra, it may proceed from one of three sources, viz.: the kidneys, bladder or urethra itself.

When the discharge comes from the kidneys, the patient complains of a sense of fulness, weight and dull pain in the loins, accompanied with some degree of faintness and nausea. When from the bladder, a sense of heat and fulness is felt in the hypogastric region, involuntary bearing down, and urgent desire to make water. But active hæmorrhage for the most part takes place from the urethra only, and is generally the consequence of the use of the bougie in cases of stricture. If such a discharge take place from the kidneys or bladder, it will, in general, be found to depend on external injury. A few months ago I attended a patient who discharged, for the space of a week, a large quantity of florid blood daily; sometimes it flowed from him when in bed, at times when affected with priapism, at others when making water, so that it was occasionally pure blood, and at other times blood mixed with urine. The complaint seemed to have been produced by a long train of sacrifices at the shrine of Venus.

A discharge of blood from the urethra sometimes takes place in the course of purpura hæmorrhagica, as has been already mentioned. A discharge of blood frequently occurs where there is a stone in the bladder, and I have seen it produced by the internal use of cantharides.

Treatment of hæmaturia.—It is necessary to ascertain whether or not the discharge be confined to the urethra, respecting which the history of the case will generally inform us. If there be considerable pain in the region of the bladder, more particularly if the bladder be much distended, it will be sometimes found serviceable to introduce as large a silver catheter as can be passed.

In the treatment of active hæmorrhage from any organ, if the pulse be full, and if there be marks of lost balance of the circulation, the beneficial effects of opening a vein in the arm have been long well known. It is to be recommended in this case, also, if the pulse be strong, and more particularly, if much local pain exist; but in the case noticed above, I depended entirely on the use of the acetate of lead in considerable doses. The patient was kept nine days under

the influence of this medicine. During three days he took 5 grains of that preparation, combined with a small proportion of opium three times a-day; and for the remaining six days the quantity was increased to 10 grains thrice a day. I never had greater reason to be satisfied with the action of any medicine; the only unpleasant effect it occasioned was constipation.

Gentle laxatives and cold water enemata are to be employed in all cases of hæmaturia. If there be much constitutional irritation, opiates will be found serviceable, and their use cannot be dispensed with if the patient have lost such a large quantity of blood as to produce a great and permanent impression upon the system. In cases accompanied by vomiting, which is a frequent attendant on excessive hæmorrhages, opium should be given, combined with calomel. The external application of cold may do good in slight cases, if the person be able to sit over a tub or on a bidet, but the application should not be persisted in too long: and it is bad practice, particularly in severe cases, to keep a person's garments constantly wet. It does mischief, by abstracting heat from the body when it cannot be spared as well as by driving the blood from the surface, and keeping up a tendency to irregular distribution.

The best plan of stopping the discharge of blood which has its source in the urethra, is by pressing that canal in different places between the finger and thumb until the hæmorrhage is commanded, and afterwards to apply a large compress to the part by means of a T bandage, so as to keep up the necessary degree of pressure.

CHAPTER V.

DIABETES.

By this term is meant a superabundant secretion of urine, containing a large proportion of saccharine matter; sometimes, however, the quality of sweetness is wanting. To the former, authors have applied the term *Diabetes mellitus*, in contradistinction to the other, which has been termed *Diabetes insipidus*.

It has been recommended, however, that the term "diabetes" should be restricted to those instances in which the urine is saccharine, and I shall follow this suggestion.

It is my invariable plan, both in lecturing and writing, to make marked distinctions between those diseases with which experience and actual observation have made me acquainted, and those respecting which I know little, and that little from the experience and writings of others. In commencing the consideration of this intractable, but rare disease, it is my duty to confess that I know nothing whatever respecting its nature and seat. Since writing the second edition of this work, three cases of diabetes have fallen under my care.

Notwithstanding the attention which this singular disease has attracted, since the celebrated Willis drew the attention of the profession to its investigation in 1684, and although men of powerful minds, assiduous habits and great practical experience have been drawn into discussions respecting it, doubts to this day exist, not only as to the nature of the disease, but also the organ principally and primarily affected. True it is, that, by the assistance of morbid anatomical investigations, we have found out some diseased appearance in the urinary and digestive apparatus; and that, by the aid of chemistry, the morbid character of the urine and its component parts have been discovered; yet it has never been explained, in a satisfactory manner, whether the diseased state of parts and the morbid state of urine stand in relation of cause or effect. Still greater mystery hangs over the subject, when it is known that the kidneys have been found perfectly sound in structure and unchanged in appearance. Were we to be led, in forming an opinion as to the primary seat of the disease, by the accounts which a majority of patients give of their first symptoms, we should certainly feel disposed to fix upon the stomach, and not upon the kidneys, as the proper seat of the affection; but then the same may be said of almost all the disorders of the urinary system.

Symptoms of diabetes.—"Diabetes is attended (says Dr. Latham,* p. 1,) for the most part with a very voracious appetite, and with an insatiable thirst; with a dry harsh skin, and a clammy, not parched, but sometimes reddish tongue; and with a frequent excretion of very white saliva, not inspissated, but yet scarcely fluid. As the disease proceeds, it is accompanied often with a hay-like scent or odour, issuing from the body, with a similar sort of halitus exhaling from the lungs, and with a state of mind dubious and forgetful: the patient being dissatisfied, fretful and distrusting, ever anxious, indeed, for relief, but wavering and unsteady in the means advised for the purpose of procuring it." Diabetes comes on very insidiously; the patient complains of unusual lassitude, and a tendency to perspire on every slight exertion; and although the appetite is much greater than natural, the digestion is seldom good, there being uneasiness in the stomach after eating, flatulent distension, heartburn and an irregular state of bowels. Pain is sometimes complained of in the region of the loins; occasionally it is very violent, and there is always a weakness referred to that part of the body. As the disease goes on towards a fatal termination, there is a feeling of exhaustion; difficulty of breathing, together with dropsical infiltration into the lower extremities, and general rapid emaciation take place; the pulse, which is not usually much affected at the commencement, becomes quick and weak.

The urine is of a straw colour, having a peculiar smell, which struck me to resemble whey that had been allowed to stand till it became somewhat sour; the quantity passed in twenty-four hours has been stated as high as two hundred pounds, (Roche and Sanson, vol. 2, p. 121;) but keeping extraordinary cases entirely out of the question, it is certainly most remarkable, that the urine, in confirmed cases of diabetes, always exceeds the weight of both solid and fluid ingesta. The secretion may be stated at between ten and twenty pounds daily, which obliges the patient to evacuate the bladder very frequently, and disturbs him four or five times during the night, which, by breaking the rest, assists in destroying his health.

The quantity of sugar in diabetic urine is very various even in the same individual; as much as one ounce has been extracted from each pound of urine, sometimes even more, but the average quantity is not nearly so great. A considerable proportion of saccharine matter has been collected by evaporation, when it could not be detected by the taste; but we are told that the quantity may always be estimated by the specific gravity of the urine. According to the French, the most delicate agents scarcely indicate the presence of the lithic and phosphoric acids, the phosphates of soda, lime, or the ammoniaco-magnesian, which are always present in the healthy state of this fluid.

Diabetes has been generally fatal; its duration has been variously stated from five or six weeks to many months, and even to several years.

* Dr. Latham has investigated and criticised ancient and modern opinions on this disease, with the greatest ability, in a work entitled "Facts and Opinions concerning Diabetes," 1811, to which I can, with the greatest confidence, refer my readers for much valuable information.

Appearances on dissection in diabetes.—I have seen two dissections, in which the kidneys, to all appearance, were in a healthy state, and in which the lungs, and the mucous membrane of the stomach, and of a great portion of the bowels, were diseased, the former being tuberculated, and the latter vascular, the vessels gorged with dark blood, and the mucous membrane itself soft and pulpy. It has been stated, however, by others, that the only organ in which any morbid structure has been clearly ascertained, is the kidney. Mr. Cruickshank, in his work on the lacteals and lymphatics, affirms that the arteries of the kidneys are generally enlarged in this disease, particularly those of the cryptæ, or minute glands which secrete the urine. In a case which occurred to Dr. Baillie, "the veins upon the surface were much fuller of blood than usual, putting on an arborescent appearance. When the substance of both kidneys was cut into, it was observed to be everywhere much more crowded with blood-vessels than in a natural state, so as in some parts to approach to the appearance of inflammation. Both kidneys had the same degree of firmness to the touch as when healthy; but I think were hardly so firm as kidneys usually are, the vessels of which are so much filled with blood. It is difficult to speak very accurately about nice differences in degrees of sensation, unless they can be brought into immediate comparison. A very small quantity of a whitish fluid, a good deal resembling pus, was squeezed out from one or two infundibula in both kidneys, but there was no appearance of ulceration in either." This description of the condition of the kidneys would most exactly represent that seen in many cases of cholera, in which the secreting power of the kidneys had been destroyed for days.

Causes of diabetes.—Diabetes attacks men more frequently than women, but seldom earlier than in middle age. I believe it has been found that no rank of society is exempt from its invasion; and it does not appear that any kind of occupation predisposes to it more than another. It is also said to be unknown in warm climates, although I have heard of an instance which occurred in the West Indies. There can be no doubt, however, that it is more frequently seen in cold, humid climates; therefore it is said to be more common in Holland and in England than elsewhere; but if this were the case, not only with respect to climate, but other exciting causes generally mentioned, such as "chagrin, vegetable diet, intemperance and other excesses, suppressed eruptions, atonic gout, diseases of the liver, lungs, &c., and ill-conditioned ulcers," we should see the disease every day, whereas it is avowedly rare. A curious fact may be mentioned, which was first stated by Chesselden, and is mentioned at page 139 of his Anatomy, viz.: that sweet urine is sometimes secreted in cases of chronic carbuncle.

Pathology of diabetes.—From all the facts hitherto collected, very different pathological conclusions have been drawn, and supported by men of acknowledged celebrity.

1. It has been supposed that the disease depends upon a morbid condition of the stomach, or other viscera connected with the assimilation of the food and the process of chylification.

2. On the imperfect animalization of the blood.

3. Upon the retrogade action of the lymphatic vessels.

4. Upon a morbid condition of the kidneys themselves.

Being so imperfectly acquainted with the disease, I cannot do better than condense the opinions which have been collected by Dr. Mason Good in his "Study of Medicine."

1. It seems to be a most extensively received hypothesis, that diabetes depends upon a diseased action in the stomach, &c. Dr. Mead, observing that the disease frequently occurred in those who had been accustomed to live intemperately, and who were chiefly addicted to the use of spirits, attributed it to affections of the liver; which opinion was very generally received in his time.

Dr. Rollo, formerly surgeon-general of the artillery, was among the first who referred the disease to the stomach; he believed that it consists in an increased action and secretion in this organ, with a vitiation of the gastric juice, and probably a too active state of the lacteal absorbents; while the kidneys and other parts of the system, as the brain and skin, are only affected secondarily.

He supposed that the blood is imperfectly formed, and deficient in its saline principles, which are converted into saccharine matter by the chylopoietic and assistant chylopoietic viscera; but a fatal objection to this part of the hypothesis is, that it has been found, by experiments performed by Wollaston and Marcet, that blood taken from diuretic patients before it has reached the kidneys, contains its proper salts, and shows no vestige of sugar. There can be no doubt, however, that the first symptoms of which patients complain are referred to the stomach, and that this organ has been found with diseased appearances after death. A stomach was lately presented to me, showing this fact in a remarkable degree; there is a drawing of its appearances when recent in my possession, and the stomach itself is dried and preserved, and still shows these appearances.

2. With respect to the second opinion, that diabetes depends upon an imperfect animalization of the blood, the hypothesis originated with Willis immediately after he detected the existence of sugar in diabetic urine, since which it has been subscribed to by many distinguished pathologists, among whom we find the name of Sydenham. The chief support upon which this opinion is founded, is the appearance of the blood itself, which is dark-coloured, has what has been termed a dissolved appearance, looks like treacle, and when allowed to stand after being drawn from the system does not separate much, if any, serum; but, on the other hand, the experiments of Wollaston, Marcet and others, which go to show that the blood contains its proper salts and no vestige of sugar, have proved equally fatal to this as to the last hypothesis.

The theory, however, is advocated by Dr. Latham, who believes the action of the stomach, as well as of the kidneys, to be healthy, and considers the excessive appetite to be a "natural sensation calling into its full exercise that organ through which the constant waste of the body must be directly supplied, and without which the patient must soon inevitably perish," (p. 330.) He endeavours, also, to show that the elements of sugar may exist in the blood, although in substance it is not discoverable, being "so weakly and loosely oxygen-

ated, as to be again readily evolved by the secretory action of the kidneys, not from any fault in the kidneys themselves, but from the regular and natural exercise of their functions in separating from the imperfect blood such matters as are not properly combined with it." (P. 97.)

3. The third opinion, that diabetes depends upon a retrogade action of the lymphatic vessels, first originated with the son of the distinguished author of the Zoonomia, by whom it was afterwards very keenly supported. According to his view, the saccharine matter is formed in the digestive organs, and then carried by a retrogade motion of the lymphatics to the kidneys. In reference to this subject, Mr. Cruickshank asks the following query (at p. 69.) "Why should the chyle flow retrogade into the lymphatics of the kidney, and not into the lacteals themselves? and why are not the fæces fraught with a similar fluid, as well as the urine?"—These are unanswerable queries, and are fatal to this hypothesis.

4. Diabetes has been referred to a morbid condition of the kidneys themselves. This opinion was entertained by the Greek writers, who supposed the kidneys were in a state of great relaxation, debility and irritability. A considerable number of the profession have adopted the opinion that the kidneys are really the primary seat of the disease; and the majority of these ascribe it to some degree of inflammation, although by some it is attributed to spasm. Cullen adopted this last notion so completely, that he placed diabetes in his class neurosis, and order spasmi, immediately before hysteria and hydrophobia; for doing which he has given, as Dr. Mason Good observes, a most unsatisfactory reason. Many suppose, then, that there is no necessity to look further than the kidneys for the seat of the disease, and that its nature is to be attributed to a *morbid irritation connected with an inflammatory action of a peculiar kind;* therefore it is believed by them to be a very simple and uncomplicated disease. Dr. Mason Good is a strenuous supporter of this view; and the following are the most forcible of his arguments. It is well known that the secretion of the kidneys is capable of being increased by various agents. He believes that a strong analogy exists between dropsy and diabetes; and as a large quantity of fluid is thrown out in the former, from the excited secretory vessels, there can be little difficulty in believing, that from a primary morbid excitement in the kidneys themselves, they may eliminate as much urine as is ever passed by diabetic patients. He also considers the analogy between dropsy and diabetes to be strongly supported by the existence of similar constitutional effects; the whole body, drained of the thinner parts of the blood, is weakened and emaciated, and most of its functions are either performed very slowly, or are altogether retarded; but he believes, with Dr. Latham, that the excessive appetite, so frequently observed in diabetes, is a direct proof of the soundness of the functions of the stomach, although they are inordinately excited to supply the general wants of the system.

The supposition that the remarkable change in the composition of the urine takes place in the blood, appears to Dr. Good to have arisen from the difficulty of imagining how the kidneys, the natural function

of which is to secrete an alkali and an animal acid, should have their action so completely perverted as to secrete saccharine matter; but he states that, under particular circumstances, many organs exhibit a disposition to throw out sugar, both in health and in disease, whatever may be their proper secretion; and this circumstance occurs under the use of an animal, as well as of a vegetable diet. This human milk is peculiarly sweet; saliva and pus sometimes exhibit the property of sweetness, and the sweat, in some fevers, smells of oxalic acid.

It is difficult to form any pathological opinions from the discordant facts which have been recorded respecting this disease, having had no opportunity of investigating the matter with the advantage of a full knowledge of what had been already done by others. Guarding myself, however, against the effects of the special pleading of many writers on this subject, I cannot help coming to the conclusion that the truth lies between the two extremes—that pathologists have been too anxious to attribute the disease to one particular organ—and that those who object to the view that the kidneys are the seat of the disease, have probably expected to find some very uncommon disorganization or vascular turgescence. I am inclined to believe that diabetes is a functional affection of the kidneys, produced by a combination of circumstances which rarely exist, otherwise the disease would be of far more frequent occurrence; and that we may look for that combination to the functions of the stomach and other organs connected with digestion, and also to those of the lungs; and, if this be admitted, there can be no difficulty in perceiving that the constitution of the blood must suffer some alteration, and that the functions of the nervous system must likewise be considerably embarrassed.

Treatment of diabetes.—The different views entertained by medical men concerning the pathology of the disease, have led to various and very opposite modes of treatment. Willis, with the view of giving firmness and coagulability to the blood, and of invigorating the system, recommended a cooling diet, the albumen of eggs, tragacanth and gum arabic, to which he added rhubarb, cinnamon, lime-water, cordials and opiates, if required.

Sydenham carried the invigorating plan still further: he prescribed animal food of easy digestion, with an allowance of wine, and abstinence from vegetable substances.

Frank has great faith in the application of a blister to the sacrum, and the internal exhibition of assafœtida, valerian, &c.

Rollo, with the expectation of preventing the formation of sugar and favouring that of the animal salts, enforces a total abstinence from vegetable diet, a very liberal allowance of animal food, and the use of hepatized ammonia, together with occasional narcotics; and, under the idea that the stomach alone is at fault, he recommends an occasional emetic.

Dr. Latham, with the exception of the use of emetics, to which he objects, subscribes to the treatment recommended by Rollo, although he entertains different pathological opinions. He substitutes phos-

phoric acid for the ammonia, with a view of supplying the deficiency of the animal salts, particularly the earthy phosphates.

Those who believe the kidneys to be irritated, if not inflamed, recommend general and local bleeding; and to the late Dr. Watt, of Glasgow, belongs the merit of reviving the practice, which had altogether fallen into disuse. He trusted almost exclusively to bleeding, and, it would appear, with considerable success. Dr. Satterley has since followed this plan with even greater success than Dr. Watt, and an account of his cases is to be found in the 5th vol. of the Medical Transactions. The subject of Dr. Satterley's first case was a man 32 years of age, previously debilitated by long-continued ill health. He was admitted into Middlesex Hospital on the 18th of February, 1809, labouring under well-marked symptoms of diabetes, with a small, quick and hard pulse, and excessive thirst. On the 19th, 14 oz. of blood were taken from him; he was ordered to have animal food and a moderate allowance of liquids. On the 20th, 18 oz. more were abstracted; 20 oz. on the 23d, 29 oz. on the 25th, and 18 oz. each day on the 28th, the 3d and 11th March, making an amount of 126 oz. in the course of 20 days.

Along with this active treatment were conjoined restriction to animal food for diet, lime-water and alum whey for drink, occasional purgatives, and very frequently, during the whole course of the disease, one grain of calomel, and a dose of Dover's powder at bedtime.

The diminution effected by the bleedings on the quantity of urine passed in 24 hours, is as follows:—After the first bleeding, it was reduced from 16 quarts to 11; the second to 6;—the fourth to between 5 and 7;—the fifth to between 5 and 6;—after the sixth, to less than 5; and after the seventh, to about 3, sometimes 2 quarts.

The excessive thirst gradually left him, and his health and strength improved. He remained, however, in the hospital for some time, in consequence of an attack of pneumonic disease, for which he required to be bled once or twice; but was ultimately discharged cured, and he had no return of the diabetes several years afterwards.

Other instances are recorded by Dr. Satterley, in which the same plan was pursued, with the like success; but some practitioners who entertain similar opinions concerning the nature and seat of the disease, endeavour to allay the local and general irritation, by means of the frequent exhibition of narcotic medicines, such as opium, without having recourse to venesection.

The following is a summary of the practical conclusions at which Dr. Mason Good arrives. Diabetes attacks different ages, constitutions and habits, consequently it requires different modes of treatment. It is situated in the kidneys, with the state of which other organs sympathize. Animal food diminishes the tendency to saccharine secretion. Opium, in some instances, allays the irritation, and at length subdues it; but, in other cases, a free use of the lancet effects these ends more speedily. Colchicum has sometimes proved of more advantage than opium. Free depletion cannot be had recourse to in all cases, as the disease often attacks the old, and those who have been previously debilitated; it is only admissible in cases

where the constitution and digestive organs are unimpaired. Tonics and astringents, together with the mineral acids, which allay the distressing thirst, are often found serviceable, as are lime-water, alum-whey and mineral waters.

I have only to add, that, from the effects of acetate of lead in restraining active hæmorrhage and other discharges, it may be found useful in diabetes, and is therefore worthy of trial. It was beneficial in the three cases to which I have alluded. The last accounts received from one of the patients stated that he had been quite well for several months.

CHAPTER VI.

SYPHILIS.

Much learned controversy has taken place respecting the origin of syphilis, but, after all, it is more interesting to naturalists and historians than to practical men. As my object is to offer the result of my labours to the profession in as small a space as possible, the history of the origin of this disease is inadmissible with my plan, particularly as many points of immense practical importance have been abridged, at the risk of producing obscurity which more ample illustration would prevent.

Syphilis appears under various forms, and is supposed to be produced by a peculiar virus applied to the parts of generation during impure connection. It occurs generally from the third to the seventh day after the application of the syphilitic matter. Some allege that it may take place later. The symptoms produced by the syphilitic virus have been divided into local and constitutional, and also into primary and secondary; I shall restrict the term constitutional to the febrile symptoms, which are sometimes produced when the local inflammation is intense and deep-seated, and shall apply that of secondary to all other constitutional effects, such as sore throat, cutaneous eruption, nodes, &c.

Local symptoms of syphilis.—When a sore is situated on the parts of generation, the fruit of impure connection, it is termed a chancre, and may be on the glans, the prepuce, at the angle formed by the junction of the two former, at the frænum, at the orifice of the urethra, or on the body of the penis. In the female, chancres are generally situated about the labia, nymphæ, clitoris and meatus urinarius.

The first appearance of a chancre is generally announced by some degree of itching, and, upon examination, something like a pimple is observed, having an inflamed base, which feels hard to the touch; it soon shows an elevated point, from a small opening in which a limpid fluid is discharged, and from which ulceration extends more or less rapidly. Some ulcers are superficial, with hardened bases; others are raised and spongy; while some extend very deep, and are surrounded by hard, ragged edges. Ulcers on the prepuce are generally raised, and are larger than those situated on the glans, which are more frequently excavated than those on the prepuce. Chancres also originate from cracks or fissures, which so frequently take place on the prepuce, at which parts ulceration subsequently happens; or a

pimple or vesicle is formed, from the apex of which the ulceration extends. There is another appearance frequently observed, viz.: a large excoriation resembling the sores which take place behind the ears of children, and which affects not only the glans, but the lining membrane of the prepuce, and produces considerable inflammation, profuse discharge, and often swelling of the prepuce itself, preventing its retraction, and thus forming the state called *phymosis.*

The degree of inflammation which accompanies these varieties of chancre, differs very much, sometimes being very slight; at others, so severe and extensive as to terminate in sloughing of considerable portions of the penis. This, there is every reason to believe, depends more upon the state of the constitution of the patient than upon the virulence of the matter applied. The degree of pain also varies, sometimes being exceedingly severe, at others scarcely complained of, and seems to depend more upon the depth and activity of the inflammation than upon the extent of surface involved, or the swelling of the part.

In certain states of the constitution, an eruption of vesicles appears on various parts of the body, and not uncommonly on the penis, particularly at the prepuce, and has therefore been called *herpes præputialis;* and I agree with Bateman and others, that this affection sometimes bears such a close resemblance to chancre as to be liable to be mistaken for it; and Mr. Plumbe states, (at page 310.) that the mistake "is by no means an occurrence to be apprehended *where much professional knowledge exists* on the part of the surgeon or physician;"—and further, that, "at the present day, *no man who knows what he ought to know of the science could possibly commit such a blunder;*" yet it is my duty to confess that I fear I have often committed such a blunder, and am inclined to believe that there are few men in practice who have not done the same. Sores on the labia of children produced by acrid discharge are frequently seen, which closely resemble the description of the true Hunterian chancre, and I have seen the same appearances in the mucous membrane of the bowels. From observation, I am inclined to believe, that for one instance of the true Hunterian chancre, other sores are met with fifty times.

The glands in the groin frequently inflame and suppurate during the existence of ulcers on the external parts, but it is comparatively rare that this occurs on both sides. It does not appear that buboes take place in an average of cases more frequently than once in twenty. On some occasions they suppurate quickly, on others very slowly, and sometimes attain a considerable size, and continue indurated for many months before suppuration takes place, if it take place at all.

Secondary symptoms of syphilis.—The most frequent of these is an ulcerated state of the fauces, pharynx and Schneiderian membrane. The disease, in bad constitutions, and under improper treatment, may destroy considerable portions of the soft palate, uvula and tonsils; the ulceration sometimes extends to the epiglottis, and even to the larynx, so as to destroy its cartilages, and in process of time into the nose, affecting and destroying its bones.

Various eruptions on the skin also occur, assuming the form of papulæ, pustulæ, squamæ; and, in fact, there is scarcely a form of disease noticed in Willan's orders or species, which we do not occasionally see ranked among the secondary symptoms of syphilis. It is said that syphilitic eruptions present a copper-coloured appearance, and a diagnosis is too often drawn from this circumstance.

Inflammation of the periosteum often occurs, particularly on the tibia, forming nodes, and the bones themselves sometimes become affected, more particularly those of the nose and head, melancholy examples of which are to be seen in every museum.

Inflammation of the iris is alleged to take place during the course of syphilitic affections, produced by the specific effects of the virus; —the fact is undisputed, but the conclusion as to the cause is more than doubtful.

Secondary symptoms may occur shortly after the healing of a primary sore; it is alleged they occasionally do not take place till after a considerable lapse of years, although the patient, in the interval, may enjoy perfect health.

Treatment of the primary symptoms of syphilis.—The treatment of primary sores should be conducted upon the following principles. We should be guided, not by any general theory, but by the appearance of the sore itself, and the state of the patient's constitution. It should be recollected, however, that the subjects of these affections are generally young, thoughtless and dissipated, who have contracted the disease after a course of hard living, and were, at the time of infection, in a state of high excitement from the use of stimulants, having also, perhaps, the stomach and bowels in very bad condition, contaminating all the secretions of the body. If there be much inflammation, pain and swelling, or should the ulceration show a tendency either to spread rapidly or to assume a bad character, a vein must be opened and a sufficient quantity of blood abstracted; and I may state shortly, that I have often been surprised and gratified at witnessing the immediate benefit of this treatment. I have seen large quantities of blood (30 or 40 oz.) taken on such occasions, and can safely say, without once observing any bad effects. In the circumstances which call for venesection, no external application should be made to the part, except warm anodyne fomentations, or, perhaps, what will be found still more beneficial, the vapour of hot water.

Antimony is often of considerable service as a contra-stimulant, either as an auxiliary to the bleeding, or in cases where the circumstances do not exactly call for the lancet, or when we are afraid to use it.

Laxative medicines are to be occasionally exhibited; the patient's diet should be restricted to vegetable substances; and confinement to bed for at least a few days is highly necessary, particularly in the severe cases now under consideration.

After the inflammation has been reduced, and in cases which are not attended by any considerable action, but in which the sores are very irritable, the careful application of a strong solution of the nitrate of silver (20 grs. to the ounce) is often serviceable. In cases

which are neither attended by excessive inflammation nor irritation, the best application is a small piece of lint, not larger than the size of the sore itself; and the part is to be exposed five or six times a day to the vapour of hot water, or it may be kept wet with any bland liquid. Great cleanliness is necessary in all cases, but as the sore is often irritated, and additional inflammation excited by drawing back the prepuce, the fluid should be thrown up between the prepuce and glans by means of a small syringe. On many occasions, no further means will be necessary, if we are consulted early; but from various motives, patients are often induced to conceal their complaints for a considerable time, and when we see the sores, they are found too far advanced for simple remedies. In such circumstances, various washes have been used, as solutions of the acetate of lead, sulphates of zinc, copper and alumina and the nitrate of silver. The oxymuriate of mercury, as well as the muriate, mixed in lime-water, are also frequently used as external applications; the one is familiarly known by the term "yellow," the other "black wash." The latter is made by throwing a drachm of the submuriate into eight ounces of recently prepared lime-water; a precipitation takes place of a dark colour. This preparation is more frequently used than the yellow wash, and I believe is generally admitted to be more efficacious than any other single application. The preparation I have used for some years is made in the following manner: an ounce of calomel is well and gradually rubbed up with one pound of lime-water. After standing for twenty-four hours, the fluid part is poured off, leaving the precipitate sufficiently moist to be applied with a hair-pencil to the affected part, without the intervention of lint or linen. In making choice of any particular lotion, it is found to be a good rule to change from one to another, should the sore show no appearance of amendment in the course of three or four days.

Various ointments have been also often used—of these, the common mercurial and the red precipitate stand in the highest estimation; but it has been generally found that greasy applications do not answer well. When astringent or stimulating preparations are required, their strength must be regulated by the effects they produce on the part; slight temporary pain should be occasioned when we wish to excite a little increased action; when, however, the sore is in a very indolent state, a strong solution of the nitrate of silver will, upon the whole, be found to be most effectual; the solid caustic itself is often necessary, particularly when a tendency is shown towards the formation of warts.

In treating cases of primary sores, whatever may be their external character, whether they succeed impure connection or not, my plan has been to treat them in the manner above described in the first instance; but should there be no decided appearance of amendment in the course of ten or twelve days, then I am in the habit of prescribing a five-grain mercurial pill, morning and evening, and I have rarely had occasion to give above eighteen pills before a permanent cure was effected. It has been ascertained, however, by numerous experiments performed within the last fifteen years by

different individuals in different countries, that all primary sores can be eventually healed by the simple non-mercurial plan of treatment; and although this practice cannot be called altogether new, still, when we reflect upon the immense destruction of human life and domestic happiness, created by the diabolical mercurial plan previously pursued, the effects of the exertions of every gentleman who has been instrumental in proving the safety of the non-mercurial treatment cannot be too highly estimated. Although the services of Dr. Thomson are well known and acknowledged by many, yet I am grieved to see his name passed over in some of the popular works of the day. In the learned work of Dr. Mason Good, the merit of introducing this practice is entirely referred to Mr. Rose, surgeon to the Coldstream regiment of guards. Dr. Mason Good states, (vol. iii. p. 388,) that Mr. Rose "was determined to put the question to a test, and upon such a scale as might lead to something of a decisive result; he forbore, in consequence, about the year 1815, to employ mercury for the cure of any case of syphilitic affection."

It is well known that Dr. Thomson led the way, both by precept and example, long previous to 1815; and, if I recollect right, it was in consequence of the views which Dr. Thomson gave in his course of lectures on surgery, that I was induced, in the year 1808, to treat more than one case of chancre without mercury, which had all the appearances of true syphilis. In one instance secondary symptoms ensued in the form of sore throat and eruption, which were also successfully and permanently cured upon the same principles; and it so happens, that I have still an opportunity, from frequent intercourse with the individual, to know that he has never suffered from the plan pursued, and that he has a large family of healthy children. I also recollect, when I first took charge of the sick in the Ordnance Hospital at Leith Fort, in the beginning of the year 1811, having been strongly advised by Dr. Thomson not to give mercury. Dr. Thomson's opinions were well known both at home and abroad before the year 1815, at which period I believe there was not a military or naval surgeon in the service of Great Britain who was not aware of them; therefore it must be acknowledged that Dr. Thomson has not received that merit which is justly his due, as will be seen by the following extract copied from the work abovementioned:—"The experimental course laid down by Mr. Rose was soon adopted by others, and, on various occasions, carried into establishments which afforded ample space for a satisfactory examination. It was tried in other battalions of the guards, as well in France as at home; was introduced into the York Hospital at Chelsea, and various other establishments, as at Dover, Chatham and Edinburgh." (P. 388.)

These observations are not dictated by feelings of personal friendship, but are made from a strict sense of justice towards Dr. Thomson.

It cannot now be denied, that all syphilitic sores may heal without having recourse to mercury; and, on the other hand, it is known that by a judicious use of various preparations of that mineral, the same event may take place. But an interesting question immedi-

ately suggests itself.—By which plan will a cure be most speedily and effectually obtained? I have found that, according to either plan, permanent and effectual cures are produced, but more speedily under the judicious use of mercury, along with blood-letting and the other means, local and constitutional, which have been already noticed. But there are constitutions that cannot bear the action of mercury, and upon which it produces poisonous effects.

Although I should be entitled to insist on the force of these observations, drawn from my own practice, yet they are rendered still more worthy of confidence by the united testimony of a number of gentlemen who have directed their attention to the settling of this important question. Dr. Hill, who has written an excellent paper on the simple treatment of syphilis, in the 18th vol. of the Edinburgh Medical and Surgical Journal, candidly states, at p. 590, that secondary symptoms occurred in a greater proportion under his treatment, than after that by mercury; yet he assures us that these affections are of a milder and more tractable nature. In the practice of Staff-Surgeon Murray, Mr. Evans, of the 57th regiment, and Mr. Brown, of the staff-corps of cavalry, the proportion of secondary symptoms to the whole number of cases has been about a tenth. Mr. Guthrie, deputy inspector of military hospitals, now a surgeon in extensive practice in London, in a paper published in the 8th vol. of the Medico-Chirurgical Transactions of London, makes the following observations, at page 508: "The fact I have stated as to the non-occurrence of secondary symptoms in regimental hospitals, where all doubtful cases were treated by mercury, is so positive, that I am certain no regimental surgeon of ability will be found to contradict it. That they did sometimes occur is true, but it was only when the troops were moving, and under irregular management that they were numerous, and then only in the general hospitals, where all the stragglers and all the bad and protracted cases are collected. In the half year ending the 24th June, nearly 1400 cases of primary symptoms were treated in the army in France by mercury, and in this period only 14 cases of secondary symptoms occurred." And in another place he states, "In six regiments in one district in England, 521 cases were treated in fifteen months by mercury, and ten cases of secondary symptoms appeared; so that the true average proportion is 1 in 75."

Notwithstanding these statements, it is evident there are no data on which any calculation can safely be made respecting the proportion of secondary symptoms succeeding to either plan of treatment. Some practitioners call every eruption on the skin and slight relaxation of the throat and rheumatic pains secondary symptoms. Others place only the worst description of such cases under that denomination; which circumstances I have often witnessed, both on the part of mercurialists and anti-mercurialists. A great majority of the cases of eruptions and sore throats, occurring under both symptoms of treatment, are generally to be attributed to affections of the stomach and bowels, produced by the remedies employed in peculiar constitutions; and that they should more frequently occur under the usual plan adopted by the anti-mercurialists is not surprising. No means

are more likely to weaken the functions of the stomach and bowels, and, indeed, the actions of the whole system, than long-continued confinement to bed, the use of slops, and drenching patients with two or three pounds of the decoction of sarsaparilla daily. Such treatment will enable us to account very well for the longer period required to heal sores upon the anti-mercurial plan than the other. On many occasions, chancres of long standing have healed immediately, after patients have been allowed solid food, and a little wine or porter, sometimes with, sometimes without, a few blue pills.

In former days, when large quantities of mercury were given, and persisted in for a long period of time, secondary symptoms were far more frequent than at present; and in calculating the benefit derived from the labours of the non-mercurialists, they are fairly entitled to the credit of the remarkable change which has taken place, as well as of showing that secondary symptoms do not occur nearly so often as was imagined; that they are rarely dangerous, and may in many instances, be cured, perhaps not so speedily, but quite as effectually without as with mercury.

A curious fact may be mentioned respecting the black wash, which applies equally to all other mercurial applications. Some years ago, when I was carrying on investigations respecting the comparative advantages of the different modes of treating syphilis, I was surprised to find, on visiting the hospital in the Castle of Edinburgh, that the primary sores were healed in a much shorter space of time than in the Royal Ordnance Hospital at Leith Fort, although I had two advantages which they did not enjoy, viz.: a better and a less crowded hospital, and men, generally speaking, of stronger constitution. Upon expressing my surprise at this circumstance, I was asked by one of the medical officers if I used the black wash, for that they had found it the most effectual application. My reply was, that I had not considered it fair to use any mercurial preparation whatever, when endeavouring to ascertain the effects of the non-mercurial plan of treatment; but I resolved after that to try it. Accordingly, the black wash was prepared, and the first subjects to whom it was applied were two men who had been upwards of thirty days in the hospital without any amendment of the sores. On the seventh day, the healing process was observed in the sores in both cases; but one of the men asked me to allow him porridge instead of his bread, which he could "not eat on account of the state of his teeth." Next day he made the same request, and begged me to look at his mouth: the state of the gums and the fetor of the breath announced the effects of mercury upon the system, which attracted my attention and induced me to examine the mouth of the other man who was in another ward; he was found to be in a similar state, but slighter in degree. On the next public day, I returned to the castle, and announced the circumstance before Dr. Thomson and a considerable number of other gentlemen, who said it must have been accidental, and that it had never been observed in their hospital. It was readily granted on my part that it might be accidental, but that it certainly deserved attention, having occurred in two consecutive cases. Salivation never having been observed in the castle

was no argument, because I had no doubt the event had never been looked for, and, perhaps, would never have been observed by me had not one of the patients asked for a change of diet. We soon went up stairs into the wards; the gums of some patients were examined, who were using the black wash, and two or three of them were observed to be under the influence of mercury. It was then calculated, that the hundred-thousandth part of a grain of mercury could not have been received into the system by means of the application of the black wash to such a small extent of surface. My answer to which was, that the calculation was merely a guess, and that it was immaterial to the point at issue how small or how large a quantity would affect the system.

At that time I was attending a young lady who had a small sore, of the nature of lupus, upon the nose, to which the black wash was applied, out of the same bottle from which the two men had been supplied. On the ninth day, she complained of her mouth being very sore, and of having a copperish taste; upon examination, the gums were found to be swollen, spongy and inflamed, the breath having the mercurial odour. Since that period I have applied the black wash to many cases of all descriptions of ulcers, and in two-thirds of these some degree of soreness in the mouth has been produced, with considerable mercurial fetor, in the space of from the fifth to the tenth day. In all these cases, the sores healed more rapidly than in the remaining third; and a circumstance worthy of being mentioned has been observed—that from the moment the sores began to cicatrize, the effects of the mercury upon the mouth declined, although the application of the black wash was continued; and in some, for the sake of experiment, it was persevered in for fourteen days, notwithstanding which the mercurial effects disappeared.

Treatment of buboes.—When inflammation of the glands in the groin is first observed, the patient should be advised to use no exercise, and, if possible, confine himself to bed, more particularly if he show any of the appearances of a bad constitution, or even temporary bad habit of body. If there be much redness and pain, leeches should be applied, succeeded by a poultice or warm fomentations; and sure am I, that should suppuration eventually follow, it will be much less extensive than if leeches had not been used. The matter, in the event of suppuration, should be let out as soon as possible, by means of a moderately sized puncture with a lancet, as the best means of diminishing the suffering of the patient, preventing bad ulcers and the formation of extensive sinuses. A plan has been proposed of opening buboes by means of caustic; but experience obliges me to condemn such roundabout surgical practice. Should the parts not show a disposition to heal, much benefit is often derived from pressure, and also from the application of the solution of the sulphate of zinc or nitrate of silver; indeed, the edges of the incision sometimes require to be touched with the latter in substance. A generous diet is sometimes necessary, and the occasional use of wine is frequently found advantageous.

Treatment of Secondary Symptoms of Syphilis.

1. *Sore throat.*—This form of secondary symptoms is to be treated upon general principles. From the effects produced in a great number of cases, I cannot speak too highly of the external application of leeches and blisters, when the inflammation and swelling in the throat are considerable, and when the ulcers are active and irritable; but in other circumstances, a solution of the nitrate of silver, in the proportion of twenty or thirty grains to the ounce of distilled water, is to be applied by means of a hair pencil to each ulcer. In this case the functions of the stomach should be carefully attended to by regulation of diet, and the use of gentle laxatives, combined either with the sulphate of iron or sulphate of quinine. I have hitherto seen no case which has not speedily yielded under this treatment, when the sore was within reach.

2. *Eruptions.*—It has already been mentioned, that almost every form of known eruptions has been classed among the secondary symptoms of syphilis. They are to be treated upon general principles, so fully detailed in a former part of this volume: but in intractable cases, marked benefit will be found to follow the use of the alcoholic solution of corrosive sublimate.

3. *Nodes.*—In incipient cases, in which the pain is severe, the frequent application of leeches to the part affected will be of great service, followed by that of blisters; and here again I have to observe, that decided advantages will result, in a majority of cases, from the use of the corrosive sublimate, aided by the vapour-bath, opiates and perfect rest. When the bones come to be extensively diseased or carious, surgical treatment must be had recourse to.

The following deductions have been forced upon my mind, not only from my own personal observations, but also from a careful consideration of all the facts laid before the profession respecting the treatment of syphilis.

1. That mercury is as certain a poison as arsenic, only it is not so quick in its operations upon the system.

2. That, like many other poisons, it is found useful in the cure and alleviation of many diseased states of the constitution, when employed with caution, and within certain limits, which can never be defined to suit all constitutions.

3. That it will cure syphilitic diseases, when used judiciously, not by any specific effects which it has been long erroneously supposed to possess in these diseases, but from its having the power of altering or modifying diseased actions, both local and general, improving the state of the secretions, and thereby disposing sores to heal; but when carried beyond a certain point, which can never be defined, mercury produces a disease of its own, always more difficult to cure than the primary one for which it was employed.

4. That all kinds of syphilitic ulcers on the parts of generation, including the true Hunterian chancre, may be cured without the intervention of mercurial preparations, upon the simple plan of treatment above described.

5. That secondary symptoms do not succeed the non-mercurial plan of treatment in nearly such a great proportion as was apprehended, and as is still asserted by some of the mercurialists; and that when they do occur, they are generally mild, unattended by danger, (which cannot be said of those produced by over-doses of mercury,) and can be cured in a great number of cases without the use of mercury.

6. It would appear to be established by all the medical evidence which I have had an opportunity of examining, that all the primary forms of syphilis are more speedily cured by a judicious use of mercury than by the non-mercurial plan of treatment.

It is with much pleasure that I can refer my readers, for most valuable information, to an able work on Syphilis, by J. M. Titley, M. D., of London.

CHAPTER VII.

DISEASES OF THE LABIA, AND EXTERNAL PARTS, IN THE FEMALE.

PHLEGMON.

The labia are liable to inflammation and its consequences, not only from their situation, but likewise from acrid discharges, &c. Ulceration and phlegmon are two of these effects, but the remarks already made when treating of syphilis, are equally applicable to all ulcers on the labia, and render it unnecessary to say more upon the subject; I shall therefore proceed to treat of phlegmon, which may occur at any period of life; sometimes as the consequence of external injury; at others, it occurs spontaneously as phlegmon does in other parts of the body.

Symptoms of phlegmon.—The disease is known by the existence of heat, pain, swelling and throbbing, and more or less general fever. From the looseness of texture of the part, the progress of the disease to suppuration is generally rapid, in which case the pain is more severe; but, in other instances, the disease comes on more gradually, the part continues long hard, and the pain is subacute. The terminations are the same as in phlegmonous inflammation in other parts of the body, suppuration being, however, the most frequent; owing, no doubt, to a natural feeling of delicacy, which prevents females from making such complaints known till the disease is far advanced.

Treatment of phlegmon.—There can be no doubt respecting the advantages to be derived from the application of leeches early in the disease. I object to cold lotions, because I doubt much if they ever prevent suppuration, although they may certainly retard the disease; warm fomentations and poultices will be found far more efficacious. From the depending position of the parts, and the increase of pain produced by motion, the patient should be confined to bed. The bowels are to be kept open, and the pain moderated by large opiates. Suppuration sometimes takes place in the course of the second day, and as soon as matter is discovered, it should be evacuated by puncture; but there is no necessity for making a large incision, provided the abscess be opened in a depending part. From observing that, when left to itself, the abscess opens on the inner surface of the labia, I generally make the puncture in that situation. It is not good prac-

tice to introduce a tent, but pressure should be applied by means of sufficient compresses, and a T bandage.

Mortification ought to be a very rare termination; but I have seen two cases where sloughing took place, with great loss of substance, in consequence of neglect and bad management.

PECULIAR AFFECTION OF THE PUDENDUM, OCCURRING IN YOUNG SUBJECTS.

In the year 1815, the attention of the profession was directed to the history of a very fatal affection of the pudendum of children, by Mr. Kinder Wood, surgeon in Oldham, now in Manchester. Of this affection he had seen twelve cases before he wrote his paper in the 7th vol. of the Medico-Chirurgical Transactions, London. The patients were from one to six years of age. Two only recovered. The complaint commences, according to Mr. Wood, "with chilliness, succeeded by heat; slight pain in the head; dulness, nausea; loss of appetite and thirst; the tongue has a clay-coloured deposit; the bowels are torpid; and the patient is languid, inert and listless. These symptoms precede the affection of the pudendum about three days. When the genital organs are examined, one or both labia are found inflamed and enlarged; the inflammation is of a dark tint, and soon extends internally over the clitoris, nymphæ and hymen, and a thin secretion, which, at this period, may be observed coming from these parts, renders it not improbable that the lower part of the vagina may be affected." In a dissection, at which I was present with Mr. Cheyne and Dr. Combe of Leith, and which was also attended by Professor Bene and his son from Hungary, when on a tour in this country, the inflammation, which terminated in mortification, had extended high up in the vagina.

Ulcerations soon take place, generally of a bad character, having a dirty yellow appearance. In Mr. Wood's cases the discharge was peculiarly offensive, copious, irritating the adjacent parts, and contributing to extend the disease along the peritoneum to the anus and to the inner part of the top of the thigh, contiguous to the labia. He has also seen the inflammation spread over the mons veneris, and, succeeded by deep ulcerations, progressively extending as long as life continued. "The pulse, (says Mr. Wood,) is quick and irritable after the inflammation commences, and, as the ulceration extends, the face becomes of a peculiar pallid hue, the skin having a very singular whiteness, which I have never seen absent after the ulcerations had formed. The stools are slimy and offensive; and, in two or three cases, I have seen aphthæ spread extensively around the anus and over the peritoneum. The ulcerations in this affection are not of an equal depth or appearance, but various in this respect, as well as in the state of the bottom, which, in some places, is foul as well as deep, in others, superficial and sprinkled with small red granulations." Mr. Wood further states that, in his cases, the pain on motion was excessive, and that retention of urine, with its usual concomitants, formed an important train of symptoms. The course

of the disease does not appear to occupy any regular period, but, "from the time that the ulcerative action is completely established, the enlarged labia diminish and the redness disappears, the ulcer successively extending over parts which had been inflamed. The character of the disease, at this time, is that of a deep, foul and spreading ulcer, upon parts weakened by a peculiar inflammation and a constitution injured and weakened by previous febrile symptoms. The external organs of generation are now progressively destroyed; the peculiar pallor of the countenance increases; the pulse becomes quick and weak; the appetite fails; the bowels become loose; the skin of the thighs hangs loose and flabby, as in marasmus; the discharge from the parts increases and becomes more and more offensive, till the patient is worn out and expires." But, in all the cases but one which I have seen, the progress was different; the ulcerations were not extensive, and the external swelling and dark-red colour continued to the last, and, in two cases, even after death.

The duration of this curious affection is various:—"In one case, the patient got better in twenty-three days, in another, in seventeen days; but it is not possible to say what may be the duration of a fatal disease, this depending on many circumstances of violence, constitution, &c. When the ulceration is deep and extensive, I have never seen the patient recover." Mr. Wood presumes that this affection bears a much stronger similarity to infantile erysipelas than to any other disease.

The first case of this affection that fell under my observation occurred several years ago, in my dispensary practice. The patient, a girl of six years of age, when recovering from measles, during the progress of which there had been great gastro-intestinal irritation and diarrhœa, was seized with the disease of the pudendum, and died in the course of eight days. Every effort was made to obtain permission to examine the body, without success, but I saw sufficient to convince me that the child died, not so much from the effects of the external disease as from inflammation, and perhaps ulceration of the mucous membrane of the bowels. Some time afterwards I was asked by Dr. Moffit, of the 7th Hussars, to see a child labouring under the disease at Piershill Barracks; she was also attacked with it immediately after the recession of the eruption in measles, which had been mild, but attended with diarrhœa. The external inflammation, pain and swelling of the pudendum were fully as great as in the former case, and bore such a strong resemblance, in its external characters, that any one would have readily recognized the affection from a drawing in my portfolio. This child recovered under the use of poultices and fomentations, and the exhibition of gentle laxatives. Since then, several fatal cases have occurred in Edinburgh, and the appearances on dissection were such as to confirm the opinion I had previously entertained—the mucous membrane of the bowels displaying extensive vascularity and ulceration, particularly in the ileum. In one of the cases the ulcerations were numerous and extensive; and in the other, the mucous membrane was found thickened and spongy in many places, and in the usual progress towards ulcer-

ation, which would certainly have taken place had the child lived a few days longer.

It would appear that Dr. Ferriar, of Manchester, was familiar with this affection, for he states, in his excellent work, entitled "Medical Histories and Reflections," that he had "met with several instances of putrid fevers in young girls, accompanied with broad maculæ on the body and limbs, *and a gangrenous state of the labia pudendi.* The parts were greatly tumefied and extremely painful. It was a very fatal complaint." (P. 169.)

Treatment.—Mr. Wood remarks that the first part of the treatment is to move the sluggish bowels with calomel and rhubarb; the affected part should be frequently washed with the liquor plumbi acetatis dilutus slightly warmed, and poultices, made of the same liquor, applied. As soon as the ulcerative action is commenced, he considers it necessary to have recourse to bark in decoction, to which he commonly added confect. aromat. with tinct. calumb. and small doses of tincturi opii, together with a moderate allowance of red wine. When the tumefaction and redness were diminished, and the ulceration stationary, he applied the ungt. oxyd. plumb. alb., and found it very useful. When the bowels became loose, he found the elect. mimos. catechu of excellent service, and he gave the bark in substance when it could be borne.

According to the views which I have been led to form, besides the local treatment recommended above, such means ought to be taken as will cure inflammation and ulceration of the mucous membrane of the bowels, which have been so fully described in the first volume.

CHAPTER VIII.

INFLAMMATION OF THE TESTES.

Inflammation of these organs is sometimes produced by external injury, or it occurs spontaneously in the course of gonorrhœa, particularly the virulent form, and also during the cure of stricture in the urethra by the bougie. It was formerly called hernia humoralis, from mistaken notions, by the humoural pathologists. The inflammation may either attack the part called epididymis, and spread from thence to the body of the testicle, or the latter may be originally and solely affected. When the body of the testicle is inflamed, the pain is very severe, extending along the cord, which, in some cases, is also involved in the disease; and occasionally great uneasiness is felt in the lumbar region. The pain is increased by pressure, motion, and also when the body is in the erect position; the swelling is sometimes very great, and the scrotum frequently reddened and tender. I have seen both organs affected simultaneously; but this is rare, the inflammation generally attacking one only at a time. When the epididymis is alone affected, the pain is seldom much complained of, and the constitutional symptoms are slight; whereas in the other, there are sometimes high febrile symptoms, and very frequently nausea, with a disposition to faint.

Treatment of inflammation of the testes.—The horizontal posture in bed must be insisted on, and the part is to be properly supported; if the disease be produced by external injury, and be not severe, these precautions, together with the employment of laxatives, a strictly antiphlogistic regimen and the application of warm fomentations, will suffice. In more severe cases, the internal exhibition of antimony as a contra-stimulant is necessary, with perhaps local bleeding, which is much better effected by opening one of the superficial veins, on the surface of the scrotum, with a lancet, than by the application of leeches, which are tedious, often troublesome, and, on some occasions, exceedingly inconvenient, particularly when secrecy is required. When a vein in the scrotum is opened, the patient should be standing, as the blood will not flow in the recumbent posture; so that when we wish to stop the discharge, we have nothing to do but to make him lie down. In very severe cases, however, where the swelling is great, the pain severe and the febrile symptoms high, one general bleeding will be necessary. This proves beneficial by unloading the system, and particularly the part, of blood, and by giving an effectual, perhaps a permanent check to the diseased action. I

find it very serviceable in the decline of the acute stage of the disease, and particularly should there be pain in the course of the spermatic cord, to apply a small blister on the lower part of the abdomen in the course of the vessels. After the inflammation has subsided, and if any hardness remain, the use of frictions with mercurial ointment, containing a portion of camphor, will be serviceable, and a suspensory bandage must be worn for some time.

When the inflammation of the testes depends upon inflammation or irritation in the urethra, the same plan of treatment is to be had recourse to, in addition to such means as may be necessary for the removal of the latter affection. Should it seem to be produced by the use of the bougie, it must be abandoned for some time, and when recourse is again had to it, a small-sized instrument may be used, with additional gentleness and caution. In the treatment of this disease, we should feel anxious, not only to mitigate the patient's present sufferings, but to employ such means as will prevent any subsequent induration. I scarcely ever met with an instance of scirrhus of the testicle, which has not been attributed by the patient to some previous injury.

CHAPTER IX.

DISEASES OF THE UTERUS CONNECTED WITH INFLAMMATORY ACTION.

In this chapter I shall treat of the following diseases:—1. Inflammation of the Uterus after delivery.—2. Inflammation of the Os and Cervix Uteri in the ordinary state of the system.—3. Vascular Sarcoma, Scirrhus, and Cancer of the Uterus.

INFLAMMATION OF THE UTERUS AFTER DELIVERY.

This disease has been termed *metritis*, which implies the existence of inflammation of the *substance* of the uterus. Comparatively speaking, it is rare, and we meet, perhaps, with more than fifty cases of inflammation of the peritoneal covering of the uterus and its appendages, for one of this disease. I have met with it only in two instances within the last twenty years—one of which was owing, as far as could be ascertained, to long-continued injurious pressure which the uterus sustained in a case of difficult labour, occasioned by the diminished capacity of the pelvis, and the large size of the head of the child;—the other was a very complicated case, occasioned by rough treatment during labour, and in the extraction of the placenta; the bladder in this case was allowed to remain distended from Sunday till the following Friday. Several relapses took place, attended with pain in the region of the uterus, enlargement of that organ, ascertained by internal as well as external examination. After many months of suffering and hectic fever, it was suspected that the uterus contained a fluid, and the channel through the os uteri was obliterated. Upon the probability of this opinion, a small steel bougie was cautiously introduced through the os uteri, when a discharge of about two ounces of fetid pus took place, with a large quantity of air. From this time the bad symptoms disappeared, the recovery was rapid, and menstruation took place in a few weeks subsequent to the operation.

In a very severe puerperal epidemic, which prevailed at Vienna in the months of July and August, 1819, it is stated that the substance of the uterus was always affected; but upon examining the dissection reports, I can find only two such instances out of fifty-six. In the epidemic which occurred in the Maternité of Paris in the year 1829, the uterus is represented as having been diseased in one hun-

dred and sixty-five cases, and in twenty-nine instances was alone affected.

Not being familiar with the disease myself, I must take the liberty of drawing a description from the work of Mr. Burns, of Glasgow, who describes it as appearing under two forms. The first takes place within the ninth day after delivery, with all the symptoms of ephemera, with a dull, heavy pain in the lower part of the belly, which is neither constant nor much felt, unless when the patient sits up, or when considerable pressure is made with the hand; but occasionally a darting pain takes place through the uterine region. The state of the lochia, of the milk, the pulse and bowels, are said to be various. A discharge of blood like the menstrual is said to be critical, as well as the occurrence of free perspiration and diarrhœa. The treatment consists in exciting early and free perspiration, fomenting the belly, and opening the bowels. Few cases are said to require the use of the lancet or of blisters.

The second form is said to be more serious from the intensity of the inflammation: it commences between the second and the fifth day after delivery, but may take place at a later period. The pain in the lower part of the belly is severe, increased upon pressure, and the uterus is distinctly felt harder and larger than usual; there is, however, no general swelling of the abdomen or tension, unless the peritoneum be affected; sometimes nausea and vomiting take place. The pulse very soon becomes frequent and somewhat hard, the tongue white and dry, and the urine scanty and high-coloured. The lochial discharge is early suppressed, and the secretion of milk is diminished or destroyed.

Like the other form, this may terminate favourably by some critical discharge, but in many cases, the result is represented to be less fortunate:—the febrile symptoms and the pain continue, the pulse becomes more frequent, rigors take place, a throbbing of the part is felt, symptoms of hectic ensue, the patient spends sleepless nights, and is drenched in perspiration.

"After some time (says Mr. Burns), matter is discharged from the vagina, or by the bladder or rectum." "Pus is contained often in the ovaria and tubes and sinuses of the uterus. Mortification is an extremely rare termination. This is a fact of which my dissections convince me, and it is farther confirmed by the opinion of Dr. Clarke. Little or no serous effusion takes place into the abdomen." (Page 426.)

I strongly suspect that Mr. Burns has confounded this complaint with four others—viz., suppression of the lochia, peritonitis, disease of the mucous membrane of the bladder, and an affection of the colon and rectum. The symptoms occasioned by suppression of the lochia, peritonitis and metritis bear such a strong resemblance to each other as occasionally to defy all diagnostic distinctions. The pain in peritonitis is sometimes as dull as that represented in metritis. The general description which Mr. Burns has given of the appearance found on dissection is very vague; but in detailing the symptoms of metritis, he states, that "matter is discharged from the vagina, or bladder, or rectum, but oftenest from the rectum." I would here

take the liberty to observe, that although matter is discharged from the vagina, it may have proceeded from the uterus; but if discharged from the bladder or rectum, these, it appears to me, would be rather roundabout ways for the matter to take from the uterus, unless false passages have been made by instruments rashly used, or by ulceration. Mortification, instead of being a rare occurrence, as stated by Mr. Burns, would be a very frequent termination, if the inflammation affected the muscular structure of the uterus. The existence of pus in the ovaria and tubes is very usually found in puerperal peritonitis. The assertion of the existence of pus in the sinuses of the uterus is vague, as it may be coagulable lymph, which is often discovered in veins.

The remedies which Mr. Burns recommends in the second form, are the early and free use of the lancet, mild laxatives, fomentations, embrocations and sinapisms. The best internal remedy we can employ, he says, is saline julep, with antimonial wine and laudanum. Emollient and anodyne enemata afford relief. After suppuration has taken place, he recommends open bowels, light nourishment, fomentations and anodynes. After the matter is discharged, removal to the country and tonic medicines are useful.

INFLAMMATION OF THE OS AND CERVIX UTERI IN THE ORDINARY STATE OF THE SYSTEM.

Experience has convinced me that inflammation of the os and cervix uteri occurs more frequently than is generally imagined; that it is the cause of much distress to females, by producing diseased states of the menstrual discharge and other complaints, more particularly ulceration, as well as scirrhous and cancerous affections. As the disease falls to be so often mentioned in the following pages, I shall now give a description of its symptoms, appearances and terminations.

This disease may take place after exposure to cold, fatigue or fright, and it is sometimes ushered in with chilliness followed by some degree of fever, with a sense of fulness, weight, heat and pain in the proper region, and also in the back and loins—the severity of these symptoms depending upon the intensity and extent of the inflammation; in general, however, the inflammation is subacute, with corresponding mild symptoms. In the acute cases, the rectum appears to suffer, at least tenesmus takes place, the patient experiences increased suffering when at stool, and occasionally there is also micturition. The worst instances that have fallen under my notice were connected with diseased states of menstruation, both as cause and effect. In most cases there is an increased discharge from the vagina, resembling the leucorrhœal; frequently it is of a sanguineous nature, and when examined, is found partly fluid and partly coagulated. When the discharge is copious, the pain in the back is generally severe.

In all serious diseases of the uterus, it is necessary to make a careful examination of the state of parts, not only by the vagina, but also

by the rectum. On reaching the os uteri, in acute cases, a considerable increase of pain will be produced by the touch, and will be very much complained of every time the finger is made to press upon the organ, which feels hot, swollen and doughy; and I have often been aware, during such examinations, of the pulsation of minute arteries. Sometimes I have discovered one or more large vesicles which feel like minute tubercles; and also ulcerations, particularly on the posterior lip. In subacute cases, the patient complains of slight increase of pain; upon making an examination, the uterus feels heavy, and the lips of the os uteri swollen, irregular and even rough.

Treatment of inflammation of the os and cervix uteri.—Venesection is occasionally necessary in stout, plethoric women. On the continent, the application of leeches to the immediate seat of the disease is recommended, and is particularly insisted upon by French writers. Formerly I entertained strong prejudices against this practice, which a trial, urged by the recommendation of my friend Dr. Farquharson, who resided for many years at Lisbon, completely removed. The leeches are put into an ivory tube, furnished with a piston, and introduced so that the extremity reaches the top of the vagina. The piston is then pushed forward. The leeches, in general, fasten immediately, and become filled in the course of a few minutes, when they make their escape, or are removed with the finger. The patient is to sit upon a vessel containing boiling water, to encourage the bleeding, which is readily suppressed upon lying in the horizontal posture. The bowels are to be acted upon by the mildest laxatives, assisted by injections of tepid water, care being taken that the nozzle of the pipe be not pushed against the diseased part. As soon as the bowels are in a proper state, anodynes may be used, and are found most efficacious when introduced into the rectum. The diet should be more or less antiphlogistic, according to circumstances. Rest in the horizontal posture is to be enjoined until considerable amendment has taken place; and the warm hip-bath seems to be serviceable in all cases where there is no considerable hæmorrhage. I have seen contra-irritation, produced either by tartar-emetic ointment rubbed upon the lower part of the belly, or by means of a blister to the sacrum, beneficial.

Individuals who have had an attack of this disease are ever afterwards liable to a return; therefore great attention should be paid to the bowels, and to preserve the feet sufficiently warm: they should wear drawers, and never be without a napkin, or a T bandage made of flannel.

When an ulcer is discovered, it should make little difference in the treatment further than to induce us to be, perhaps, a little more active, and more peremptory in insisting upon the necessity of keeping the horizontal posture. In such cases injections, at first of warm milk and water and afterwards of any of the usual astringents, repeated several times a day, are necessary. In one case, in which I was successful in arresting the progress of, and subsequently healing, a large ulceration on the lip of the os uteri, I had an opportunity, about eight months afterwards, of examining the condition of the part on dissection, the patient having eventually died of phthisis pulmonalis.

There was considerable loss of substance, but the cicatrization was complete, and there was no surrounding hardness.

VASCULAR SARCOMA, SCIRRHUS AND CANCER OF THE UTERUS.

By vascular sarcoma of the uterus, I mean an increased growth of that organ, by a deposition of organized matter similar to its natural structure, and possessing its fibrous appearance. In all the cases which I have seen, the disease seemed to advance with symptoms showing increased action, if not inflammation itself—such as general febrile movement; pain increased on pressure; general tenderness of the part; tumefaction of the abdomen, which has been always observed to be more and more enlarged after the subsidence of every attack. These symptoms recur at irregular periods, with intervals of one, two or more months. The natural functions do not appear to be much disturbed, except during the inflammatory paroxysms; in general, the appetite is good, but there is much thirst; digestion goes on well, at least for a considerable period, and the bowels are not more impeded than can be well accounted for by the mechanical pressure; the stools generally have a natural appearance; and the menstrual discharge, in many, continues to flow, but sometimes in increased quantity, so as to resemble active hæmorrhage. The uterus sometimes grows to an immense size, if the disease advances slowly. I once had an interesting case of this affection under my care, in which, upon dissection, the uterus weighed about fifty pounds avoirdupois, which is, perhaps, the most extreme instance on record, particularly in which life was preserved so long. The tumour not only filled the abdomen, but pushed the diaphragm so high, that it encroached upon the thorax, and lay over the heart and lungs, so as to conceal the respiratory sound over the whole anterior part of the chest. So high did it reach, that the diaphragm on the right side came in contact with the first rib; the lungs were found reduced to about a third of their natural size; and although the heart was, perhaps, rather larger than natural, it was flattened by the pressure it had sustained. A cast of the body of this person, a preparation of the uterus and several drawings are in my museum.

On cutting into an uterus, affected with vascular sarcoma, there is observed not only a resemblance to the natural structure, but an absence of those white lines which characterize scirrhus; and there is nothing like ulceration. The disease has no resemblance to tubercles of the uterus, which are circumscribed and seem like knobs projecting from its surface, or embedded in its substance. In vascular sarcoma, it is impossible to point out where the proper structure of the uterus terminates, or the diseased structure commences; the surface of the organ is generally even, and wants the hard, indurated feel of scirrhus. Women affected with this disease may die at last from the effects of peritonitis, phthisis pulmonalis, or of some cerebral affection, instances of all of which I have known; and in some cases the uterus has been found, upon dissection, very much enlarged from this disease, where little, and, in others, no suspicion was entertained

of organic disease. This, I apprehend, can scarcely happen in scirrhus or cancer.

Treatment of vascular sarcoma of the uterus.—In the gravid condition of the uterus, fresh matter is deposited by its arteries, so as to increase its bulk and weight in a remarkable manner, but is again absorbed after delivery; and from the analogy which exists between vascular sarcoma and the great increase in the substance of the uterus during gravidity, it is probable that the preparations of iodine, by exciting the action of the absorbent system, will be found successful in its treatment. The iodine may be exhibited either in the form of tincture or combined with potash, forming the hydriodate of potash; of the former, ten drops may be given three times a day, gradually increasing the dose to thirty—of the ordinary solution of the latter, thirty drops increased to sixty; and either of these preparations may also be applied externally in the form of ointment. I have never seen any of the bad consequences from the use of iodine concerning which so much has been written, except in one case, and I have employed it very frequently, and continued it for months. The application of leeches—contra-irritation in the pelvic region—a rigidly abstemious and dry diet—careful attention to the bowels—and the avoiding exercise, particularly towards the menstrual periods, are all collateral means which are highly necessary, and must not be neglected. I cannot too strongly urge the advantage of applying the leeches to the cervix of the uterus.

I cannot resist stating the effects of the above-mentioned treatment in the case of a lady, who, after having for some months observed a tumour the size of the bottom of a Florence flask, above the brim of the pelvis, rapidly increasing both in size and weight, and bearing down in the passages—mentioned her situation to her friends, who advised medical assistance to be called, which was done accordingly. After a large quantity of iodine had been used without any effect, I was consulted, and found an enlargement, not only above the brim of the pelvis, but also filling up its cavity, producing constipation and micturition from the pressure upon the rectum and bladder. I gave an unfavourable opinion, but added that there was a possibility of checking the activity of the disease, and the further enlargement of the tumour, at least for some years. There never was a case which better illustrated the advantages of the combined influence of the treatment already mentioned: leeches and contra-irritation were employed in addition to the external and internal use of iodine; an immediate effect upon the activity of the disease was observed, and from this time the tumour began to diminish. When I first saw her, she was the size of a woman in the fifth month of pregnancy. In the course of three months the tumour could not be felt by external examination, and at the termination of seven, the treatment was discontinued, as she ceased to feel any inconvenience, except a slight degree of weight in the passages. I have had an opportunity of seeing this patient many times since, and am assured that she feels nothing of her former disease, and that she menstruates regularly. No examination of the parts has been made since the treatment was

discontinued, at which time, however, the uterus was found much reduced in size.

There are two interesting cases, showing the success of the iodine treatment in uterine tumours, published by Dr. Baron, and respecting which I find an article in the Med. Chirurg. Review for August, 1829.

SCIRRHUS AND CANCER OF THE UTERUS.

As these affections are so frequently combined, and as scirrhus so often terminates in open cancer, I shall treat of them together; although I am aware that one species of cancerous ulceration may take place from the immediate effects of inflammatory action of the parts, without the intermediate condition of the scirrhous degeneration. These are diseases which generally show themselves about the period when menstruation ceases in the course of nature, while vascular sarcoma usually affects those who are younger; but the most active cancer may occur in females under thirty years of age, several fatal cases of which I have myself attended. Women seem to be more liable than men to scirrhus and cancer, which are the most dreadful and intractable diseases to which they are subject. It is generally believed that the disease first commences in the cervix of the uterus. At first there is a slight uneasiness in the part with glairy discharge, and a sensation, attributed to weakness or weariness, in the lumbar region; in the course of some time, heat and itching about the vagina take place, with thirst, some degree of fever during the night, and increased discharge, which at this period is slightly discoloured, having rather a disagreeable odour; these two last circumstances are the first to create alarm, and induce the patient to seek for medical advice. As the disease advances, the pain becomes more severe, burning and stinging; the discharge more and more foul and fetid, sometimes alternating, however, with large evacuations of a limpid, serous fluid; the palms of the hands and soles of the feet feel as if scorched, with great restlessness and thirst, particularly during the night. The stomach becomes at times very irritable, so that nothing can restrain the tendency to vomit; the pulse is rapid; the surface either harsh and dry, or bedewed with perspiration; and there is very frequently a deadly paleness, not only of the countenance, but affecting the whole body. Sometimes active hæmorrhage takes place from the passages, which no doubt proceeds from some vessels, the coats of which are ulcerated.

The ulceration is sometimes confined to the cervix and os uteri and upper part of the vagina, at others it extends to every part of the organ as well as the vagina, affecting, in some cases, the rectum and the bladder, through the coats of which it extends; but more frequently the disease involves the rectum. I have several preparations in my museum, where perforations are to be seen, not only between the rectum and the vagina, but also between the rectum and the uterus.

The duration of the disease is very various; in some cases it runs through its course in between two and three months; in other instances, when the scirrhous degeneration precedes the cancerous, the

course of the disease may occupy years. Sometimes the patient dies a lingering and painful death, the fatal termination being attributed to the gradual decay of strength, by the joint effects of the constitutional irritation, pain, want of sleep and inanition; at others, peritonitis takes place suddenly, and hurries the patient quickly to her grave.

Treatment of scirrhus and cancer of the uterus.—It is to be apprehended that these degenerations have been too often allowed to run through their course, without sufficient means having been taken to subdue them or to arrest their progress, from the prevailing opinion of their utter hopelessness. But I am not singular in believing that, although not, perhaps curable, much may be done to arrest their progress for many years, and at the same time to make the patient comfortable, provided the disease be attacked early by the means now to be described, which I can strongly recommend from experience. These are, a dry, abstemious, but sufficiently nourishing diet; assiduous attention to the bowels, without producing purging or intestinal irritation; strict confinement to the horizontal posture upon the occurrence of the slightest pain, and allowing gentle exercise to be taken only when no pain has been complained of for some time, and when the weather is fine. The body must be protected by sufficient clothing, and precautions taken to prevent the possibility of the feet becoming cold. A flannel T bandage should be worn; and upon the occurrence of the slightest pain, discharge or febrile movement, leeches are to be applied to the part affected, and repeated according to circumstances, followed by the production of contra-irritation, either by means of a blister to the sacrum or antimonial ointment to the lower part of the abdomen, together with the occasional use of the tepid bath.

An examination *per vaginam* should be made from time to time, in order to ascertain the condition of the parts; and we are to form an opinion, along with the other circumstances mentioned, from the size and weight of the uterus, but particularly from the state of the os uteri. It is always a bad sign if it be found more and more gaping and ragged, and if increased pain and hæmorrhage be produced by the touch.

In the advanced stages of the disease, we are often implored to relieve the distress occasioned by the pain, intractable vomiting, restlessness and want of sleep; and sometimes, I am sorry to say, we are applied to in vain; for the stomach is either too irritable to retain any medicine, or the opiate which is given produces in a few hours the irritability of the stomach, or creates a rending headache. Thus we are often placed in the most afflicting position, sometimes blamed for not being able to relieve the present sufferings of the patient, at others for having created, by our remedies, sensations which are less endurable than those for which they were prescribed, so that we are obliged to run through the whole list of narcotics. I have sometimes found one, sometimes another, serviceable in allaying pain; but upon the whole, more benefit is derived from small doses of the sedative solution of opium thrown into the rectum, than from any other means. Care should be taken not to administer one

single drop more than is necessary to subdue pain, because the smallest additional quantity will be quite sufficient to excite vomiting or violent headache. I generally begin, therefore, with from five to ten drops, gradually increasing the dose, as the system gets habituated to the remedy. Much comfort will be produced by the administration of pills, containing equal parts of camphor and hyoscyamus, but more particularly when there is irritation of the bladder, or much nervous irritability.

The sickness and vomiting are generally more difficult to allay than the pain. All known remedies have sometimes failed in my hands, but more success has followed the administration of a pill composed of two or three grains of calomel and two of opium, with a small blister, or a plaster composed of spices mixed with opium, applied to the epigastric region, than any other means.

In all cases where the disease is far advanced, the patient suffers much loathsome feeling from the bad odour of the discharge, which, in many instances, excites or aggravates the irritability of the stomach; and it often requires a strong sense of duty or great affection to sit long at the bed-side. It therefore becomes a very important object to remedy this evil, which we can now do most effectually by throwing injections into the passages containing the chloruret of lime or of soda properly diluted with water, and repeated several times during the day, as well as by sprinkling these substances over the room and bed.

CHAPTER X.

PROLAPSUS OF THE UTERUS—RETROVERSION OF THE UTERUS—POLYPUS OF THE VAGINA AND UTERUS.

PROLAPSUS OF THE UTERUS.

This affection may exist in various degrees, from the slightest relaxation to the complete expulsion of the uterus beyond the external parts, when the disease is termed *Procidentia*. The slighter forms of this disease are not easily discovered; but when it exists in a greater degree, a sense of weariness and pain in the back is complained of, together with a dragging sensation; the patient feels as if something were protruding from the external parts; and there is usually some discharge like leucorrhœa. As the disease advances, the bladder, from its connection with the vagina and uterus, becomes affected and displaced, micturition is produced, and sometimes strangury. It should also be recollected, that the more the uterus is protruded, in the same ratio must the vagina be everted. It is generally remarked, that should a woman affected with prolapsus of the uterus become pregnant, the uterus, instead of being pressed lower down by its increased weight, rises in the abdomen as usual; so that it is more difficult to feel the os uteri at the seventh month, than in the unimpregnated state; but I have seen several cases where the disease became aggravated as pregnancy advanced.

Causes of prolapsus of the uterus.—The chief cause of this disease is getting up too soon after delivery, or even sitting up in the half erect posture, before the uterus is reduced in size; but I have known the affection to be very troublesome in the virgin state in relaxed habits. Constipation and bearing down efforts, together with lifting heavy weights, and using any exertion during the time of the menstrual discharge, are also causes of prolapsus.

Treatment of prolapsus of the uterus.—The horizontal posture, avoiding every exertion, and keeping the bowels open, are the chief means to be recommended, together with the daily use of cold water to the parts, and an astringent injection, composed either of the sulphates of alumina, zinc, lime-water or a decoction of oak-bark. In extreme cases, an instrument called a pessary is to be introduced into the vagina, in order to support the parts.

Should the uterus be found already protruded beyond the external parts, in the state called *Procidentia*, it is often possible to produce

reduction by attention to the bowels, after persisting in the horizontal posture for several days, and by employing long-continued pressure with the hand on the protruded part, so as to deprive it of blood; after the uterus is pushed within the parts, it must be retained by a pessary and a T bandage.

RETROVERSION OF THE UTERUS.

This is a complaint which takes place in the first months of pregnancy, and in which the fundus of the gravid uterus is tilted backwards out of its natural situation, and becomes wedged under the great promontory of the sacrum, the os uteri projecting toward the symphysis of the pubis, where it frequently presses upon the urethra or neck of the bladder, as does the fundus of the uterus upon the rectum as it passes down along the sacrum. The symptoms are more or less violent, consisting of bearing-down pains with uneasiness, feeling of weight in the passage and pain in the belly, partly, perhaps, from distension of the intestine, but principally from distension of the bladder, which may be felt over the brim of the pelvis. Generally, no urine is passed from the bladder, and, although there is frequent desire, no satisfactory evacuations take place from the bowels. There are usually febrile symptoms and considerable restlessness.

Causes of retroversion of the uterus.—Although it is a disease of pregnancy, yet I have known it to take place in the unimpregnated state; but in which cases the uterus was rendered preternaturally large by menstrual obstruction. Constipation and distension of the bladder coexisting, is the chief cause of retroversion of the uterus, assisted, perhaps, at the moment, by some unusual exertion or efforts when at stool.

Treatment of retroversion of the uterus.—I have seen some very curious, but unpardonable mistakes made by practitioners not being able to detect this complaint. If once recognized, which it can only be by examination made in both passages, the treatment is simple, and generally very satisfactory. The chief points to be attended to are, to evacuate the contents of the bladder and the rectum; the first is easily effected by the introduction of the catheter; but it should be known and remembered, that the more the female bladder is distended, the more does the urethra become elongated, so much so, that I am aware of the particulars of a case that terminated fatally, owing to the embarrassment occasioned by this circumstance, and in which the ordinary female catheter did not reach the bladder; this created a belief that it was empty and threw the practitioners off their guard. Upon dissection, the bladder was found enormously distended, producing peritoneal inflammation, which was the cause of death. The uterus was found, between the third and fourth month of pregnancy, in a retroverted state. The actual preparation of the bladder and uterus and a drawing of the relative situation of parts, by the master-hand of Sir Charles Bell, are in my museum.

Considerable address is sometimes required, after the contents of

the bladder are discharged, to clear out the intestines. Castor oil should be given, and some hours afterwards, an injection of tepid water should be thrown into the bowels; but the rectum is so tender, and the obstruction so great, from the pressure of the fundus of the uterus, that this simple operation cannot be trusted to ordinary hands; it must, therefore, be done by the practitioner himself, in the following manner: The patient being placed upon her knees, leaning forward, the pipe, well greased, is to be slowly introduced, with the point properly directed along the hollow of the sacrum, when the fluid is to be gradually thrown in. In former days, attempts were made to place the parts *in situ*, by introducing two fingers into the rectum, and forcibly pressing forward the fundus of the uterus; but this practice is now seldom employed, at least for some days, and practitioners in the mean time content themselves with keeping the bowels open, and relieving the bladder. Fomentations are serviceable in relieving pain, as are opiates, after the bowels have been freely opened. General bleeding may sometimes, though rarely, be necessary; but it is at least safe practice to draw blood, if there be much pain in the abdomen and pelvis, with tenderness to the touch, and particularly if the pulse be full and hard. It must not be forgotten that abortion may take place, which is to be managed in the usual manner; and, as far as I know, there is only one case on record, which occurred to Dr. Merriman, where there is good evidence of the uterus in this situation carrying on its contents to the full period.

POLYPOUS TUMOURS OF THE VAGINA AND UTERUS.

Tumours of this class are often met with in practice; for the most part, their structure is hard, and they are covered by an elongation of the mucous membrane of the part from whence they have arisen; sometimes, although rarely, they are soft and lymphatic, resembling those found in the nose. No age is exempt from them, although they are not so frequently met with in very young subjects. Sometimes they are found attached to the vagina, but generally spring from some part of the uterus, and may be attached either by a broad base or by a narrow pedicle; but the latter is the most common, particularly after the tumour has been expelled from the uterus. Uterine polypi may grow from any part of the uterus, of which some fine examples may be seen in my museum, in one of which, a small tumour of this description, of a bright red colour, is seen projecting from the Fallopian tube. Most generally, however, polypi arise from the *cervix uteri*.

The constitutional symptoms are similar to those produced by other diseases of the uterine system. These are, loss of general health and strength, dyspeptic symptoms and irregularity of bowels. When uneasiness and a dragging sensation low down in the back, with bearing-down pains and micturition are complained of, particularly if attended by discharge, some suspicion of uterine disease is naturally excited; but it is only by an examination that the nature of it can be detected, and then only when the tumour is either totally or

partially expelled through the os uteri; considerable mystery will otherwise hang over the nature of the disease. The discharge is at first mucous, subsequently it becomes tinged, and at last altogether bloody; the bleeding is at times copious, and is supposed to proceed from the rupture of considerable-sized veins. As soon as a polypous tumour in the uterus gains some degree of size, its mechanical pressure produces a sense of weight and uneasiness in the passages, even should it be situated in the vagina;—but if in the uterus, there will be frequent, and sometimes severe pain, which, although partly owing to the same cause, is to be principally attributed to contractions of the uterus, which have all the characters of those observed during abortion in the early stages of pregnancy. In such circumstances, the discharge is considerable, which, together with the constant paroxysms of pain, want of rest, failure of the appetite, &c., weaken the patient; hectic fever will ensue, and the patient may die from the effects of long-continued constitutional irritation, or from exsanguinity or debility. The tumours are said sometimes to ulcerate, and to send forth excrescences; but of this I have not seen any example. On examination with the finger, it is of great moment to be able to distinguish between different diseases which resemble polypus, particularly prolapsus and retroversion of the uterus, and perhaps also steatomatous tumours, which are sometimes formed between the rectum and vagina. A polypus is, in general, not tender to the touch, although it must be remembered that the vagina, which embraces it, may be in that state; the depending part is generally the largest, at the extremity of which nothing like an os uteri can be felt. Upon tracing with the finger for the origin of the tumour, we shall either come to its attachment in the vagina, and distinguish the uterus higher up, or if it should spring from the uterus, we shall be able to detect the os uteri encircling it like a ring; and, in order to prevent any chance of mistake, we should make a point of tracing the whole circle which the os uteri makes. I can scarcely fancy how retroversion of the uterus can be mistaken for this affection, because, in that case, the uterus will be tender to the touch, and the os uteri discovered projecting towards the symphysis of the pubis, with the fundus directed towards the hollow of the sacrum. Tumours situated in the recto-vaginal septum may be easily distinguished by making an examination by the rectum, as well as the vagina. I have heard of one case which occurred in London, and which made a considerable noise at the time, where an eminent surgeon most unaccountably mistook a relaxed and prolapsed bladder for a polypous tumour, and it was with great difficulty he was restrained from applying a ligature. Every man in the profession, whether physician or surgeon, should be able to distinguish between such diseases by the usual mode of examination, although it may be well, before proceeding to any operation, to be sanctioned by the authority of an accoucheur. The necessity of medical men directing their attention to the diseases of the uterine system in a proper manner, is well illustrated by the following case:—A young woman, aged 25, a widow, and the mother of two children, was operated upon by me for polypus in the winter of

1825. This woman's complaints had continued for two years, during which time she had been affected with increasing pain in her back and loins, frequent desire to make water, and a leucorrhœal discharge, with frequent hæmorrhage, which created great debility. The functions of the stomach became affected early in the disease, and the bowels were sometimes constipated, sometimes too loose. For some months she complained of cough, attended by expectoration, which was sometimes bloody. She had taken every remedy in the pharmacopœia to restrain the hæmorrhage, and had been frequently bled upon the same principle that venesection is had recourse to in epistaxis, but, as might be expected, without any benefit. At this juncture she fortunately consulted Dr. Duffin, now of London, who was led to make an examination, when he discovered the presence of a polypus. I was consulted, and immediately performed the operation, by including the tumour within a ligature in Dr. Duffin's presence. The tumour separated on the fourteenth day, and was found to have a very broad base. Leeches were applied to the abdomen several times before the tumour dropped off, in consequence of symptoms denoting peritoneal inflammation; but the woman made a good recovery, menstruated soon after, all the unpleasant symptoms quickly vanished, and she has ever since enjoyed excellent health.

Treatment of polypus.—The sooner a ligature is applied the better, and there is no operation more easily performed, if the double canula of Levret be used, the tubes of which instrument may be separated at pleasure. A hempen ligature well waxed is preferable to a silver wire, which, on one occasion, after I had applied it, gave way on the eighth day, and required to be renewed. The ligature should, in general, be made tight from the first, but should there be much pain experienced in attempting to do so, the pressure had better be produced very gradually. Before the operation, the bowels should be brought into a proper state; and after the application of the ligature, the patient should be watched, in order that any inflammatory action, either of the uterus or peritoneum, may be speedily attacked, and subdued by venesection or leeching. Opiates are also serviceable to allay pain and produce sleep.

CHAPTER XI.

TUBERCLES OF THE UTERUS—BONY CONCRETIONS—HYDATIDS—AQUEOUS AND FLATULENT DISCHARGES.

TUBERCLES OF THE UTERUS.

The diseased formation which generally bears this name is not the scrofulous tubercle which is so frequently found in the lungs, mesentery and almost all other tissues of the body. The tubercles of the uterus are hard, somewhat spherical-shaped masses, sometimes imbedded in the centre of the substance of the uterus—projecting into its cavity—or from its external surface; in the one case, the projecting part is covered by the mucous membrane, in the other by the peritoneum. They have also other characters which distinguish them from the scrofulous tubercle, being fleshy and more or less vascular, whereas the others have not the slightest carneous appearance; and I have never been able, even after minute injection, to see a single vessel in their substance. Suppuration is unknown, and ulceration rarely takes place. There is as much doubt, however, respecting the pathology of tubercles of the uterus as of those which are found in the lungs. Some suppose it to be a disease of the cellular substance; while others allege it depends upon that of the proper muscular fibres of the uterus; and there are many who attribute this diseased formation to inflammatory action. On making sections in a great number of cases of tubercles of the uterus, I find that some consist of a hard cartilaginous shell, containing an almost transparent fluid; others are semi-cartilaginous throughout, and show white shining lines running like radicles in every direction, intersecting each other, the interstices apparently containing the proper substance of the uterus; some appear to be minute vesicles, or small sacs containing a fluid, occasionally giving somewhat of a honeycomb appearance; other tubercles approach very near to the nature of bone; while a few bear an exact resemblance, in every respect, to the proper substance of the uterus. These tubercles are found of various sizes, from that of a pea to a goose's egg, and even larger; they may be either solitary or exist in considerable numbers, so as to encroach upon the cavity of the abdomen, and occasionally give to the uterus a grotesque appearance, making its cavity, from the os uteri to the fundus, long and winding, in other instances obliterating the cavity of the uterus.

The symptoms produced by tubercles of the uterus depend very much upon their character and size; generally speaking, they are not of a malignant nature, and if so, few or no constitutional symptoms will arise, at least for a considerable period of time. But if malignant, the symptoms will resemble those of scirrhus and cancer; when large, they produce mechanical pressure upon neighbouring parts, and give rise to corresponding symptoms, both local and constitutional. The local symptoms are tenesmus, constipation, desire to make water, and pain in making it, weight and bearing down in the passages. Menstruation is regular, at least in most cases; but occasionally the performance of this function is attended with difficulty and pain; in several instances, where the state of parts was afterwards ascertained by dissection, menstruation was observed to be more copious than usual, with shorter intervals between the periods.

Treatment of tubercles.—Little more can be done than to palliate symptoms as they arise, prevent constipation and mitigate irritation of the bladder and uterus, should it exist.

BONY CONCRETIONS.

Bony or earthy concretions in the uterus are by no means rare; several undoubted specimens of which are in my museum. They are of different sizes, and exist, as far as I am aware, solitary; their surface is generally rough, being intersected with fissures and indentations; they are commonly more or less of a spherical shape; and the presence of such bodies in the uterus may be expected to give rise to general and local irritation. In one case, a substance of this sort was found after death in the uterus of a woman who had been long subject to uterine irritation and hysteria, and who at last fell a victim to phthisis pulmonalis. Another woman, after having been delivered of a healthy child, appeared to be doing well for twenty-four hours, when pains like those of a second labour took place, which induced a belief that a twin was coming into the world; this however was not the case; something hard was felt passing through the os uteri, which, in the course of a few hours, was expelled during a violent paroxysm of pain, and was found to be a calculus of the description now under consideration: the woman did well, and had no return of the complaint. Another preparation about the size of a turkey's egg has been lately presented to me by a medical friend in Stirlingshire, with the following history: An unmarried woman consulted him about a uterine affection, attended with enlargement of the abdomen and other symptoms which led him to suspect that she might be pregnant, the possibility of which she admitted. At the termination of a year, or somewhat more, she actually entered into the holy state of matrimony, and became, in the course of time, "as women wish to be who love their lords." She went on to the full period; strong uterine action came on; a hard, unyielding substance was felt at the os uteri, which was expelled

before the child, and was found to be the calculus sent to me. The child was born alive, and the woman made a good recovery.

In some instances, the substance of the uterus itself is converted into calcareous or bony matter.—Two splendid specimens of this kind were lately presented to my museum; one came from a subject in the anatomical rooms, the other from Dr. Grieve, of Dumfries, and was found in an aged person who fell a victim to cholera. In these preparations the osseous deposit is dispersed here and there in the uterus, which, in both cases, is considerably enlarged and indurated.

Considerable dubiety must always exist in such cases; the calculus can only be discovered by introducing the finger or a sound into the os uteri; but even from such an examination we shall possibly derive little additional light, as it must not be supposed that the calculus, when touched with the sound, will produce the same sensations as those emitted on touching a stone in the bladder, uterine calculi being coated with a thin layer of a substance as soft as boiled cartilage.

Treatment.—We have to allay general and local irritation as in other uterine diseases. Mr. Burns has given references to several interesting cases of this kind, and, among others, to a case mentioned by Gaubius, where the affection was complicated with a prolapsed state of the uterus. After a considerable time a large stone was expelled by violent action of the uterus. On the next day a larger stone presented at the os uteri, which gradually dilated, and allowed it also to pass; and he states, that smaller stones were extracted from time to time, and the patient gradually got well. In the 1st volume of *Le Journal des Savans*, a case is related by Beale, in which an incision was made into the uterus of a woman, and a calculus extracted, which had existed for eight or nine years with insufferable pain, after which she recovered. At first the concretion weighed nearly 4 oz., but after it was dried it became very light for its size. Mr. Burns also tells us of a case of calculus occurring in a child of five years of age, who died in consequence of suppression of urine.*

HYDATIDS.

Hydatids are sometimes formed in the uterus; occasionally they are solitary, but for the most part are very numerous, being of various sizes, from that of small currants upwards, and attached to each other by a loose cellular-looking substance, which is probably coagulated lymph. The nature of these substances is not known, and the prevailing opinion that they are produced by blighted conceptions, I cannot believe to be correct. The symptoms are such as are occasioned by any other cause of uterine irritation, and are accompanied by uterine efforts resembling labour-pains. If the true nature of the complaint were detected, which it can only be by a partial discharge of hydatids, it might be serviceable to introduce an instrument like a sound into the uterus, for the purpose of breaking them down, and

* In a late dissection of an aged woman who died of cholera, the arteries of the uterus were ossified. The organ itself was in a state of extreme atrophy.

loosening any adhesions which may exist between them and the uterus, and afterwards to exhibit an infusion of the ergot of rye, made with two drachms of that substance in four ounces of water, which from the violent uterine action it induces in certain cases of lingering labour, I would expect to be very effectual in causing the expulsion of hydatids. It must be understood, however, that I merely speak from analogy; and it must be remembered also, that while this remedy will be, at least, innocent in the case of hydatids or any other soft substance contained in the uterine cavity, it might be fatal if used to produce the expulsion of a bony concretion. Local and constitutional irritation must be relieved by the means already recommended, and after the discharge of the hydatids has taken place, every measure must be used to re-establish the general health.

AQUEOUS AND FLATULENT DISCHARGES.

Both of these affections, but particularly the first, frequently attend hydatids, as also scirrhous and cancerous affections of the uterus and vagina, and more particularly the cauliflower excrescence. I was lately consulted about a young married woman, the mother of three children, respecting a very copious discharge of watery fluid which took place from the vagina, alternating with leucorrhœa: she menstruated regularly, and during these times the aqueous discharge did not take place. On examination I found the uterus rather bulky, and there were several small tubercles on one of the lips of the os uteri, but neither pain on pressing it nor gaping of its lips; the vagina felt much relaxed. In this case, there were considerable flabbiness of person and weakness of habit, which I attempted to improve; but as I could neither persuade the lady to take medicines, nor, in fact, to do any thing she was desired, I gave up attending; and have no doubt, that in the course of time a scirrhous affection of the uterus will take place, the seeds of which already exist, but which might have been warded off by proper treatment.

The discharge of flatus from the vagina I have most frequently remarked soon after delivery; it speedily wears off, and rarely continues to be a source of annoyance beyond a week or ten days. This affection very seldom presents itself in other states of the system, but cases have been known to occur. I have heard of two instances where ladies have been obliged, in consequence of irregular and loud explosions entirely beyond their control, to seclude themselves from society—an unnecessary restraint, because such occurrences may be prevented by wearing a small canula in the passages.

In the flatulent as well as in the aqueous discharge, which does not depend on cancer, the complaints, I conceive, may be altogether removed by means taken to improve and invigorate the general health—such as proper regimen, cold or warm bathing, and attention to the bowels. Considerable benefit will also be derived from throwing astringent injections into the passages twice or thrice a day.

CHAPTER XII.

FLUOR ALBUS AND LEUCORRHŒA.

Considerable difference of opinion exists in the minds of the profession respecting the application of these terms:—some use them synonymously, others apply the term fluor albus to designate the existence of a white discharge from the passages, which is unattended by any marked constitutional symptoms, and which they suppose to proceed from the vessels of the vagina. They give the name of leucorrhœa to the discharge when it is opaque, and when the general health is much involved; in which circumstances they conceive the secretion comes from the uterus itself.

The mucous membrane lining the uterus and vagina is constantly bedewed with a mucus secreted by its vessels, which, in the healthy state of parts, is merely sufficient to keep the surface moist; but it very frequently happens, from various causes, that this fluid is poured out in a superabundant quantity, which is then discharged from the passages, and has commonly obtained the name of "whites." It affects females of all ages, and frequently attacks even infants. It is a disease respecting which medical men are seldom consulted, unless the patient suffer pain, or the discharge be excessive, occasioning general debility and, perhaps, producing excoriation of the parts.

Considering the one to be an advanced stage of the other, I shall treat of both under the general term leucorrhœa, without reference to the colour, quantity, or seat of the discharge.

Symptoms of leucorrhœa.—Patients, for the most part, complain of a sense of weakness, weight, and often severe pain in the back, attended by a discharge of glairy, transparent mucus in considerable quantity, having the appearance of new made thin starch, which, however, sometimes looks milky and opaque. The discharge and constant pain, sooner or later, produce debility and impaired health; the functions of the stomach and bowels become impeded, the abdomen full, often much distended by flatulence; the countenance in time assumes a pale and pasty appearance; the lips lose their colour; the eyes their natural brilliancy; the extremities are cold during the day, and for some time after retiring to bed, when slight fever takes place, and they become burning with heat. Sooner or later, if the disease be not checked, palpitations occur, and the legs become anasarcous. The head also suffers in most instances, the patient complaining of headache, and occasionally of vertigo.

These symptoms do not succeed each other rapidly in women of strong constitutions, in whom it usually takes a course of years; but in weakly habits, the disease is more rapid and severe in its consequences. The menses continue to flow very regularly in slight cases; and at these times the leucorrhœa generally disappears and returns again as soon as the period is completed. Occasionally, the menstrual discharge is much increased in quantity, and is irregular in its periods; it also often happens that obstructions take place, and at the monthly times when a woman should be "unwell," the leucorrhœa is found greatly increased in quantity, and accompanied by more severe pains in the back and loins.

In addition to what has been above mentioned respecting the discharge, it may be stated, that it has sometimes a purulent appearance, and is occasionally tinged with blood; but when this happens, or when it becomes fetid, considerable apprehensions may be entertained respecting the condition of the uterus. In all cases of discharge, an examination *per vaginam* is absolutely necessary.

Causes of leucorrhœa.—Leucorrhœa often takes place in full, plethoric habits, and in women who are much exposed to heat; it may also occur in weak, emaciated subjects; and in both circumstances, may sometimes depend on increased action of the secreting vessels, approaching, perhaps, to inflammation. It may also be produced by causes which tend to weaken the action of these vessels, as frequent abortions, excessive venery, and long-continued exposure to cold and fatigue. It may be also occasioned by the presence of ascarides in the rectum—by polypus, prolapsus and other affections of the uterine system—and also by scirrhus and cancer, which may be suspected if the person be beyond the meridian of life, and the discharge excessive, tinged or fetid. Some constitutions are more prone to be affected in this manner than others; I cannot, however, point out any particular temperament or personal appearance which marks the susceptibility; but women are more frequently affected during pregnancy than at other periods, which may be well accounted for from the increased determination of blood to these parts. There can be no doubt that the unnatural, but, as it has been termed, refined manner of bringing up females in this country also predisposes to it.

Treatment of leucorrhœa.—In all severe and suspicious cases, the practitioner should take an early opportunity of examining the state of parts, in order to be satisfied whether or not the discharge depends on organic disease; for if it do, he cannot confidently promise success from any remedial agents he may employ. Few diseases connected with discharges, from whatever part of the body they may proceed, should be hastily and rashly suppressed, or treated in any other manner than as constitutional affections. In leucorrhœa the remedies must be applied to the general system first, and not to the parts themselves, as if it were of local origin; the constitution, in fact, must be prepared, in the first instance, to do without the discharge.

However young and plethoric the patient may be, I cannot fancy a case which will require venesection, unless there be some unusual

circumstances attending it, as very violent pain and high constitutional excitement; but I have seen much advantage in weak, as well as in strong subjects, from applying leeches to the groins, when harassed with constant uneasiness in the uterine region: the number of leeches is regulated by the condition of the patient;—in some cases four will suffice, while in others a dozen may be required. But it may be hereafter found, that more decided advantage may follow the application of leeches to the os uteri.

Plethora can be reduced much more effectually and permanently by a spare, dry, but sufficiently nourishing diet, and by acting upon the bowels, than by any other means. Regular but not violent exercise should be recommended; long walks are to be avoided, as well as every other cause which tends to produce fatigue. If the patient be weak, the diet should be more nourishing, the exercise less fatiguing, and wine may be allowed, or any other more palatable stimulant; but the stomach must never be over-distended, and the use of slops should be entirely discountenanced. Should there be any evidence of the existence of worms in the rectum, the usual remedies, particularly turpentine injection, must be employed. After these steps have been pursued for some time, perhaps for a week or ten days, remedies may be used to suppress the leucorrhœa.

The local remedies consist of different astringent injections thrown into the vagina, by means of an ordinary bag and pipe, or a womb syringe; these are composed of solutions of the sulphates of zinc, alumina, iron, copper, or the acetate of lead, or infusions of vegetable astringents, such as green tea, oak bark or galls. They should be used at first weak, their strength being afterwards increased if necessary.

It has been strongly recommended by many authors, to use occasional emetics; I have accordingly exhibited them, but without any apparent good effect. A gentle mercurial course, cicuta, cantharides, the different resins and balsams, particularly copaiva and turpentine, have also been recommended, and are considered by some as specifics, together with cubebs and electricity, which is made to pass through the pelvic region. There can be no doubt that considerable benefit has been derived from the employment of each of these means, therefore one may be had recourse to after another; but, from my own observation, I may state that better effects have followed the use of the acetate of lead and the tincture of cantharides than of any other remedies. An occasional opiate is serviceable for allaying irritation and producing sleep. Women, particularly those in humble stations, are very fond of having recourse to strengthening plasters; but the same end—viz., support to the back—may be effected by proper stays or a flannel bandage, without the disagreeable circumstances resulting from the plaster. Tonics have also been recommended, as well as cold and warm bathing; to the occasional use of the former there can be no objection, and cold bathing in the open sea, at the proper season, is often serviceable in cases where there is no disease of the uterine system, and the patient not debilitated.

If the *os* and *cervix uteri* be found, upon examination, to be tender, swollen or doughy—if there be severe shooting pains in the pelvis or loins—and if the discharge be of a milky whiteness, then we must certainly have recourse to the internal application of leeches, and to the use of the warm hip-bath, which should precede all other remedies.

Women who are liable to leucorrhœa should avoid violent exercise and exposure to extremes of heat or cold; they should wear warm clothing, attend scrupulously to the state of their bowels, abstain from eating or drinking any article that is known to disagree with the stomach; and they should make a point of using the *bidet* twice a day.

CHAPTER XIII.

DISEASES OF MENSTRUATION.

Under this head I shall treat of five diseased conditions of menstruation, which present themselves in practice.

1. Amenorrhœa, or obstruction of the menses.
2. Dysmenorrhœa, or painful and difficult menstruation.
3. Immoderate flow of the menses.
4. Menorrhagia.
5. Circumstances occasionally attending the cessation of the menses.

AMENORRHŒA.

Under this denomination are generally included retention of the menses, and suppression; the former has also been termed *emansio mensium*, and implies that the discharge has not appeared at the usual period of life; the latter denotes that the discharge has become suppressed, which may occur in two circumstances to be afterwards mentioned.

Retention of the menses.—This form of amenorrhœa becomes the subject of medical treatment only when a girl passes the usual period of life at which the discharge ought to occur, and when the constitution feels the want, which is evinced by the occurrence of a variety of symptoms, and the disorder of several functions. This time of life varies remarkably in different countries, occurring, it is believed, much earlier in hot than in cold regions; but even in the same climate, great differences are observed. The discharge ought to appear in connection with other signs denoting puberty; in temperate regions this happens about the age of fourteen; but even in this country I have known several instances at nine years, but a greater number in which the discharge had not appeared at eighteen.

The usual signs which denote constitutional suffering are the following:—The patient loses her natural liveliness, forsakes her usual amusements, and even neglects necessary employments in which she ought to be engaged. She is restless, peevish, and feels incapable of exercising her mind or fixing her attention; complains of weariness, lassitude and debility, and at the same time loses flesh. Her face becomes pale and her skin sallow; she has either no appetite or experiences unnatural cravings to eat indigestible matter, which at other times creates disgust—such as cinders, lime, chalk and com-

mon earth. When these symptoms have continued for some time, dropsical effusions occasionally take place, not only in the extremities, but also in the abdomen, although the distension of the latter generally arises from flatulence, which occasions great uneasiness to the patient, sometimes even amounting to pain; the belly becomes more swollen after meals, and particularly towards evening. The urine is either scanty or copious, and the bowels are torpid; it is difficult to keep the extremities in a natural state of heat; and when the feet are cold, headache is generally complained of; indeed it frequently takes place, whatever may be the condition of the extremities. Some patients become extremely apprehensive and anxious about their situation, while others have a melancholy appearance, and seem to care little about surrounding objects or themselves; and in some, anomalous hysterical affections appear. Cough and hurried respiration, if they have not already occurred, soon take place, together with expectoration. The bowels, which were formerly torpid, now, perhaps, become irritable and loose; at length the patient is affected with perpetual diarrhœa and hectic fever and dies greatly emaciated, sometimes with, at others without, any of the appearances of phthisis pulmonalis.

This description is drawn from life, and is also an example of the disease called *chlorosis*, in its worst form. Chlorosis, however, is not peculiar to the female, as several exquisite cases have fallen under my notice in young men, about the age of puberty, and for the occurrence of which it is difficult to account; whereas, in women, it may be said to be excited by the want of a natural and periodical secretion.

In this form of amenorrhœa, the symptoms sometimes take a different course; cough and expectoration take place, with slow emaciation, the patient becoming better and worse for some years, the menstrual discharge, however, not appearing; and she dies at length of chronic phthisis, sometimes accompanied by ulceration of the bowels or of disease of the liver. Tubercles are occasionally found in most organs of the body, and the immediate cause of death may be chronic peritonitis.

Causes of retention of the menses.—This form of amenorrhœa may depend, according to Mr. Burns and others, on a want of vigour in the system, by which not only a new action is prevented from being formed, but also those actions which were formerly performed become impaired; or on a special want of energy in the uterus; but in far the greatest number of instances, menstruation is postponed merely from the general debility of the system. Absence of the menses depends, in some cases, upon a malformation of the organs of generation, as want of the ovaria, imperfect formation of the uterus or of the Fallopian tubes, cohesions of the vagina and labia, or an imperforated state of the *os uteri* or of the hymen.

Treatment of retention of the menses.—When a girl passes the usual period of life without menstruating, her friends naturally become anxious about her situation; and this of course increases if her appearance denote loss of health, and more particularly should the symptoms be severe. When a medical man is called, his first

duty is to inquire into the cause of the retention; but his investigations will be incomplete unless he make an examination, to ascertain if there be any malformation at the orifice, or in the course of the vagina, or at the *os uteri*. Notwithstanding this uncertainty, however, delicacy forbids such an examination, at least for a time, till other means have been tried in vain, and life be likely to pay the forfeit. It is evident, also, that the want of the ovaria, or imperfect formation of the tubes, and, in some cases, even of the uterus itself, cannot be discovered by examination.

The ureters may be perfectly well formed and healthy, but may want a certain something to enable it to commence the first of its peculiar functions. Now this certain something, of which we really know nothing, has been denominated want of energy of the uterus itself; and we judge of it by the health being as yet good, and the constitution strong and vigorous; although the pain, restlessness and other slight symptoms show that this will not be the case long, unless something be done by art. The humoral pathologists, influenced by their peculiar views, recommend opening a vein in one of the lower extremities; and it may be often serviceable. The best effects are sometimes produced in robust, plethoric habits, by taking a small quantity of blood at one, two, or three consecutive monthly periods: these monthly periods announce themselves every third or fourth week, by the aggravation of symptoms and increased suffering of the patient. Instead of general bleeding, however, I now prefer the application of six, eight, or more leeches to the region of the groin, or in the neighbourhood of the vulva, or, if admissible, to the os uteri itself. The discharge of blood relieves the system, and gives the uterus time to prepare for the office it has to perform, and prevents the general health from becoming affected; while the discharge from that part of the body tends to excite some action in the uterus, which it is impossible to explain, and which may be produced either by unloading the vessels of the uterus, or by exciting a determination of blood towards it and the other parts of generation. I am confident of the fact, although uncertain about the theory, having often observed the menstrual discharge appear out of its ordinary course, upon the application of leeches to the pelvic region or abdomen, when the attainment of no such object was in view. But on the other hand it ought also to be mentioned here, that menorrhagia is often checked by the same means, which shall be mentioned more at large when treating of that disease. A good deal of the benefit derived from the application of leeches may be attributed to the effect of the bites produced upon the system at large. With respect to general and local bleeding, however, the strongest protest might be recorded against large and frequently repeated abstractions of blood from the system in this class of cases. It is the habit of some to take blood locally or generally upon every slight occasion, and upon the occurrence of every headache, difficulty of breathing, and anomalous hysterical symptom, till patients cannot pass a week without the operation, and at length the constitution becomes irretrievably ruined. Medicines, called *emmenagogues*, have been long in use, but are now, for the most part, laid aside by practical men, who

agree that they are generally injurious. I cannot speak too highly, however, of the benefits to be expected from the use of cantharides in this and all other cases of diminished and obstructed menstrual discharge, commencing with doses of ten drops of the saturated tincture three times a day, and gradually increasing the quantity to thirty, forty and even sixty drops. Care should be taken, however, to give proper directions that the remedy be immediately suspended upon the occurrence of any irritation in the bladder or urethra, when camphor and hyoscyamus should be exhibited, together with diluents, particularly linseed tea.

Constipation is not only to be prevented, but the bowels are to be daily and freely acted upon by aloetic pills, conjoined with assafœtida, in case of pain from flatulent distension of the bowels. Aloes is preferable in this case to any other purgative, because it appears chiefly to act upon the rectum; care must be taken, however, that irritation of the rectum is neither too much nor too long excited, lest it produce piles. The hip-bath is a powerful remedy in this class of cases, and is to be used daily; it is preferable to the general hot bath, from the increased heat which partial immersion will enable a patient to sustain. At first the water should be somewhat under 100°, but the temperature should be afterwards increased by the addition of more hot water, till it is as warm as the patient can well bear. It is found beneficial to put an ounce of mustard in the bath. The clothing must, in all cases, be adapted to the constitution of the patient and the season of the year, and cold feet avoided. The patient should be much in the open air, taking such a degree of exercise as she can bear without fatigue; the exercise must be regular, however; and riding on horseback is particularly serviceable, as well as the use of a swing. Agreeable society, and every thing which can amuse the mind, are to be enjoined, but crowded and hot rooms must be avoided. The diet should be regulated according to circumstances;--if the patient be full and plethoric, it should be light, abstemious and dry; —if weak, it should be more nourishing; but the stomach must never, on any account, be loaded. In neither case is the use of wine contra-indicated, unless there be fever or considerable local irritation.

Cold bathing in the open sea often produces very unpleasant consequences in all forms of amenorrhœa, although it may certainly be serviceable in a few cases. It is a remedy too frequently had recourse to, particularly in Scotland, for every malady, and too often receives undue countenance from medical practitioners even of some degree of eminence. Frequently do I see cases of *phthisis pulmonalis*, asthma, dropsy, diseases of the uterus, &c. which, if not produced, are certainly aggravated, by sea-bathing. I scarcely ever have occasion to ride along the sea-side without being grieved at seeing poor emaciated children, in the last stages of *tabes mesenterica* and other scrofulous affections, screaming and struggling while they are dipped. It may be mentioned once for all in this place, that when the system is much reduced, it cannot stand the abstraction of heat which is occasioned even by undressing in an exposed situation, such as a bathing machine, not to speak of that produced by complete immersion.

External frictions are very serviceable, particularly when per-

formed with a horse-hair glove. Rubefacients, and even more severe contra-irritation, by means of mustard plaster, blisters and antimonial ointment are also found useful for relieving internal pains. A local stimulant is much employed in England, composed of one or two drachms of the aq. ammoniæ pur. to twelve or sixteen ounces of warm milk or thin starch; three or four ounces of which are injected into the vagina four or five times daily.

The mechanical obstructions in the passages may be divided into two classes: viz., those occasioned by cohesion of the sides of the vagina or labia, and an imperforated hymen; and those caused by an imperfect or imperforated state of the *os uteri* itself. All these cases are comparatively rare, but few men can have been in extensive practice for twenty years without meeting with several, and therefore they require some notice in this place. In the first set of cases, in addition to the constitutional symptoms and local pain already mentioned, there are great fulness, distension and a sense of weight in the passages, accompanied sometimes with severe pain, and a feeling of bursting; straining at stool and micturition; together with enlargement of the abdomen, which excite suspicion of pregnancy. The nature of the case can only be determined by examination, and can be relieved only by the knife.

In the second set of cases, there is greater difficulty in detecting the state of parts, from the natural impediment to an examination which exists at the orifice of the vagina; but I may mention, at least as a curious coincidence, that in the only two cases of imperforated os uteri which have fallen within my observation, there was no hymen, and the passages easily admitted the introduction of two fingers. In a third case of very imperfectly formed os uteri there was a hymen, but it offered no obstacle to the necessary examination. One of the former individuals would not submit to the os uteri being punctured, became perfectly exsanguined and chlorotic, affected with difficulty of breathing, cough and expectoration, and died since the publication of the last edition. The other case I shall now relate: A young woman, aged 22, came from the country to consult Dr. J. A. Robertson, who sent her to me in the beginning of the winter 1826. The following particulars were collected from herself and a female friend who accompanied her. The menstrual discharge had not yet appeared; she had always been healthy till she reached the age of sixteen, from which period her health began to suffer, and since which she had regularly complained every month of pains in the back and loins, together with a sense of weight and bearing down in the passages. For some time her sufferings were slight, and she was still able to perform her duties as a servant, but for the last two years she had become comparatively weakly and emaciated, not knowing what it was to enjoy a day's ease; and she stated that she would readily submit to any thing which might cure her. The girl appeared to be above the middle stature, the mammæ were undeveloped, she was of an awkward shape, and, indeed, her appearance, colour of skin and sound of voice were rather masculine. Her abdomen was not tumid, but it was stated to be occasionally swollen, particularly after meals. She seemed to be of a nervous

temperament, and was exceedingly shy and timid. Upon examination, the fingers passed readily into the vagina, and the uterus was felt much lower than usual, but I could discover no orifice. Dr. Robertson had previously detected the same fact, but had not then communicated the circumstance to me, thinking he might be mistaken. The examinations were repeated many times, and after feeling the spot where the orifice ought to have been, which was distinguished by a small dimple, I attempted to introduce one of the smallest silver probes that could be made, but was unsuccessful in every attempt. It then occurred to me, that the malformation might be owing to an extension of the mucous membrane over the orifice, in which condition we sometimes see the urethra of a new-born male child. I determined upon giving her the chance of a cure, particularly as the means to be used would not certainly produce severe pain. Accordingly, the sharp and triangular extremity of a silver probe was introduced, directed by the finger, and carried to the part above described, and a perforation made by employing a rotatory motion; the instrument was then withdrawn and the round point introduced, which then readily passed up to the fundus of the uterus. For several days she complained of slight pain, attended with some discharge of mucus, a little tinged here and there with bloody specks; and nothing further was done till the irritation had subsided. In about eight days the further dilatation was attempted and persevered in daily, the size of the instrument being increased, till by the twelfth or thirteenth day I was able to introduce No. 6 male bougie to the fundus of the uterus. On the following day there was the appearance of so much irritation, both local and constitutional, that no further attempt was made. In two days afterwards she menstruated, and has been regular ever since, and suffers neither pain nor inconvenience. Her health and strength soon recruited, and, in a short time her appearance became quite feminine. I saw her accidentally a few months before this article was corrected for the fourth edition in 1835, and she was then in the enjoyment of good health.

In the case of amenorrhœa from imperfectly formed *os uteri*, the patient had at various times been afflicted with violent symptoms; pain in the abdomen, sometimes of a distressing nature, and obstinate affections of the stomach and bowels; together with occasional retention of urine, and anomalous hysterical complaints. At every menstrual period she passed a little mucus, which was now and then slightly tinged, but had never the natural appearance, and it was always attended with great pain. After attaining the age of twenty-three, when her health was greatly impaired, and after she had tried all known remedies in vain, she most reluctantly, and after great delay, submitted to examination; and the *os uteri* was found so small as to be scarcely perceptible. She menstruated satisfactorily after several bougies had been passed through the os uteri, but I never succeeded in penetrating completely into the cavity of the uterus, either from an obstruction in the cervix, or from what appears to me to be more probable, a curvature of the canal. Nevertheless, after dilating the passage as far as could be reached, (No. 7 bougie,) she menstruated naturally, freely and without pain, and her

health became wonderfully improved. It is but fair to mention, however, that this case was also complicated with extensive constriction of the rectum, which, I fear, is not yet completely removed. Since the publication of the former editions several cases have occurred, the majority of which have terminated successfully: but in candour I must state, that in one case a complete failure took place.

Retention of the menses, arising from or accompanied by general debility, must be treated by means adequate to restore the health and strength of the individual, in addition to the other remedies above mentioned.

Suppression of the menses.—The second variety of amenorrhœa is, suppression of the menstrual discharge, which may occur in two circumstances; either it may not return at the next expected period, or it may be suddenly checked during its flow; and this last has been termed "checked menstruation." Women affected in this manner are said to be obstructed.

The first circumstance is one of the natural effects of pregnancy, and is sometimes produced by disease—for example, by general bad health; weakness caused by great loss of blood; long-continued fatigue; exposure to cold at the time the discharge was expected; improper food; excessive mucous discharges, as in leucorrhœa; frequent abortion, which injures the healthy functions of the uterus, and also by various diseases of the uterus.

The second circumstance may be produced, also, by exposure to cold, but is often the immediate effect of violent mental passions. Grief has often this effect: and I have known it caused by excessive joy. Constipation must likewise be regarded as a cause, particularly of the first variety.

When the menses are suppressed, hæmorrhage frequently takes place from the lungs, stomach and nose; the abdomen becomes tumefied and painful; the mammæ are sometimes tense and painful; the tongue is generally foul; the appetite bad; occasionally feverish symptoms take place; and sometimes death follows in the train of consequences.

Treatment of suppression of the menses.—In checked menstruation I have seen the discharge brought back in twenty-four hours by proper treatment. If there be much vascular excitement, the lancet may be necessary in full, plethoric individuals; and the blood may be taken from the lower extremity, if a vein can be found conveniently situated; but, upon the whole, leeches are preferable, applied to some part of the pelvic region, or to the os uteri. If the patient be not troubled with piles, two aloetic pills may be given every third or fourth hour, till the proper effect is produced, except in cases of excessive constipation, when milder remedies are to be used, assisted by large injections of tepid water. A case so complicated may require venesection. The warm ammoniacal injection may, at a subsequent period, be thrown into the vagina and the feet bathed in very warm water; but the hip-bath, impregnated with mustard, will be found most beneficial.

When obstructions take place in debilitated constitutions, purging must not be carried too far; indeed, it may be mentioned as a gene-

ral rule that strong physic should not be given in such circumstances: but the bowels ought to be kept gently open by suitable medicines, and particularly by mild injections. The patient should be allowed a nutritive diet, easy of digestion; and a sufficient quantity of wine or brandy, if the former do not agree, will be found to be the best tonic; but the diet, the exhibition of stimulants and tonics, should be regulated by the circumstances attending each particular case. If the stools show that the food is passed undigested, or if the tongue be furred, or be red and dry, animal food of any kind must be given with caution, and I think prohibited altogether when the tongue is in the condition above described; but there can be no objections to the use of wine; indeed it will, in general, be beneficial, unless it excite fever.

In many cases of derangement of health in females, a shower-bath, taken immediately before dinner, will be found serviceable, and may be used with warm or cold water, according to circumstances; but generally, the more a patient is debilitated, the warmer should be the water: the body should be afterwards well dried, and fresh garments put on. Exercise, and other remedies already so fully noticed, must be had recourse to. It may be further added, however, that preparations of iron are in great repute, and are well known to women under the name of "steel pills," "steel drops," &c.; but I believe they have no specific effects; should other remedies fail, however, it may be as well to try them. [The preparations of iodine, particularly the hydriodate of iron,* have proved singularly beneficial in this form of amenorrhœa.]

It becomes a question how far the introduction of the bougie into the uterus may be applicable in obstinate cases of this kind, when other remedies have failed, and the general health has become affected. I have tried it in three bad cases: in two of these the menstrual discharge appeared soon after, in the third it completely failed; but the first two cases are scarcely to be regarded as satisfactory, because other remedies were employed at the same time.

DYSMENORRHŒA, OR PAINFUL AND DIFFICULT MENSTRUATION.

Although, in dysmenorrhœa, the discharge is generally scanty, yet it is sometimes in natural quantity; in some instances the discharge contains fibrous shreds, while, in others, a small organized mass, the shape of the cavity of the uterus, which, in common language, is called a "false conception," or a "mole," is thrown off.

A few days before the discharge is expected to appear, women affected with dysmenorrhœa begin to complain of pain, more or less severe and constant, in the back and loins, as well as in the pelvis; at last a scanty discharge appears, attended with increasing pain and suffering. In investigating into the precise nature of these pains, they have been described to me in various ways, and as existing in various degrees, from a sense of weakness, weariness, weight and

[* See Appendix, *Alteratives.*]

tightness, to violent cramp, spasm, colic and bearing down, which last is sometimes so violent as to resemble the expulsive pains of labour, particularly when shreds of membrane are passed, and still more so when an organized mass is expelled. The abdomen becomes swollen, sometimes tense; flatus may be heard moving from one convolution to another; the appetite is impaired; the bowels are constipated; the stomach is often irritable, sometimes affected with violent vomiting; the tongue is foul, and there are often febrile symptoms; the urine is sometimes suppressed, at others retention takes place. Some women suffer pain only during the first day, while others do so during the whole period.

Dysmenorrhœa sometimes takes place from the very commencement of menstrual life; or it is dated from the period of marriage; or after the birth of a child, generally speaking, the first child; lastly, it may take place at any period of life, and, in such cases, it is generally attributed to cold. The disease is of very common occurrence; much of the distress and bad health of females is owing to it, and many fall victims to consumption in consequence of diseased action being excited in the system by the periodical sufferings. These periodical sufferings, however slight at first, afterwards become more severe and of longer duration, so that, at length, some women are beginning only to recover from the effects of one period when the approach of the next is close at hand. At last, from the combined influence of the actual suffering during the periods, and the anxiety of mind during the intervals, the patient's health and strength are entirely destroyed. This would happen much more frequently and speedily than it actually does, only that females do not suffer with equal severity at every period; and the remark has often occurred to me, that after a very severe time, women escape once, and sometimes twice, with comparatively little uneasiness; but when the third period arrives, it is generally attended by very violent pain: this is more particularly the case when shreds of membrane and organized substances are discharged.

It has been generally remarked, that few women affected with dysmenorrhœa bear children, and it is described by all authors as a cause of barrenness. Mr. Burns makes the following statements when treating of the causes of sterility:—"The menses are either obstructed or sparing, or they are profuse or too frequent;" and again: "It is extremely rare for a woman to conceive who does not menstruate regularly: and, on the contrary, correct menstruation generally indicates a capability of impregnation on the part of the woman." Dr. Mason Good, when speaking of the sufferings of women affected with dysmenorrhœa, makes the following statement: "The frequent return of which embitters the life of the patient, and effectually prohibits all hope of a family." Dr. Denman supposed that no woman in such circumstances can conceive. There can be no doubt, however, that Dr. Denman was not quite correct in making this statement; but there can be little question of the fact, as already mentioned, that conception is rare.

Dysmenorrhœa has been observed in females under the most opposite conditions of the system, temperaments and habits. Some

are affected with hysterical symptoms, others not; but in all circumstances, the disease is represented by authors as most intractable; and, indeed, it is stated by one and all of them, that the treatment consists in palliating symptoms during the period of suffering, and that "time, in general, removes the disease better than medicine, which is only to be advised for the relief of pain, weakness or any other symptom which may attend or succeed to this state. Dr. Mason Good, in noticing the intractable nature of the affection says, "The disease, moreover, is peculiarly obstinate, and, in some instances, has defied the best exertions of medical science, and has only yielded to time and the natural cessation of the discharge."

Pathological remarks respecting dysmenorrhœa.—Dysmenorrhœa has been attributed to inflammatory action in the uterus, particularly when membranous and organized substances are discharged. These were proved by Dr. Hunter and Dr. Baillie to resemble the *membrana decidua*, formed by the lining membrane of the uterus immediately after conception. The disease has also been attributed to spasm; and loose and obscure hints are given, in various works, of its dependence on organic affections of the uterine system. Thus Mr. Burns has observed, "If no *organic affection* can be discovered, and the whole appears to arise from spasm, we have only to trust to opium in the mean time, with such treatment in the intervals as the state of the system may point out." There are others who suppose that the disease is owing to a want of nervous energy in the uterine system—to constipation—or exposure to cold and damp.

It always appeared to me, that there might be some mechanical cause for dysmenorrhœa, but it was not till the year 1823 that I first entertained a belief it might be owing to the small size of the *os uteri*. In that year a medical friend presented me with a preparation of the uterus and its appendages, in which the os uteri was so small as scarcely to admit a hog's bristle. Since that period, I have had many opportunities of investigating this interesting subject, and have now obtained many preparations taken from the bodies of individuals who died of different diseases, particularly of phthisis, and whose histories prove, that they had laboured under dysmenorrhœa from the very beginning of their menstrual lives. In these preparations of the uterus, the orifices, instead of being shaped like the mouth of the tench fish, are either circular, or nearly so, and some of them are so small as only to allow a bristle to pass; others are a little larger, admitting a small silver probe.

I am far from alleging, however, that dysmenorrhœa is *always* produced by a small os uteri; on the contrary, I believe it may occasionally depend on inflammation of the lining membrane of the uterus, as well as on inflammation in the substance of the cervix uteri, and on the encroachment of tumours diminishing the calibre of the passage through the cervix. But I maintain, that the condition of the *os uteri* above described accounts satisfactorily for many cases of dysmenorrhœa—so far as my investigations have extended, I am inclined to say it will account for the majority; although in candour I must mention, that one preparation in my possession appears to invalidate the evidence afforded by the others. In it, the mouth of the

uterus is very small, and yet the woman to whom it belonged is stated to be the mother of several children; she died in a public establishment, but the history of her menstrual life is unknown.

By this condition of the *os uteri*, not only are all the phenomena which take place in dysmenorrhœa most satisfactorily accounted for, but also the intractable nature of the disease, and the unsatisfactory result of every mode of treatment hitherto recommended. The menstrual discharge, after it is secreted in the uretus, cannot readily escape in consequence of the small size of its orifice; distension of the organ is the consequence, which, by exciting the contraction of its fibres, produces uneasiness and pain in the pelvic region. When the *os uteri* is very small, and the secretion viscid or mixed with coagulated blood, shreds of membrane or organized masses, then the distension becomes more considerable, stronger contractions are excited, producing violent pain. Sometimes the action of the abdominal muscles is called into play, and bearing-down or expulsive pains are produced, resembling, in every particular, the pains of labour, and continue till the expulsion takes place. Mr. Burns, in speaking of the disease, states that it "sometimes produces, *besides uterine pain*, spasmodic affection of the bowels, *or violent bearing-down efforts of the abdominal muscles*, as if it were intended to expel the womb itself."

During these periodical attacks, inflammation of the lining membrane of the uterus, if it do not already exist, is sometimes excited, and in the end the sufferings occasion an entire break-up of the constitution. That dysmenorrhœa should be so intractable, and the action of remedies so very unsatisfactory as to render the disease an opprobrium to medical science, are not to be wondered at, if my views be hereafter found to be correct. Before I had any opportunity of putting these opinions to the test of experiment, they also appeared to me to be corroborated in a very striking manner by two circumstances:—1. By the action of the *ergot of rye*, which increases the force of the uterine contractions, quickly expelling the contents of that organ, thus, in some cases, shortening the patient's sufferings materially. 2. By the admitted fact, which has been already mentioned, that women affected in this manner rarely, if ever, conceive. The small size of the *os uteri* renders impregnation almost an impossibility, by offering a mechanical obstruction to the passage of the semen into the cavity of the uterus, which it must reach, as proved by the accurate experiments of that ingenious and distinguished physiologist, Dr. Blundell, of London, as well as by other facts which it is unnecessary to mention in this place.

These views appear to me to be further supported by several preparations in my museum. In one of these, the cavity of the uterus is divided into two compartments, by a strong transverse adhesion. In a second, occlusion of the passage exists at the upper part of the cervix, with appearances of having been produced by the irritation of a polypous tumour; and in a third preparation, the os uteri became sealed up by inflammatory action. On dissection, the uterus, in this last case, was found enlarged, and contained about two ounces of puriform matter.

Treatment of dysmenorrhœa.—After the facts and observations above mentioned were collected, my mind became occupied with devising the best means likely to cure the disease. Mechanical dilatation appeared to be the only remedy. I hesitated for some years to carry it into execution, or, indeed, to propose it, beyond mentioning it in my lectures, till the case of the young woman affected with amenorrhœa, recently noticed, presented itself in the year 1826. Since that period I have treated twenty cases of dysmenorrhœa, by dilating the *os uteri*, and have permanently cured eighteen of the patients; among these the two cases of amenorrhœa formerly mentioned are not included.

Of the eighteen successful cases, eight were either young unmaried women, or living in a state of widowhood; ten were married, and living with their husbands. Of these ten, seven subsequently fell with child. This is the statement made in 1832. Since that period I have tried the practice, after every other means had failed, in seven cases: in one of the seven only has it failed; the others have been completely and permanently cured. Of the six successful cases, four have since had a child each. Thus, in *twenty-seven* women, *twenty-four* cures have taken place, and of these, *eleven* have since had children. This plain statement of facts, and a visit to my musuem, should stop the sneers of an illiberal brotherhood.

The instruments employed to produce the dilatation are the common metallic bougies, of different sizes, from that of the ordinary small silver probe to No. 14. The operation is performed, (the patient lying in the position in which women are usually delivered in this country,) by introducing the index-finger of the left hand, till it reaches the os uteri, for the purpose of directing the instrument to the part, which is then to be gently insinuated by a rotatory motion, till it arrives at the fundus of the uterus. Much force ought not to be employed, and little or no pain is produced by the operation. The unpleasant consequence which sometimes takes place in treating stricture of the urethra by similar means, viz., shivering, followed by fever, occurred in two instances; the fever, however, was slight, and soon terminated by copious perspiration; and in these, some days were allowed to elapse before the instrument was again used. In two of the cases, the os uteri was sufficiently large and well shaped; but the passage became so narrow in the course of the cervix of the uterus, that it required long-continued efforts before the smallest instrument could be introduced; but by perseverance the obstructions were at last removed, and the patients cured. In one of these last two, menstruation was performed without pain till after marriage, when dysmenorrhœa occurred. The other was a young unmarried woman who menstruated with ease for several years, but after long exposure to cold and moisture, the menstrual discharge became, for a time, suppressed, and ever after was performed with pain. The late Dr. Kellie, of Leith, was also consulted about this case, and had I not been encouraged by his advice, I should not have attempted the operation, as on the posterior lip of the *os uteri* several small elevations like incipient tubercles were felt. This woman called upon me eighteen months afterwards in good health, and stated that she had

not felt any uneasiness or experienced any bad symptoms since the dilatation was effected.

A lady, the subject of one of the twenty-seven cases, was also perfectly healthy, and menstruated easily till the period of marriage; but her health became impaired soon after, in consequence of her monthly sufferings. On making an examination, an enlargement was discovered, about half the size of a chestnut, on the posterior surface of the cervix of the uterus. I undertook the operation in consequence of the urgent entreaties of her friends, who happened accidentally to know of the happy results which had attended it in other cases, but little hope was offered of being able to do any good; notwithstanding which, a striking improvement in her health soon took place; and this, in the end, proved to be one of the most successful cases, for menstruation became easy, the tumour rapidly declined, and upon making an examination in about twelve months afterwards, it could scarcely be felt.

None of the women operated upon had suffered for a shorter period than two years; some for three or four; and others for ten. Of four of those who subsequently fell with child, one had been married between seven and eight years, and was reduced to a shadow from constant ailments; but after the operation, she recovered her health, strength and flesh, and became pregnant at about the termination of nine months from the date at which the bougie was used for the last time. Another had been married three years, and had suffered considerably in constitution, with severe nervous symptoms every month, till at last she became entirely obstructed; and the abdomen being enlarged, I was consulted upon the supposition that she was five months gone with child. From some circumstances which it is unnecessary to mention, I entertained a suspicion that she had deceived herself; and upon making an examination, when she supposed herself to be in the seventh month, ascertained beyond all doubt that this was not the case. In the process of time, the operation was performed, and the passage completely dilated—some months afterwards impregnation took place, and I have since delivered her of three children at separate births.

A third case is that of a lady who had been married two years, and who had had painful menstruation from the first appearance of the discharge; she was in a miserable state of health, had taken a great deal of medicine, but only with temporary relief. Impregnation took place after the third menstrual period subsequent to the dilatation.

The subject of the fourth case had also been affected from the first of her menstrual life, and laboured under the impression that she was therefore never to have a child. After dilating the passage with No. 6 bougie, menstruation took place with so much ease, that she supposed herself quite cured, and would not again submit to the operation. Several months afterwards, however, she felt a return of the pain, the operation was again had recourse to, and the dilatation carried as far as it could be effected with No. 10, which was accomplished two days before her expected period. Menstruation took

place freely, and without the slightest uneasiness; she subsequently fell with child, and was delivered of a boy.

In cases of dysmenorrhœa, when this operation may not be expedient, the ordinary plan of treatment must be had recourse to—viz.: palliating symptoms by means of the hip-bath, attention to the diet, the due regulation of the bowels and the occasional administration of opiates.

If the existence of inflammatory action be suspected in the lining membrane of the uterus, or should there be much fever, it is necessary to apply leeches internally, or use cupping-glasses to the lower part of the back. Since the year 1832, I have been induced frequently to apply leeches internally in cases of dysmenorrhœa, and I have thought always with advantage.

IMMODERATE FLOW OF THE MENSES.

Women sometimes menstruate more copiously than they usually do, so much so, that it appears more like a flooding than menstrual discharge; but the difference is easily known by the peculiar smell and appearance, and by its not coagulating like blood. This disease is, in general, confounded with hæmorrhage from the uterus, and the general term *menorrhagia* has been applied to both, either when separate or conjoined. I agree with Mr. Burns, however, in restricting the term menorrhagia to the discharge of pure blood from the uterus; but in order to be clear and precise in our language with respect to the combined case, we may then say that excessive menstruation is complicated with uterine hæmorrhage.

Many women menstruate more frequently and more copiously than others, and yet they cannot be said to be diseased, because it is natural to them. Therefore it is only to be considered as a disease in the following circumstances—viz.: when it is not habitual, and when it produces weakness or other unpleasant symptoms. Profuse menstrual discharge takes place in every variety of constitution and habit, but is observed more frequently in people of a debilitated, weakly and relaxed frame of body, and in those whose occupations lead them to constant exposure to heat.

Treatment of profuse menstruation.—Medical men are seldom consulted in this affection, except in the worst cases. Should the strength be much reduced, every means must be taken to restore it by proper nourishment, a due regulation of the bowels, the mildest laxatives, and the administration of wine if necessary. During the attack, the necessity of rest in the horizontal posture should be strongly inculcated; and in the intervals, great attention must be paid to regulate the exercise, so that it may be always short of producing fatigue. The shower-bath, bathing the lower part of the body twice a day in cold water, and even open sea-bathing, may be recommended, under the restrictions which have been so fully insisted upon in the former part of this chapter. Perhaps the acetate of lead may be found of as much service in diminishing this as it has been in other

discharges. Should there be any uterine pain or irritation, recourse must be had to opiates.

MENORRHAGIA.

I AGREE with Mr. Burns in the propriety of restricting this term to actual hæmorrhage from the uterine vessels. This discharge occurs in every state of constitution, affecting full plethoric individuals, of active habits, equally with those of a weak and relaxed frame. In the former, it may continue for a considerable period without making any inroad upon the general health; but in the latter, the system soon feels the drain; and, in either case, if the discharge continue long, the constitution becomes irreparably destroyed. Much depends upon the quantity of blood lost, and upon the length of interval between the attacks. Besides the weakness produced by the loss of blood, the debility is also increased by leucorrhœal discharge, which, in general, supervenes, together with disordered functions of the stomach and bowels; the appetite soon becomes impaired, and even destroyed, and the bowels irregular, with frequent attacks of diarrhœa, which depress the vital powers nearly as much as the original disease.

Menorrhagia is generally accompanied by pains in the back and loins, frequently by a shooting pain through the pelvis, and sometimes by fever. Anomalous hysterical symptoms frequently ensue, together with occasional distressing paroxysms of palpitation. It is worthy of remark, that sooner or later, symptoms denoting a violent affection of the brain take place so similar to those which are known to be produced by a determination of blood towards the head, and inflammatory action in the brain itself, that it is to be feared cases of this description have too often been treated by depletion. The symptoms are vertigo and headache, both of which are increased by the patient raising her head, by noise, or by any one walking through the room. Every time the patient makes any attempt to raise the head, syncope is threatened; there is a constant singing in the ears; the pulse is generally weak and compressible, quick, and in many cases exceedingly irritable, so much so as sometimes to appear pretty strong and wiry for a few minutes, which, I have no doubt, often imposes a belief that inflammatory action is going on, when really the brain is suffering from the want of a proper quantity of blood, as well as from deficiency of impulse.

Causes of menorrhagia.—This disease may depend upon general or local plethora; upon general debility; upon excessive leucorrhœal discharge and frequent abortion, which probably produce uterine debility; and upon the inflammatory action, perhaps of a subacute nature, of the lining membrane of the uterus, together with that of its follicular structure, as well as ulceration at the os uteri. Menorrhagia has also been attributed to constipation and excessive venereal indulgence; but these can only be regarded as occasional exciting causes in persons strongly predisposed to the disease. Prolapsus and polypus uteri, together with scirrhous and cancerous affections

and diseases of the ovaries, also occasionally give rise to menorrhagia.

Treatment of menorrhagia.—From the facts above stated respecting the various causes of the disease, the necessity of an examination *per vaginam* will be evident; but in the case of an unmarried woman, it is only to be had recourse to when the disease resists the effects of ordinary treatment. The management of a patient during an attack of hæmorrhage is simple, and will, in general, be successful in restraining the discharge, if it does not depend upon extensive organic disease; but even then it will be often serviceable. In every case, the patient must be kept quiet in bed, without being overloaded with bed-clothes; but at the same time a comfortable degree of heat is to be preserved, otherwise bad consequences will be produced. The discharge has been rather increased by the surface of the body being kept so cold as to occasion shivering, or even chilliness.

In full, plethoric constitutions, if there be no organic disease, and if the pulse be full and strong, venesection will sometimes check the discharge instantly, and is employed upon the same principles as in epistaxis, hæmoptysis, &c.—viz.: altering the determination of blood and reducing the impetus of the circulation. The beneficial effects of leeching have surprised me much in several cases of menorrhagia, even when the discharge was complicated with extensive disorganization. I was first induced to apply leeches, in order to relieve uterine pain and irritation, exciting a determination of blood to the parts, and keeping up the hæmorrhage, and have since had recourse to this practice with much success in cases where venesection was altogether inadmissible. On several occasions, the hæmorrhage ceased almost instantaneously after the leeches had fastened, and before they could have abstracted a dessertspoonful of blood. In plethoric constitutions, the diet should be scanty, and not very nourishing, and the bowels should be kept open by means of gentle, unirritating laxatives.

When menorrhagia occurs in weak, debilitated habits, or when the discharge is continued so long as to produce debility, the patient's strength must be supported by small quantities of nourishment given at short intervals, together with wine or brandy, notwithstanding the supervention of the giddiness, and other symptoms which generally indicate a severe cerebral disease. Rest in the horizontal posture, with the head and shoulders low, and the most perfect state of quietness, are to be insisted on: and as the loss of every drop of blood is felt in the reduced state of the system, means must be instantly taken to put a stop to further discharge. This is best effected by the exhibition of the acetate of lead in the form of pills, each containing from two to five grains, combined with a third or fourth of a grain of opium, of which one or two may be given every second, fourth or sixth, hour, as the urgency of the case may demand. As to its action I know nothing, and practical men of the present day care little about mere theories; but I have alluded to the subject, in order to speak of one theoretical objection that has been made to the practice. It is asked, if you were to cut your finger, would you think of trying to restrain the hæmorrhage by taking acetate of lead or any

other astringent? The answer is—certainly not, as there is a more easy and speedy method of doing so; but as we cannot apply a tight bandage round the uterus, or secure its vessels by ligature, we are obliged to have recourse to the other means, which has been suggested by analogy, and the success of which has been proved in actual practice. I subjoin the following short history of a case of menorrhagia, the most threatening and the most hopeless that ever fell within my observation, which was successfully treated by the acetate of lead. A lady, aged 47, the mother of a large family, of very delicate constitution, who had always been liable to profuse and frequent menstruation after fatigue, any unusual bodily exertion, the application of cold, &c., was seized, during the autumn of 1829, with profuse menorrhagia, which returned from time to time for six or seven months, each attack leaving her more and more debilitated and depressed, till, at length, the discharge never left her, and no remedy had any influence in controlling it. At last she was told that no medicine taken internally could have any effect, and that her only chance depended upon keeping quiet, and throwing into the passages a solution of the sulphate of alumina, which was tried, but without effect; and, indeed, she felt that she could not bear the fatigue attending the operation. At this juncture, her relations sent for me, when she was in the following condition. The discharge still gushed from her, whenever she was moved for any necessary purpose; she was more exsanguined than any person I had ever before seen; the surface of her body was the exact colour of death; and she had the hippocratic countenance. Her pulse was weak, small and compressible, and beat about 100.—She was perfectly sensible, but was affected with giddiness, headache, singing in the ears, a feeling of sinking, and she could scarcely speak without swooning. She had been for some time almost a stranger to sleep, and when she did slumber for a few minutes, she invariably awoke in terror and great agitation. A bowel-complaint had lately supervened, which added to her distress and increased her weakness, and for some days there were great irritability of stomach and vomiting, particularly when attacked with increased giddiness.

The treatment was immediately changed; warmth was applied and other means were taken to restore and support the heat of the body; the bolster and pillows were withdrawn so as to lower the head, and 5 grains of the acetate of lead, with half a grain of opium, were ordered to be exhibited every third hour till she had taken the fourth dose. One person only was allowed to be in the room, and was desired to give her small quantities of brandy in some nourishing vehicle at short intervals if awake, but on no account was she to be disturbed, at least for several hours. My first visit was made in the evening, when the pills were ordered; and calling again at a late hour, she was quiet, composed and full of hope, as there had been scarcely any discharge for two hours. She had just taken a second dose.

Next morning I found that my patient had enjoyed several hours of refreshing sleep—that the restlessness had considerably subsided—and that the discharge was quite suppressed. The other symptoms

were much the same, and I was told that early in the morning, she had had a violent attack of vomiting with syncope, which threatened the extinction of life, but which went off after taking some additional nourishment, as soon as her stomach could be brought to bear it, and by the exhibition of powerful stimulants. She expressed herself in strong terms respecting the happy change effected in such a short space of time upon both body and mind, and her confidence of ultimate recovery. The effort to speak nearly produced syncope, and occasioned considerable irritation of stomach, and that condition which in Scotland is termed "dry bocking."* The nourishment and stimulants were ordered to be continued at short intervals, and pills with two grains of the acetate of lead and one-third of a grain of opium were prescribed, with intervals of six hours instead of three.

At the evening visit, she was much in the same state, only that she laboured under a little agitation, in consequence of a return of the discharge on two occasions upon making some exertion; I found, however, that it was very small in quantity, and ordered the larger doses of the acetate of lead and opium to be given twice during the night, with an interval of four hours, and afterwards to recur to the use of the two-grain pills. She was persuaded to allow herself to be turned upon her right side, in which position she was supported and propped up by means of pillows, and a very small pillow was now placed under the head. From this change of posture she experienced great comfort, and on my visit next day I was told that she had slept soundly the whole night, waking only now and then, when she got nourishment—that she had a return of syncope and vomiting early in the morning, but neither were so violent as formerly. She could now make use of slight exertion, and speak without the same bad consequences as those above described; the singing in her ears still existed, but was not so noisy and troublesome: still, however, she could not raise her head from the pillow without increasing it, producing giddiness and a tendency to faint. It was now time to obtain passage from her bowels, although there was some risk of producing a return of the flooding. A teaspoonful of castor oil was exhibited, by which the bowels were moved, but, as was apprehended, there was some hæmorrhage at the time, though it did not alarm the patient much, as she was prepared to expect it.

In the evening she felt a little better, and had passed the day without any additional hæmorrhage, having taken only one of the smaller pills. She was now able to turn herself upon her side, and back again at pleasure, but still required the support of pillows. On taking my leave, I gave her one of the larger doses, and desired that she was to take nothing during the night, except nourishment, with small quantities of brandy; this was found to agree with her better than wine, which became acid in her stomach.

On the following morning, I found that she had slept well during the night; she looked and felt better; her pulse, for the first time, felt stronger and slower; but she complained of pretty constant nau-

* Which term means continued retching without discharging any thing from the stomach; the pain and sinking effect of which are known to every one who has suffered long from sea-sickness when the stomach was empty.

sea and oppression at the præcordia. This last I thought might be attributed to the action of the lead, and it was therefore discontinued in the larger quantities; indeed, only two of the smaller pills were subsequently given. By good nursing and attention to the proper regulation of the diet and stimulants, this lady made a perfect recovery, notwithstanding one or two subsequent attacks of bowel-complaint, which she experienced during her convalescence, and which threw her back considerably. Five years have since elapsed. She has menstruated regularly in proper quantity, there has been no threatening of a return of the hæmorrhage, and her health is good.

Opium is to be used in doses of one, two or three grains, according to circumstances, in cases of menorrhagia, where the discharge is kept up by general or local irritation. Its beneficial effects will be satisfactorily seen by the perusal of the following case:—A lady, about the period of the "change of life," was seized with menorrhagia. She had the best advice that could be obtained, and had taken every remedy which had ever been recommended for the suppression of uterine hæmorrhage, but without effect. The passages were stuffed with soft linen in vain, the discharge returned as soon as it was withdrawn; she became exsanguined, and seeing no hope of recovery, was in a state of great despondency. The sedative solution of opium was subsequently given. She required only two or three doses, when the discharge ceased, and she ultimately recovered.

Opium is almost indispensable when the system is very much reduced by hæmorrhage, from whatever part of the body the blood may have issued; it allays that peculiar irritability and restlessness —prevents irregular determinations of blood, which are always most dangerous in this state of the system, and to which there is a strong tendency—and lastly, produces quiet, refreshing sleep. When the system is fairly brought under the influence of the drug, the strength is no longer exhausted by continual efforts to vomit, and by unceasing jactitation; it sends the whole system to sleep, if I may be allowed the liberty of using such an expression, and enables it to live on a small scale of vitality, which, in the mean time, is enlarged by the judicious and frequent introduction of small quantities of food into the stomach to recruit the strength. Taking this view of the action of opium in such cases, we are enabled to account for the loose expressions used in books respecting it. For instance, Mr. Burns says: "The strength must be supported by liberal doses of opium:" and it will be found that this gentleman and others also speak of a considerable dose of this drug as a stimulant.

Practitioners are sometimes not sent for till the symptoms of debility are extreme. Not a moment should be lost in these cases in plugging the passages either with pieces of soft sponge, or a long stripe of old linen or cotton; but our dependence is not to be placed on this alone; it is only done to prevent further loss in the mean time.

Supposing the immediate danger over, and the discharge checked, the practitioner must consider what line of treatment ought to be pur-

sued in the interval, because it may return again and again, if some effectual means be not taken. The treatment must depend on peculiarity of constitution; plethoric patients are to be treated very differently from those who are feeble and weakly. General blood-letting is only necessary in the former, when it is found desirable to restrain the impetuosity of the circulation instantly; if not, it is best to reduce plethora by a rigidly abstemious diet, and the daily exhibition of saline medicines, containing, perhaps, a minute proportion of tartrate of antimony, together with a due quantity of exercise in the open air, and avoiding heated rooms, the use of feather beds, and too many bed-clothes.

In debilitated habits, the diet should be nourishing, easy of digestion, and dry; all slops, whether in the shape of soup, jelly or gruel are to be abstained from; the extremes of heat and cold are to be avoided, and great attention must be paid to preserve the extremities in a proper degree of temperature. The employment of the shower-bath is very desirable in all cases, except those in which extreme debility has been induced; the water should be used at first tepid, and is afterwards to be gradually brought down to the temperature of the season. Stimulants are serviceable in many cases, and in some are indispensable; tonics may also be administered when necessary.

Astringent injections may be thrown into the passages, and are, no doubt, often serviceable; but in this country, there is a great reluctance on the part of women to use them, and when used, the operation is so often bungled, that I seldom speak of them to patients affected with menorrhagia, unless considerable relaxation of the parts exist, or the case be complicated with excessive leucorrhœal discharge. Their employment in extreme cases is inadmissible, from the fatigue occasioned by the operation.

CESSATION OF THE MENSES.

When women arrive at that period of life when the menses should cease, the discharge generally becomes irregular, sometimes obstructed for a time and again returning. Nausea and vomiting, particularly in the morning, swelling of the abdomen and tenderness of the breasts occasionally take place; which symptoms sometimes induce a belief that women are pregnant, when, in fact, their constitutions are undergoing a natural change. Occasionally there is considerable uterine pain, with a dragging sensation in the back and groins, some fever, violent headache, with a full, strong pulse, irregular state of bowels, loaded tongue, thirst and other symptoms of deranged digestion, and occasionally active hæmorrhage from the uterus. These circumstances, particularly that last mentioned, frequently induce a belief of cancer, when it does not exist. It is, however, an undoubted fact, that scirrhus both of the mammæ and uterus frequently occurs about the termination of the menstrual life; and indeed if the patient have any predisposition to organic disease, it becomes lighted up, and the affection then generally runs a rapid course. The belief is so general as to the critical nature of the cessation, and the

dangers which attend this important change in the female constitution, that women usually become apprehensive of themselves, and despond; and whether they suffer or not, many have recourse to quack medicines, which are constantly advertised, and which they take to endeavour either to prolong the discharge, or to ward off disease. It cannot be too generally made known, that many females suffer from this imprudent conduct, and create diseases which, in all probability, never would have assailed them, had they taken proper medical advice. Dr. Denman, one of the wisest and most conscientious men that ever adorned the profession, states that he "hardly recollects an instance in which such medicines did not do mischief."

It is proper to mention, that many women suffer no particular inconvenience at this period; some enjoy better health than formerly, and become *embonpoint*, particularly those who have previously suffered from dysmenorrhœa.

Treatment.—When the symptoms are slight, the treatment is very simple, attention to the diet and bowels, warm clothing, together with proper exercise, being all that is necessary, and are, in general, sufficient to prevent any organic mischief. If any particular organ shows symptoms of suffering, appropriate remedies are to be had recourse to; but if there be general constitutional disturbance, or signs of uterine disease, particularly if the pulse be strong and firm, bleeding in moderate quantity will generally do good, and is to be repeated or not according to circumstances. The necessity for it is to be judged of principally by the appearance of the blood, the state of the pulse and the constitution of the patient. In cases where general bleeding is either inadmissible or its effects doubtful, we can have recourse to cupping the lower part of the back, or the application of leeches somewhere in the pelvic region. We must recollect, that when there is a tendency to local disease at the cessation of the menstrual discharge, it is, in general, of an inflammatory nature; therefore the diet and other treatment must be regulated accordingly. Although it is by no means necessary, and, in many cases, would be improper to confine patients to the house, yet they must be careful not to expose themselves to cold and damp, and they must particularly guard against the possibility of cold feet.

CHAPTER XIV.

DISEASES OF THE OVARIA.

The Ovaria are subject to several diseases, as dropsy, scirrhus, vascular sarcoma, atrophy, and the formation of fat, hair, teeth, and bone. Of these dropsy is the most frequent, and this article shall be principally devoted to that disease; because it is difficult, if not impossible, to discover the existence of the other morbid alterations before death, and if discovered, no treatment has hitherto been devised which holds out any prospect of success.

Dropsical ovaria differ very much in external appearance, as well as internal character; sometimes there is one large sac like a bladder, at other times the disease consists of many cysts varying in number and size, very often one within another, like nests of pill-boxes, from the smallness of a pea to such a great size as to contain two quarts of fluid, and even two or three gallons. The cysts are sometimes divided by fleshy or cartilaginous matter, or by indurated cellular substance; and if I know what scirrhous structure is, I have most undoubtedly seen it surrounding some of them. The thickness of the walls of these cysts is various; they are sometimes as thin as a hydatid, but more frequently like the urinary bladder; at other times they are an inch or two in thickness. The contained fluid is sometimes limpid and colourless, and without odour; at others it is viscid, ropy and dark-coloured, and occasionally has a disagreeable smell. In one instance, it was the colour of port-wine, flaky and fetid: in a number of cases which have fallen within my observation, some of the sacs contained a matter so like calf-foot jelly, that it was impossible, from the appearance, to say it was not that substance; while in others it was whitish, like honey after exposure to intense cold. Cases have been described, particularly in the Philosophical Transactions, of ovaria filled with hydatids, but I believe the bodies so called have generally no pretensions to the name; no one, as far as I am aware, has ever been able to trace a single vessel on the true hydatid, whereas, in the diseased ovaria, the sacs are so very vascular, that without being injected, vessels containing blood may be traced arborescing over them. Some cases are related in the Philosophical Transactions, and there is one in Haller's works in which the ovarium and its contents weighed above one hundred pounds;—the largest I have ever seen removed from the body after death, weighed twenty-five pounds, but they are rarely above twelve or thirteen.

These diseases of the ovaria are sometimes slow, at other times quick in their progress; or they may be slow for a number of years, and then, from some slight cause, and often even without any apparent reason, become more active, and destroy the patient's life in a few months, and sometimes even in a few days.

This class of diseases is often complicated with affections of the uterus, such as tubercles, or even scirrhus and cancer: and in one patient, whose body I opened, both ovaries were diseased; the one contained fatty matter and hair, the other was in a state of vascular sarcoma, and considerably enlarged; the uterus, more than double its natural size, was also in a state of vascular sarcoma, and there were likewise ulcerations on the lips of the os uteri, as well as within the cervix; but they were not of a carcinomatous character. These ovarian tumours are always covered with the peritoneum, and are often found adhering extensively to the surrounding parts, in consequence of the supervention of inflammation, and I have sometimes seen them adhering at almost every point.

On opening the bodies of individuals, several of them of children, to ascertain the cause of death, some of whom had died of pneumonia, others of hydrocephalus, and many of bowel-complaints, I have occasionally observed vesicles, some the size and shape of small grapes, others like large currants, and attached, by a long pedicle, to the broad ligament in the neighbourhood of the ovarium. They sometimes existed solitary; at other times two or three might be seen suspended from one broad ligament, of which there are several specimens in my museum. I recollect having seen several vesicles attached by long and narrow pedicles to the peritoneal coat of the left ovarium in a child between two and three months old, who died from having been accidentally overlaid by its nurse. These vesicles are sometimes very vascular, and when enlarged, I have reason to believe, have been often mistaken for ovarian diseases.

It is impossible to determine the exact time of life at which diseases of the ovaria may commence; but the fact is well ascertained that they never have been known to create local or constitutional disturbance, or to obtain any great size, till after the twentieth or twenty-first year.

Symptoms of diseases of the ovaria.—These diseases are seldom detected till, from their increasing size, they press on surrounding parts, or produce peritoneal inflammation, and thus create constitutional symptoms. In some cases, although the enlargement is considerable, the patient may not complain of pain: and, but for the weight of the tumour, and the mechanical pressure upon the bladder and rectum, occasionally producing strangury and piles, some women with ovarian disease would suffer very little uneasiness. In other instances, acute pain attends the disease from a very early period, and it is the first circumstance which occasions a suspicion of disease. The pain comes and goes, and affects not only the lower part of the belly, but shoots into the groin and down the thighs. Frequently it is found, by comparing the appearances discovered on dissection with the history of the case, that the attacks of pain have been owing to peritoneal inflammation, as proved by the existence

of adhesions, some of old standing, others bearing the marks of recent formation. The menstrual discharge is rarely suppressed, or otherwise affected than having been sometimes observed to be more profuse than natural, and to take place at shorter intervals. The functions of the stomach are frequently involved, sometimes giving rise to ordinary dyspeptic symptoms, particularly nausea and vomiting, as in the early months of pregnancy I have seen the mammæ become enlarged and tender, in proportion as the tumefaction of the abdomen increased; the nipple at the same time having the dark areola round it, which is considered so characteristic of pregnancy. Patients occasionally suffer very much from severe headaches and violent hysterical symptoms.

If we examine *per vaginam*, the tumour may sometimes be felt between the vagina and rectum, particularly before it becomes very much enlarged; and also when it happens to be lodged in that *cul-de-sac* formed by the peritoneum, as it is reflected from the rectum over the posterior surface of the uterus. In such a case, the *os uteri* will be found tilted forwards close to the symphysis of the pubis, and we shall be liable to mistake the disease for *retroversio uteri;* but, in general, an examination by the rectum will undeceive us. As the tumour enlarges, it will ascend out of the pelvis, perhaps high up into the cavity of the abdomen, occupying its centre, and having a very close resemblance to the gravid uterus; at first, however, it will be felt in one of the iliac regions, about the size of an orange; but if the patient be fat, it may be impossible to discover it even when much larger. I have seen several cases where the tumour nearly filled the cavity of the abdomen, thereby simulating ascites, with which, indeed, it is sometimes combined, as in a case recorded in the 8th vol. of the Medical and Physical Journal, in which there was about a gallon and a half of fluid found in the abdomen; both ovaria were enlarged so as to weigh together one hundred and two pounds. With respect to the feeling of fluctuation, in these cases, I know nothing in the practice of the profession so difficult to determine. I have seen a solid tumour of the uterus which weighed above fifty pounds, the whole anterior surface of which was attached to the parietes of the abdomen, and notwithstanding which, the feeling of fluctuation during life was thought to be so distinct, that the woman was tapped three times, once by Dr. Scott in the presence of Mr. Marshall and myself, a second time by Dr. Duffin, at the suggestion and in the presence of the late Mr. Wishart; and a third and last time the operation was performed, I have the mortification to say, with my own hands, in the presence of Dr. Christison, and upon the assurance of the most eminent men in Edinburgh that there must be a fluid somewhere. I remember well borrowing the longest trocar that could be obtained for the purpose, but the operation proved to be as dry a tapping as the others. Some little time after that occurrence, I was asked to see a woman with a large abdomen, who had been previously tapped under the notion that she was affected with ascites; no fluid followed the puncture; some hours afterwards peritoneal inflammation took place, of which she died in a few days. When the pain first came on in the belly, the patient was examining

the wound made by the trocar; she accidentally coughed, and a small quantity of matter like jelly was discharged; she then made additional attempts by pressing and coughing to get rid of more, and a considerable quantity was thus evacuated, but without relief. When I saw her she was moribund; and on dissection an ovarian disease with sacs containing a gelatinous matter was found, filling a great part of the abdomen, and extending a little above the umbilicus; the mark of the trocar was observed in the superior part of the tumour, the anterior surface of which was free, but so extensive were the adhesions behind, that it occupied me fully half an hour in dissecting the morbid parts carefully out, during which many large blood-vessels were divided.

Treatment of ovarian disease.—In the exercise of our profession, nothing is more disagreeable and even humiliating than to be obliged to witness, from day to day, for a period of months or years, the sufferings of patients under a disease like this, without being able to do more than to palliate symptoms by means of narcotics. Sometimes we have the additional mortification to find that temporary tranquillity is produced at the expense of increased after-suffering; so that there really is something to tempt an individual, with an enterprising spirit, to the performance even of the horrible operation of opening the abdomen from the ensiform cartilage to the pubis, in the hope of being able to effect a radical cure. This operation has now been performed several times by Mr. Lizars, of Edinburgh; and I have no doubt, from his anatomical knowledge and experience in operating, it was done in all the cases with the greatest dexterity, and that no means were neglected that could ensure success. But mark the results:

In one operation nothing was discovered but flatus in the intestines, and the woman died in forty-eight hours.

In another who was affected with curvature of the spine and lumbar abscess, after the abdomen was laid open, the uterus and ovaria were found sound and healthy, but it was discovered that the woman was very fat. This woman escaped with her life at the time, although stated to be "often severely tortured with pain," but is still alive.

In a third operation, the subject of which also laboured under ascites, Mr. Lizars took away a considerable-sized tumour on the left side, but was forced to leave one on the opposite side untouched, from the extent of its adhesions to surrounding parts, the uterus being also a little enlarged. This woman survived the operation, but died three years afterwards.

In a fourth case, Mr. Lizars took away a tumour by separating adhesions between it and the viscera; and the woman died from mortification.

In the fifth case, Mr. Lizars cut open the abdomen and found a very large tumour, so completely attached to surrounding viscera, with so many large blood-vessels in the way of completing the operation, that he was forced to abandon it, and to stitch up the abdomen. But in justice to Mr. Lizars, I may mention, that he main-

tained his coolness and self-possession, under circumstances which made the undaunted heart of the late Dr. Dease shrink within him; and it may be mentioned, that he was one of the best and most successful operators that the British army ever had to boast of. This woman survived the operation, and is still living.

In a sixth case, upon which Mr. Lizars operated at Dumfries, he cut away a tumour projecting from the fundus of the uterus, which was thought to be an ovarium, but the woman died in a few days from inflammation, when the ovaria were found quite snug and sound in their proper situation.

After giving this simple statement, I shall content myself with laying before young practitioners the reasons why I consider this operation unadvisable.

1. It is difficult to tell whether there be a tumour or not in the abdomen; and it will be remarked, that, in two out of six of Mr. Lizars' cases, no disease was found to account for the tumefaction of the abdomen.

2. If there be a tumour, it is impossible to determine whether it is of the uterus, ovaria or some other part. Not long ago, one of my pupils attended a woman most assiduously during a whole winter, who had an enlarged abdomen, and I had no doubt, after making the necessary examinations, that the great enlargement was produced by ovarian disease. Externally, there was felt a large hard tumour on the right side of the abdomen, as if it had risen out of the pelvis, and from feeling the os uteri tilted up towards the right side of the pelvis, it appeared still more certain that the disease was ovarian. It was understood that many other medical men had pronounced a similar opinion, and that an operation had been proposed to her, which she was averse to, but resolved to abide by my opinion, which was frankly given, that she ought not to submit to it. Besides the uncertainty of the operation itself, and the dangers which necessarily accompanied and followed it, she was affected with one of the worst forms of epilepsy that had ever come under my observation. The woman followed my advice, but in the course of six months expired during an epileptic fit. On dissection the uterus and ovaria were found quite healthy, but the liver was enormously enlarged, and so elongated that it extended into the cavity of the pelvis: it was this organ which had occasioned the tumefaction of the abdomen.

Some years ago I attended a very amiable and interesting young lady along with Dr. John Gairdner, of this city, who laboured under a very complicated set of disorders, which baffled our skill to cure, and we advised her to go to London, where she had a brother a medical man. One celebrated individual, who has figured in ovarian operations, most unhesitatingly pronounced her complaints to arise from disease of the ovarium, which Dr. Gairdner and I were persuaded did not exist. Some time afterwards she died at Newcastle, and on opening the body, the uterus and ovaries were found perfectly sound, but extensive disease was discovered in the stomach, colon, liver and kidneys.

3. It is impossible to tell whether a diseased ovarium is attached

to surrounding parts, which must always be an insurmountable objection to an operation; for should there be extensive adhesions which require to be separated during the operation, such a separation, whether affected by the knife or by the fingers, must seal the fate of ninety-nine women out of the hundred. Even in the dead body, I have been occupied more than half an hour in separating an ovarian tumour from its adhesions, and removing it from the body, which was not affected without wounding many large blood-vessels; and the following description is given by Mr. Lizars of one of his own operations:—After opening the abdomen from the sternum to the pubis, "a multiplicity of convoluted vessels presented themselves, of various magnitude, from the thickness of a finger to that of a crow's quill. At first I thought them the intestines, for they appeared extremely fleshy; then I imagined them the blood-vessels of a placenta, which they still more resembled; indeed, such was their resemblance to the vessels of that organ, that the same idea struck one and all of the gentlemen present. On minute examination, however, they were found to be the blood-vessels of the omentum majus, enormously enlarged, running on the surface and into the substance of the tumour, which appeared an enlarged ovarium. Finding that it was impracticable either to dissect these vessels from the surface of the tumour or to secure them, in consequence of their great number, I abandoned the idea of extirpating the mass, in which decision I was supported by the gentlemen present; I therefore punctured with a large trocar and canula the centre of the tumour, but nothing flowed; I next made a small but deep incision with a scalpel, when the tumour appeared solid and cartilaginous, and a vessel bled a little; I lastly punctured the lower part of the tumour, being anxious to reduce its bulk, but only pure blood flowed. The lips of the wound were now approximated and stitched, adhesives straps applied, compresses of lint and linen, with a shawl as a binder, and the patient was carried to bed. This operation was performed in the presence of James Dease, Esq., Surgeon to the Forces; Drs. Poole, ———, and Millar; Messrs. James Scott, George White and many other surgeons and students."

In Mr. Lizars' case of Isabella C———, he succeeded in insulating a large mass weighing upwards of seven pounds, which he "found adhering so strongly to the parietes of the abdomen, to the colon, and to the brim of the pelvis, that I despaired (says he,) of being able to detach it; however, by dissecting at one time, and tearing cautiously with the fingers at another, I succeeded," &c. She died at 7 o'clock in the evening of the second day.

4. It ought to be considered whether the dangers arising from the operation are not greater than from allowing the disease to remain undisturbed. In the first place, we have to consider the chance of the patient dying immediately from the shock, or from hæmorrhage, or subsequently from inflammation, after she has undergone the horrid torture occasioned by an incision from the sternum to the pubis, independently of that produced by exposing and handling the viscera, and cutting away the tumour, not to speak of the difficulty

of restraining the protrusion of the intestines, both during the performance of, and subsequent to the operation. "I shall never forget (says Mr. Lizars,) the countenances of my pupils, and the *younger* members of the profession, when the intestines protruded, and baffled all the efforts of Dr. ——— and other gentlemen to confine them. The diaphragm acted with great vigour, and with powerful impetuosity."

To give my opinion in the shortest possible manner, I shall simply state, that I regard a recovery after such an operation as almost miraculous, and to be considered more in the light of an escape than a recovery to be expected, particularly if performed with an external incision through the parietes of the abdomen and peritoneum, from the ensiform cartilage down to the pubis.

There is only one case in which an operation should be attempted —when we are consulted early, and find a tumour just above the brim of the pelvis, which is movable, and falls from side to side, when the patient changes her posture—when it is ascertained, after careful examination, both by the vagina and the rectum, that the uterus is, in all probability, sound—when the patient has as yet had no pain or constitutional symptoms, indicating the existence of peritoneal inflammation, which may lead us to believe there are, as yet, no adhesions between the tumour and surrounding parts—and when the patient appears to have great courage and stamina, and as many lives as cats are figuratively represented to possess. In such a case I would recommend an operation, with an external incision barely large enough to admit the passage of a small hand to examine the disease, and bring the surface of the tumour to the opening, that its size may be diminished by tapping if necessary, when the sac can be drawn out by degrees, very much in the manner represented to have been pursued by Dr. Macdowal, of Kentucky.

It is difficult to say what line of treatment ought to be adopted in diseases of the ovaria; but I shall state that which I have found to be most beneficial in these unfortunate cases. It is indispensably necessary to attend to the state of the bladder, by taking care that it be not over-distended, and that any irritation which may occasionally arise in this organ be mitigated by camphor and hyoscyamus, together with fomentations applied to the lower part of the abdomen; the bowels are to be daily evacuated, if necessary, by mild laxatives, assisted by tepid water injections. Considerable relief is often experienced from the repeated application of leeches and contra-irritants, which operate not only by mitigating pain, but by stopping the advancement of peritoneal inflammation, which is so apt to occur, and also by arresting the progress of the diseased growth. Occasional opiates are also serviceable. The use of diuretics cannot, I think, be upheld in the true ovarian disease, as they can have no effect either in promoting absorption, or preventing a further collection of fluid in the sacs; neither can I fancy that iodine in any of its forms can have the effect of causing absorption of such diseased masses as I have seen the ovaria to consist.

The next important question comes to be—Is the operation of

tapping these tumours likely to prolong life? Experience obliges me to say, that in general it is not, although there may be exceptions to this. Tapping, in such cases, is an uncertain operation, from the obscurity which generally hangs over them; and it may prove the first exciting cause of peritoneal inflammation, which may quickly produce death, or leave extensive adhesions between the tumour and surrounding parts. I have already shown, by the description of two cases in which tapping was performed, how uncertain are the indications for the operation; and I know of one case, where the operation of *paracentesis abdominis* was performed, under the idea of the existence of ascites, when there was actually no fluid. Feculent matter came through the canula, instead of the watery effusion; the woman soon expired, and dissection showed that the trocar had penetrated the colon. But independent of these objections, which show, at least, that this operation, simple and slight as it appears to be, should not be recklessly performed, diseased ovaria are generally composed of such a number of cysts, that when a puncture is made, either no fluid at all, or only a small quantity, may be discharged, being the contents of one inconsiderable-sized cyst; besides, I have found that the fluid is quickly secreted, and that the more frequently the operation is performed, the more frequently does it require to be repeated. Thus it will be seen in a case recorded at page 123 of the Medical Communications, 2d vol., that a patient was tapped *forty-nine times* from first to last, and *two thousand seven hundred and eighty-six pints* of fluid were drawn off; and it is stated that the secretion went on so rapidly at last that, by calculation, three pints and three ounces were secreted every twenty-four hours. Another case is recorded in the 74th vol. of the Philosophical Transactions, in which the patient was tapped *eighty times*, and the immense quantity of *thirteen hogsheads* of fluid were evacuated. Many other similar cases are to be found both in the English and Foreign Transactions, which incline me to agree with the opinion of the late Dr. Denman—that the operation of tapping should at least be delayed as long as possible, partly from its being an uncertain operation, but principally because it is quickly followed by another accumulation, so that, in the course of a few days, the patient is in as bad a state as ever.

I had nearly neglected to mention another proposal which was formerly made and carried into execution, with the view of effecting a radical cure: it consisted in laying open the abdomen, and making an incision into the tumour, to evacuate the matter, and afterwards throwing in a stimulating injection, to excite inflammation in the sides of the sac, in order to produce permanent adhesion, or introducing a tent to keep the wound open until the fluid ceased to be discharged. A case is related by Dr. Houston, in the Philosophical Transactions, in which he made an incision two inches long into the ovarium, and evacuated a great quantity of jelly-like matter and hydatids; the wound was afterwards kept open, and the patient is represented to have been cured, although the disease had existed for thirteen years, and occasioned violent pains. In the Memoirs of

the Academy of Surgery, a case is to be found of a woman who was tapped for a large tumour in the belly, but nothing came away; an incision was then made into the tumour through the parietes of the abdomen, and thirty-five pounds of gelatinous matter were extracted—next day fifteen pounds more were discharged, but vomiting and fever took place, and she died on the thirteenth day. I may add, that Dr. Denman notices the case of a patient who died on the sixth day after the sac was injected.

PART IX.

GOUT.—RHEUMATISM.—SCROFULA.—DROPSIES.

CHAPTER I.

GOUT.

This disease is sometimes known by the terms Podagra and Arthritis. Dr. Cullen has divided it into four varieties:—

"1*st*. *Podagra regularis*, with decided inflammation of the joints, continuing for several days, and receding gradually, with swelling, itching and desquamation of the part."

"2*d*. *Podagra atonica*, with debility of the stomach, or some other internal part, and either without the expected or usual inflammation of the joints, or with slight and flying pains in them: with dyspepsia or other symptoms of debility often quickly alternating."

"3*d*. *Podagra retrograda*, with inflammation of the joints, receding suddenly, and followed immediately by debility of the stomach, or of some other internal part."

"4*th*. *Podagra aberrans*, with inflammation of some internal part, preceded or not by inflammation of the joints; if so preceded, the external inflammation quickly disappears."

Dr. Mason Good has enumerated three varieties of gout:—

"1*st*. Regular fit of gout," which differs in nothing from Cullen's first variety.

"2*d*. Disguised, lurking, atonic gout," which is nothing more than Cullen's second variety.

"3*d*. Complicated gout," in which he includes Cullen's third and fourth varieties, under the terms "retrograde, recedent, misplaced gout."

Dr. Scudamore, who has written a large volume on gout, urges most potent objections, both nosological and practical, to these divisions and the definitions attached to them. He divides gout into three varieties, viz.: acute, chronic and retrocedent; and the following are his definitions:—

"Acute gout.—Inflammation and pain of the articular, tendinous or bursal structure, usually attacking one part only at the same time, but in succession of attack, affecting different parts together; with preternatural fulness of the adjacent veins, and in certain situations, with œdematous swelling of the integuments, occurring in twenty-four or forty-eight hours from the invasion of the fit; vivid redness of surface, which is sometimes shining; entire disability of the affected part, with peculiar sensations of burning, throbbing, cutting and pricking, and weight; the action sometimes readily changing situations spontaneously or from slight causes; terminating almost

invariably without suppuration, and usually with some critical indications of the event."

"Chronic gout.—Inflammation and pain more slight, irregular and wandering than in the acute; faint redness of surface; much permanent distension of parts, or continued œdema, and impaired moving power; without critical indications of its terminating; commonly associated with a morbid state of the digestive organs, a languid or oppressed circulation, and much nervous irritation in the system."

"Retrocedent gout.—Metastasis, or transference of the gouty action in the paroxysm from the external part to some internal organ."

It may appear a strange confession to come from me as a lecturer on the practice of physic, that I never read Dr. Scudamore's Treatise on Gout till actually engaged in writing this article, although I have long known that such a work existed, and that its author had attained a high degree of eminence in practice; but I have several reasons in excuse to plead.

It is impossible for a person engaged in practice, and at the same time most anxiously employed in investigating the nature and seats of disease, to peruse every medical work which now-a-days comes from the press. With respect to what had been previously written on gout, I had derived nothing but vexation and disappointment from the perusal. Very early in life, I had frequent opportunities of witnessing the phenomena, progress and termination of gout; and during an attendance on a near and dear relative in the course of long paroxysms of this disease, I was compelled to read aloud, for his satisfaction and my own improvement, all the published works of the day. At last, when it was pronounced by a celebrated writer that, after all, the only thing to be done for gout was "*patience and flannel*," my patient became almost frantic with rage, and declared that, although he was not a physician, he could write more sensibly upon the subject himself, and concluded by desiring me to study nature and not books, if I wished to obtain a knowledge of the disease. I never forgot his advice; and from that moment I began to make a book by storing facts in my own mind.

When lecturing on gout, I have contented myself by giving a simple statement of all the pathological facts which I had observed, and by commenting on the statements made by Dr. Mason Good in his chapter on this subject; but after seeing Dr. Scudamore's treatise, it behoves me to state, that I have never been more gratified and instructed from the perusal of any medical work; and as the opinions which I entertain are similar in many respects to those of Dr. Scudamore, I shall avail myself of many of his facts and observations, because they are drawn from a more enlarged experience.

Phenomena of a Paroxysm of Regular Gout.

"The gout, (says Cullen, Par. 492,) not only as it occurs in different persons, but even as it occurs in the same person, at different times, is a disease of such various appearance, that it is difficult to

render the history of it complete and exact, or to give a character of it that will universally apply."

The first attack usually occurs in one of the feet, generally in the ball of the great toe, which has more or less of the appearance described by Dr. Scudamore in his definition of acute gout, and which there is no necessity for repeating in this place. The patient often attributes the sensation he experiences to a twist he thinks he has given his foot, or to the effects of a tight boot or shoe. Dr. Scudamore says, at page 17: "On some occasions, and especially in the first fit, the immediate invasion of the disease is not preceded by any warning." The reason of this I believe is, that the warning has not been taken, as I have never yet seen a case which was not preceded by a distinct announcement of gastro-intestinal irritation. The tongue has always a morbid appearance, being loaded, or having a fiery red colour, or being shrunk and blanched; the bowels are irregular; the patient feels loaded and oppressed after eating; there is acidity of stomach and heartburn which is sometimes excruciating, accompanied by occasional vomiting of a very acid matter. The epigastric region cannot bear pressure; the urine is scanty, high-coloured, and becomes thick and muddy after standing. The patient is often observed to be depressed in spirits and drowsy, although he cannot sleep, and the nights are passed with great restlessness. The limbs are affected with numbness, weakness, and a pricking, tingling sensation, with cramps and darting pains along the course of the nerves, more particularly in the extremity in which the disease is afterwards to be fixed. The extremities at times can scarcely be preserved in the natural degree of heat; at others, they become burning hot, particularly the soles of the feet and the balls of the great toes, and these states alternate. There are sometimes general rigors, or rather fits of chilliness, followed by feverishness, during which the face becomes flushed, and there is sometimes headache.

These precursory symptoms, and others which might be mentioned, vary much in different individuals, depending upon idiosyncrasy. I have never known a person subject to gout who was not warned of an approaching paroxysm, by some sensation or symptom which might be said to be almost peculiar to himself. Thus, one will have violent fits of sneezing;—a second, a feeling of heat and pain in his eyes, with a diminution of the lachrymal secretion;—a third will preceive heat, redness and swelling at the point of the nose;—a fourth will have a bronchial affection, with cough and slight expectoration;—a fifth will be aware of the approaching attack by a peculiar appearance of the tongue, a feeling of coldness, heat or acidity in the stomach, perhaps an unusual craving for some particular kind of food;—a sixth is made apprehensive by the occurrence of diarrhœa, by unusual sluggishness of the bowels, or flatulent distension of the abdomen;—a seventh will have great irritation about the neck of the bladder, scalding in the urethra, and perhaps discharge of matter, sometimes passing a little blood, and having slight difficulty in making water;—an eighth will experience an unusual lassitude, inability to apply his mind to any subject, and irritability of temper, at times giving way to sudden bursts of passion, or merely to a feeling of

peevishness; and a ninth will suffer from palpitation or some other symptom sufficiently striking to arrest his attention. Those who have experienced a few attacks of gout are hence able to take steps which will sometimes either postpone the paroxysm, or mitigate its violence.

At length the paroxysm fairly sets in with the following local symptoms:—pain, which soon becomes burning and throbbing, with occasional stounds from the affected part up the limb, the return of which the patient constantly dreads; with some degree of swelling, which, as well as the pain, increases rapidly; so that, in a few hours, the parts are much swollen, red, with considerable distension of the neighbouring superficial veins. Even from the first, a great part of the swelling is owing to œdema, for the parts will be found early in the disease to pit slightly on pressure. The redness soon becomes of a bright scarlet hue, and the throbbing, shooting pains, heat and inability to move the limb rapidly increase, so as to be at their acme in a first fit, perhaps in the course of twenty-four hours.

First attacks are, in general, although not always, slight, the patient being able through the day to bear his sufferings at least with composure. At night the pain and general fever increase, but decline again towards morning, with a slight relieving perspiration, at which time, perhaps, the patient enjoys a little slumber.

The constitutional symptoms which occur during the paroxysms, vary not only according to the severity of the local inflammation and pain, but also to the state of health in which the patient may happen to be at the time. If there be any organic affection, of course the symptoms will suffer modification, which, however, falls to be considered under the head of retrocedent gout. The first constitutional symptom which naturally attracts attention is fever, and in all old-standing cases of gout the disease makes its approach with chilliness and cold extremities, succeeded by some degree of fever and its usual attendants—restlessness, thirst, want of appetite and præcordial oppression. The pulse varies; it is generally full and hard, and indicates an inflammatory and plethoric state of the system, unless the patient be reduced in health and strength by the long continuance of previous organic disease or intemperate habits. Even in slight cases, the digestive organs show much functional suffering; besides want of appetite and thirst, the patient experiences abdominal pains, which are owing, perhaps, in nine cases out of ten, either to some indigestible matter lodged in the stomach and bowels, or to their flatulent distension, but which are too often attributed to cramp and spasm, and opiates or stimulants are exhibited. In many cases, burning pain, or merely a sensation of heat is experienced in the epigastric region, where pressure cannot be well borne, accompanied by sour eructations, or vomiting of a very acid and acrid matter, which produces a sense of heat and rawness in the œsophagus. This matter sometimes looks as if mixed with bile, of a green colour; at others, it is limpid and colourless. The tongue is furred, red round the edges, or it is clean, but of a fiery red colour, with the papillæ much raised; but a furred tongue is the most common appearance, being either white, or having a yellowish tinge. The bowels are some-

times affected with looseness, but far more frequently they are torpid, and the evacuations are fetid, and look very vitiated and unnatural, being frequently mixed with mucus, which sometimes appears in shreds. The urine is scanty, high-coloured, producing irritation in the bladder and heat in the urethra, with their attendants, frequent desire to make water, and some degree of difficulty in doing so. On standing, a pink or brick-dust sediment takes place in every case during the inflammatory stage. The urine is often mixed with mucus, and is represented to be of greater specific gravity than when in a healthy condition. As the inflammatory symptoms subside, the urine loses its high colour, and by degrees ceases to deposit a lateritious sediment; but in its place there is a whitish deposit, as if it were mixed with a small quantity of chalk or magnesia. Dr. Scudamore thinks that the brick-dust sediment depends on the functions of the liver; and there can be no doubt that it has a share in the cause, but it is quite as likely to depend upon functional derangement of other organs, particularly of the stomach.

The nervous system shows marked evidence of derangement, as is evinced by irritability of temper, general sensibility and restlessness, the intensity of the pain, the darting cramps extending along the course of the nerves, even throwing the muscles occasionally into violent spasmodic contractions, as well as by the sudden and instantaneous translation of the inflammation from one limb to another.

In the course of two or three days, the symptoms are found to have undergone considerable mitigation. The patient then complains of weakness in the limb, with perhaps slight tenderness of the part. It rarely happens, when gout may be said to be in its infancy, that the inflammation, as it declines in one foot, appears in the other, or in any other joint, which circumstance is so frequently observed in the old-standing cases.

The œdematous state of the part continues for some days after the subsidence of the inflammation; and occasionally, desquamation of the cuticle takes place, with much temporary itching.

In one hundred and seven cases of the first attack of gout, Dr. Scudamore has given the following comparative statement, showing the parts most liable to be affected:

In 70 cases, the inflammation was in one foot only.
In 8, the great toe of each foot.
In 2, the toe and instep.
In 2, the outer side of one foot.
In 1, the heel of each foot, the hand, and elbow.
In 3, one ankle.
In 1, each ankle.
In 1, the ankle of one foot, and toe of the other.
In 3, the ankle and instep of one foot.
In 1, the toe, instep, and ankle of one foot.
In 2, instep of one foot.
In 1, instep of each foot.
In 1, one instep first, afterwards each knee, wrist, elbow and shoulder.
In 1, heel of one foot.

In 1, heel of each foot.
In 1, each foot and hand.
In 1, right thumb, and afterwards in the toe.
In 1, right knee.
In 2, left knee.
In 1, hand and wrist.
In 1, back of one hand.
In 1, back of each hand.
In 2, one wrist.

In the early fits of gout, the health improves soon after the local symptoms decline, and I have heard many people declare they felt themselves better and more vigorous than they had done for weeks and even months before.

The gout may return annually, perhaps, at shorter intervals; on many occasions, however, there is no threatening of a paroxysm for several years; but as the disease goes on, the attacks are generally more severe, the fits longer and the intervals shorter, the parts affected more numerous, till at last the constitution becomes broken down. Dr. Scudamore has justly observed, that the frequency of a return of gout is in proportion to the constitutional tendency, and to the unfavourable mode of life of the individual.

In subsequent attacks, the constitutional and local symptoms are similar in character to those already described, but are more marked in point of severity, of longer duration, and the constitutional nature of the disease becomes more and more manifest. The precursory symptoms are also rendered more apparent by becoming more severe with each returning fit. But we are assured by Dr. Scudamore, that even confirmed gouty subjects are sometimes attacked at the very moment when they most congratulate themselves on the possession of health and strength; and he has seen some fits thus sudden and unexpected, in the sequel very tedious and severe.

There is no disease, except, perhaps, rheumatism, in which such a complete appearance of metastasis or translation of the inflammation takes place as in gout; the disease having been frequently observed to originate in the toe of one foot, at the very time it disappeared in the other. There can be no doubt of the fact, although, in many cases, I have been able to satisfy myself, that the inflammation in both feet had previously co-existed; but when it became more painful, and a greater annoyance in one foot, the attention was attracted from the other. In the same manner, a metastasis sometimes appears to take place from the great toe, or from any other joint, to an internal organ; but this, I am also persuaded, is often a deception, and can be explained in a similar manner.

Phenomena of Chronic Gout.

When the constitution is considerably injured by long-continued indulgence in luxury and bodily inactivity, or is worn down by repeated attacks of acute gout, the disease assumes a less violent, but still more dangerous form, which Dr. Scudamore has called "chronic,"

—Dr. Cullen, "atonic,"—and Dr. Mason Good, "disguised, lurking, atonic gout."

This form of the disease is generally a consequence of previous acute attacks. The local inflammation, pain and redness are comparatively slight; there are more permanent distension, œdema and helplessness of the affected limb than in the acute form; but the conditions of the digestive organs, of the circulating and nervous systems, are more embarrassed and oppressed. The disease is more bearable in this than in the acute form, because the patient does not suffer that extreme agony occasioned by intense local inflammation; but there is, nevertheless, more danger, from the importance of the parts whose functions are very seriously impeded, which sooner or later terminates in structural lesion; and it is invariably observed that the paroxysms are more frequent and irregular.

According to Dr. Scudamore—"The state of the constitution in chronic gout embraces a great variety of symptoms, which are modified by the temperament and habits of the patient; by the situation and degree of local disease; and also by the seat and nature of the internal visceral derangement. Indeed, so many anomalies so often arise in this impaired state of the health, partly depending on internal causes, and partly on the painful or uneasy state of the affected textures, that probably no description would be adequate to include all these shades of sympathy; and it may be sufficient to delineate a general outline."—(P. 327.)

Some patients are severely distressed with dyspeptic symptoms, such as uneasy sensations in the stomach and bowels, nausea, a craving desire for food, oppression and flatulent distension after every ordinary meal, which are much increased if the stomach be incautiously loaded. Some experience cramps, others heartburn, and some a peculiar coldness in the stomach, which they compare to that which would be produced if it contained ice. The cramps are owing, I am persuaded, in a great majority of cases, to efforts made by the stomach and bowels to expel crude and indigestible matters; as well as to distension from flatus, and are not commonly, at least, of that mysterious nervous character which is generally imagined. Although the patient's appetite seems natural, yet he is not nourished by his diet; he neither experiences increased strength nor vigour, but on the contrary, suffers additional constitutional and local irritation, and even feverish action. His mind becomes weak and irritable, often hypochondriacal; he is haunted by imaginary evils during the day, and by disturbed, or even frightful dreams at night; and the sleep is, in general, broken and unrefreshing. Palpitations are common, not only in the region of the heart, but in the course of the abdominal aorta, even when the heart's action is quite tranquil and natural. The body becomes more susceptible to the impressions of atmospherical vicissitudes; the limbs become emaciated and weak when the abdomen is, perhaps, growing larger; the bowels are sometimes costive, sometimes loose; the stools always possess an unnatural fetor, sometimes having a white appearance, showing a diminution of biliary secretion; at other times they are dark-coloured, and very frequently mixed with mucus. I have even seen the mucus tinged with

blood, and attended by all the usual symptoms of dysentery. There is considerable irritation about the rectum, no doubt often produced by the enlarged and painful condition of the hæmorrhoidal veins, which occasionally discharge blood, sometimes in considerable quantity; and many gouty people are so much relieved by periodical hæmorrhage, not only from the anus, but from the nose, that they consider it necessary to health; and I have known several cases in which apoplexy took place, when the natural hæmorrhage ceased to recur. The urine has much the same appearances as in the acute form of the disease. A chronic cough and expectoration are frequently met with, and depend upon the state of the bronchial membrane.

The calcareous depositions which are so frequently found about the smaller joints, and which go under the name of "chalk stones," are more frequently formed in this species of gout than the acute. The humoural pathologists believed them to consist of indigested gouty matter thrown upon the joints, and changed into their peculiar state of hardness by the heat and pain of the joint, but they are now known to be a compound of uric acid and soda. "These gouty concretions, (says Dr. Scudamore,) occurred only in a few individuals of particular gouty idiosyncrasy, and are found in various situations from within the synovial membrane of the joint even to the layers of the cutis. I have found them in the living subject, filling the bursæ, and condensed to great hardness; in the sheaths of tendons, feeling almost stony; in the cellular membrane, either in hard or soft lumps; and under the cuticle, pressing for escape. In one gouty person who comes under my frequent observation, the concretions near the surface have caused numerous ulcerations both in the hands and feet, and the chalk-like matter is constantly secreted."

Phenomena of Retrocedent Gout.

It sometimes happens, that, during a fit of gout, the external inflammation suddenly disappears, or, at least, becomes very much mitigated, while the patient is affected with lethargy, stupor, coma, apoplexy; or with severe pain in the head, and other symptoms indicating inflammation or some other cerebral affection.

At other times, on the recession of the gout, difficulty of breathing, with tightness in the chest, great oppression at the præcordia, and a sense of suffocation, followed by cough and expectoration, take place; or violent palpitation, pain and constriction in the region of the heart, accompanied by oppressed breathing, cough, &c., indicating disease of some part or parts of the viscera of the thorax.

In another set of cases, the translation takes place towards the abdomen with symptoms of gastritis, hepatitis, enteritis, peritonitis or dysentery; and, in some cases, the urinary organs are involved. Dr. Scudamore thinks "the transference is most disposed to affect the stomach or intestines, or both in succession. The symptoms which attack the stomach are exquisite pain and spasm, with vomiting. If the intestines be more distinctly affected, enteritis, in its worst forms, is produced; and vomiting, which is a usual attendant,

is more or less urgent, according as the seat of disease is near or distant from the stomach. In either case, the danger is pressing; and unless relief be speedily rendered, death soon closes the scene."

Dr. Cullen (Par. 532) observes, that "the stomach, which has so universal a consent with the rest of the system, is the internal part that is the most frequently, and often very considerably, affected by the gout. The paroxysms of the disease are commonly preceded by an affection of the stomach; many of the exciting causes act first upon the stomach; and the symptoms of the atonic and retrocedent gout are most commonly and chiefly affections of the same organ."

Dr. Mason Good (vol. 2, p. 630, 2d ed.) makes the following observations: "It sometimes happens, however, that while the general constitution of a podagric patient is tolerably sound, one or more of the internal organs form an exception to the general rule, and are less healthy than the rest. And as, upon an excitement of gouty inflammation in a gouty habit, the inflammation seizes ordinarily upon the weakest part of the body, it makes its assault upon such organ rather than upon the hands and feet; or, if it commence in the latter, is readily transferred to it; constituting the third of the varieties before us, and which has usually been called RETROGRADE or MISPLACED GOUT. And if the general system should, at the same time, be below the ordinary tone of health, when the paroxysm is thus excited by the force of some occasional cause, the organ affected may evince great languor and painful inertness, as in the second variety, rather than acute inflammation, as in the first. The sensation in the stomach, instead of being that of a fiery coal, is that of a cold lump of lead; in the head it changes from maddening pain to oppresive horror, in which the patient suddenly starts from sleep almost as soon as he has begun to doze from the hideousness of the ideas that rush across the mind, and from the distracting dream.

"The fit is sometimes transferred to the bladder, in which case there are acute pain at the neck of the organ, strangury, and a discharge of thin acrid mucus from the urethra. The rectum has also occasionally been the seat of metastasis, and has evinced various species of affection, as simple vehement pain, spastic constriction; or hæmorrhoidal tumours. When thrown upon the lungs, it *mimics* the symptoms of a peripneumony."

There is a great deal of good sense and sound observation displayed in the above passages, but it is mixed up with some absurdly mysterious expressions, which may throw young practitioners off their guard, and therefore must be noticed. When Dr. Mason Good speaks of the second variety of retrograde gout, in which the organ affected is represented to be "*below the ordinary tone of health*, evincing *great languor* and *painful inertness*, instead of *more violent* symptoms, as in the first variety," one accustomed to see much of disease, and to open the bodies of those who have fallen victims to it, would be led to imagine the author was not aware that inflammation may exist in various degrees of intensity; and that, modified by some peculiar, but unknown causes, inflammation of similar intensity and extent will give rise in one subject to violent symptoms, while in another they have such an opposite character, that although the

patient is observed to labour under some degree of suffering, yet the symptoms are not so striking as to attract the same degree of attention. These passages would lead one to imagine that the author of this learned and laborious work was not aware that inflammation of different tissues gives rise to a different cast of symptoms as to violence, which is particularly exemplified in the serous and mucous membranes, which last are so very frequently involved in gout. I must enter a strong protest against the expression used when speaking of retrocedent gout, viz.: "When thrown upon the lungs, it MIMICS the symptoms of a peripneumony."

Dr. Scudamore states "that Dr. Home, of Edinburgh, in his lectures, relates the case of a gentleman who exposed himself to the influence of wet and cold when the gout was slightly present in the feet: and, on the same afternoon, enteritis followed, which in twelve hours proved fatal. He also states that Dr. Parry informed him, "that in the same winter he has seen two instances of extravasation in the brain, from the removing of gout in the extremities, by immersing the feet affected in cold water."

Unless from similar rash practice, or from imprudence on the part of the patient, I conceive that such sudden translations of the inflammation, or, what is the same thing, sudden alterations in the balance of the circulation, during the paroxysm of gout, are among the rarest occurrences to be met with in practice, unless, indeed, there have been previous disease in the organ to which the translation takes place. A person of gouty habit may be seized, after exposure to cold and damp, with slight inflammation of the brain, lungs, or of any other organ, when his bowels are constipated and his system plethoric; gouty inflammation of a joint may supervene, and mitigate for a time the internal disorder, the attention of the patient and of the physician being then exclusively attracted to the external inflammation; and subsequently, upon the subsidence of the inflammation in the joint, or from mismanagement, such as plunging the foot into cold water, the internal disease may reappear, perhaps with increased violence, or, what is all the same, when the patient is weaker, and not so well able to stand the remedies as he would have been a few days previously. Or it happens that an individual may be affected with a permanent organic disease of the heart or lungs, and may be at times seized with gout, when he will be every moment in danger of the inflammation receding from the joint. I once casually met with a gentleman, in many respects a hypochondriac, and who was so considered, at least according to his own account, by his medical attendant. He had a very foul tongue and acidity of stomach, which he said had been his constant companion for years; he also added that he had a tightness about his chest, which was certainly increasing; and that he never had a good night's rest, in consequence of frightful dreams. I satisfied myself from the state of the pulse, and that of the heart's action, that he had an enlargement complicated with dilatation of that organ. In the course of a few months afterwards, he was seized with gout, and died during the attack from retrocession; his death was attributed by his medical friends to "spasm of the lungs;" whereas, all the symptoms immediately preceding death

appeared to accord with the opinion which I had formed to myself. I anxiously looked forward to the examination of the body of this patient, and took an opportunity of urging its propriety, but received the following reply—"What would be the use of opening a man who died of gout?"

In the year 1830, I attended a gentleman who, after an illness which I knew to proceed from extensive disease of the heart, with which he had been slightly affected for several years, was seized with gout in the lower extremities. The external inflammation was very unsteady in its seat, sometimes affecting one joint, sometimes another; but whenever there was little external inflammation, he became instantly affected with difficulty of breathing, occasioned by bronchitic inflammation or violent palpitations, with constriction and sense of suffocation. Twice the translation took place to the brain; on one occasion he became frantic, talked loud and abused those about him; and on another, he exhibited a strong tendency to coma. At these times relief was produced by the application of leeches, but principally by causing external irritation. At last, after spending a quiet night, with much refreshing sleep, taking nourishment at proper intervals, and when every thing appeared to be going on well, he became affected with difficulty of breathing, and died in a moment. Immediately previous to the fatal event, he expressed his own satisfaction at the relief he had experienced and the prospect of a speedy recovery. I made every effort to obtain an examination of the body, but failed, in consequence of a promise he had extorted from his wife; but there could be no doubt that there was hypertrophy with dilatation of the heart, disease of the valves, and that there had been bronchitic inflammation.

Causes of Gout and Pathological Observations.

Dr. Scudamore has written a considerable number of pages on the causes of gout, to which I beg to refer my readers for a great deal of very valuable information, as it would be inconsistent with the plan of this work to enter so much at large into the subject as he has done in his treatise.

The first question that naturally suggests itself is—Whether or not the disease is hereditary? According to Dr. Cullen, it is expressly defined to be—"*Morbus hereditarius, oriens sine causa externa evidente*," &c. Guided by nature instead of books, I have observed that gout is more an acquired than a hereditary disease. Dr. Scudamore instituted an investigation to ascertain the fact, and of one hundred and thirteen patients, the number of those in whom the disease

was hereditary from the father, amounted to - - -	32
——————— mother, - - - - -	9
——————— father and mother, - - - -	3
Of those whose grandfather only had gout, the disease completely hopping over one generation, - - -	6
——————— grandmother only, - - -	1
——————— uncle only, - - - -	3
——————— aunt only, - - - -	1
Gout not known either on the father's or mother's side, -	58

From this statement, it appears that the cases of acquired gout, in which no family reference could be traced, were to the rest as fifty-eight to fifty-five; and in the examples contrasted with those *immediately* hereditary, as fifty-eight to forty-four. My own experience corroborates the above statements, but it is generally viewed as a hereditary disease; and this has arisen, I imagine, from the habit which too often obtains among medical men, of drawing general conclusions from one or two facts, such as the following. A gentleman in affluent circumstances, very fond of the pleasures of the table, and taking little exercise, will generally be found to be afflicted with the gout; and because his son, living exactly under the same circumstances, perhaps enjoying greater indulgences, and being fully more indolent, also has the gout, it is marked down immediately as a strong proof of the hereditary nature of the disease. But if the case were somewhat altered, if the father, however gouty he might be, were to experience a reverse of fortune, and his son were obliged to break stones on the road, or to earn his bread by any other kind of severe labour, then there would be about a hundred chances to one, that, to whatever diseases he might be heir, he should never have the gout.

Gout is notoriously a disease of the rich, or rather, I should have said, of the affluent and indolent, who induce a constitutional plethora by living in a too luxurious manner, pampering the appetite, and overloading the stomach with different articles of food at each meal—who do not take sufficient bodily exercise, or attend to the state of their bowels—and who stimulate their systems in every possible way, till at length their bodies may be said to resemble a house filled with highly combustible materials, which requires but the addition of a small spark to set it in flames. Dr. Scudamore observes that, in Scotland, gout is much more rare than in England, and that in Edinburgh, where the habits of the people approach the nearest to those of London, it is seen most frequently; while in Glasgow the gout is very rare, even among the highest classes, which he ascribes partly to the greater activity of the people and the better regulation of general habits; but he gives a sly hint, that the exemption may be owing also to the use of *Glasgow punch*, which is a more general beverage at the best tables than wine!! The truth undoubtedly is, that gout is comparatively rare among the middling ranks in Scotland, and that it is not nearly so frequent among the rich as in the same class of society in England; and one cannot help feeling proud at being connected with a country whose population, from the highest to the lowest, are bent upon giving their children a better education than they themselves have received. Many a man in a humble walk of life is delighted with the thought that one of his sons may possibly some day fill a pulpit, or be physician to some great embassy, or raise himself, by integrity and assiduity, to be a first-rate London merchant, or be sent to India, and become a rich nabob. These are far greater sources of delight to the humble Scotsman, than pampering his own appetites. It is thus he raises the moral and intellectual character of his country, and prevents himself from being teased and tortured by many a bodily infirmity.—A word re-

specting the Glasgow people and the Glasgow punch. I know that the statement made by Dr. Scudamore is generally believed, but the truth is, we do not often meet with gout in Edinburgh in any class of society; and however unfrequent it may be in Glasgow, I am quite sure the habits of all classes of society in Edinburgh will at least stand a comparison with those of the inhabitants of that flourishing city.

The gout attacks males much more frequently than females; but some of the most severe and tedious cases of gout I ever attended happened in females; and during the course of the summer of 1830, a female had a severe attack, which was protracted for three months. She was very little benefited by any mode of treatment, till the parts affected were literally covered several times with leeches, after which she speedily recovered.

With respect to age, it has been remarked from the time of Hippocrates downwards, that it is a disease which, if it ever do occur, is rare before the age of puberty. I have known one case in a boy, the son of a scientific friend, who, no doubt, had an attack of gout at an early age. As a general statement, the correctness of the following paragraph from Dr. Scudamore may be depended on:—"I have not myself witnessed more than one example of a first attack before twenty, nor any after sixty-five."

I have seen the gout attack individuals of every kind of temperament, complexion and disposition; and, with respect to severe study, I am sure this is much overrated by writers as a cause of gout. "This cause, (says Dr. Scudamore,) comprising not only want of exercise, lateness and irregularity in the hours of rest and sleep, but also its consequences, weakness of the stomach, and inactive bowels, by its effects on the nervous system from the *over-action of the brain*, produces that form of irritative debility which increases the susceptibility of the frame to disease, and consequently to gout, if such be the predisposition of the individual." I admit that people of studious habits, who eat and drink a great deal more than the wear and tear of the body require, will be liable to gout; but I do not consider it in any way connected with the over-action of the brain, which is certainly more conducive to health and longevity than indolence of mind, all other circumstances being the same. For example, I know one gentleman most intimately, with a strong hereditary title to the disease, who, for many years, has had his mind intensely engaged in scientific pursuits. During that period, he has scarcely ever enjoyed more than five hours sleep in the twenty-four —and has often been two or three days and nights without being in bed, sometimes, indeed, four or five—his constant habit is to sit over the "midnight lamp" till two, three or four o'clock every morning; and yet, were he going to insure his life, he could obtain a policy at half the premium he could have done twenty years ago, with all the difference of age. He has preserved himself by rarely drinking any thing stronger than good table-beer; avoiding loading his stomach; and regulating the quantity of solid food to the exercise which he has enjoyed, the state of his bowels, and the degree of mental effort which he knows he must make after dinner. It may be mentioned

as a hint to others, that when he has to apply his mind most assiduously, he prepares himself for the exertion, not by taking a very hearty meal and a more liberal allowance of wine, but by eating less than usual and taking no stimulant whatever, although he can, when necessary, enjoy his friend with a good dinner and a bottle of wine, as well as any other person.

All excesses in eating and drinking are bad for the animal system, and render it liable to disease; but overloading the stomach with different kinds of food at every meal, is, I am persuaded, far more frequently the cause of gout than over-drinking. Nevertheless, every habit which tends to produce plethora, combined with irritation of the stomach and bowels, may be considered as a cause of gout. There are some kinds of wines which, taken even in a moderate quantity, gouty subjects always feel—these are, more particularly, champagne, and claret.

Upon the whole, then, I look to a diseased state of the mucous membrane of the stomach and bowels, as produced by all the above causes, either singly or combined, in addition to a plethoric state of the system, as being the cause of a gouty paroxysm. I believe that the seat of the gouty inflammation is in the nervous filaments of the part affected: but various opinions have prevailed upon this last point. Boerhaave considered a morbid texture of the nerves and capillaries to be the disease. The humoural pathologists supposed that it depended upon an acrimonious state of the fluids which are separated, and thrown off by a process of nature; and they considered the inflammation in the extremity to be a sign of a revulsion of the humours, and therefore regarded it as a mark of health.

Dr. Cullen was of opinion that, "in some persons, there is a certain vigorous and plethoric state of the system which, at a certain period of life, is liable to a loss of tone in the extremities. This is, in some measure, communicated to the whole system, but appears more especially in the stomach. When this loss of tone occurs while the energy of the brain still retains its vigour, the *vis medicatrix naturæ* is excited to restore the tone of the parts; and accomplishes it by exciting an inflammatory affection in some part of the extremities." (Par. 533.) Thus it will be perceived that here, as well as in fever, he makes strength to depend upon weakness, and weakness upon vigour and plethora of the system.

According to the views which I have taken of gout, it should be regarded simply as an inflammation of the affected part, produced by an effort of the constitution to remove disease from internal parts to the surface of the body. Therefore, the inflammation of the toe is not to be regarded as a disease, but only as the occasional symptom of a disease, which may be one either of function or of structure. This is proved by taking a retrospective view of the causes of gout, and the marks of constitutional disturbance which always precede the inflammation of the part—by the production of a great increase of internal suffering, sometimes even death, from the sudden recession of the external inflammation—and by the universal belief of those who have either seen the disease or experienced its suffer-

ings, that a gouty paroxysm clears the system of something which had been acting injuriously upon it for some time.

The body may be in a very high state of predisposition to take on gouty action, but it requires some additional accidental circumstances to bring it into operation; this is what is called an exciting cause, of which there are many; but the following are the most frequent. Exposure to cold and wet, particularly when the body is in a state of fatigue; long-continued coldness of the extremities; constipation; indigestible matter taken into the stomach; a cold drink when the body is heated; a particular act of intemperance, more especially, indulgence in the use of certain kinds of wines; excessive evacuations; suppression of periodical discharges; the influence of the passions, a strain, or pressure from a tight boot or shoe, &c.

Treatment of gout.—In the treatment of gout, it is to be feared that much mischief is frequently done by large and repeated bleedings under the idea that this disease depends upon an internal affection of an inflammatory nature. Injurious consequences have also followed from the opposite course of never bleeding; the practitioners treating the symptoms as the disease, which they supposed to possess some peculiar and mysterious character, rendering all interference hurtful, even dangerous, and therefore dooming the patient to Dr. Cullen's remedy of *patience* and *flannel*. Many highly respectable men still entertain this opinion; and it becomes an important inquiry to ascertain how this should have come to pass. Many people are still guilty of pinning their faith to the sleeve of Cullen, never once calling their own good sense into action. Heroic remedies, if not loudly called for by threatening symptoms, undoubtedly do mischief, by interfering with the salutary operations of nature. Many practitioners, I am sorry to say, treat every disease which comes before them according to its name and not according to sound pathological principles, including the consideration of age, constitution, habits and duration of the disease. Some patients are therefore bled who do not require it, and the consequences are injurious; others are bled who cannot bear it, and who ought to be treated by cordials, and the result is fatal; many patients are over-purged with drastic medicines, to the aggravation of the disease, while others are bunged up with opium. Some patients are highly nourished and over-stimulated, because the doctor thinks gout a disease of debility, which, in all cases, requires nourishment; and as the heart is unable "to pump the blood to the brain, which may produce fatal syncope," the strongest stimulants are necessary to effect that end. Such practitioners never alter their practice; they have one steady method of treatment for all cases. There are also reasons why the public in general entertain a dread of interfering with the course of a gouty paroxysm. It may be a prejudice handed down from father to son, and the notion very probably owes its existence to statements made to that effect in medical writings. But the principal reason appears to be, that many people ruin their constitutions, and some even die suddenly, from being in the habit of going on indulging their appetites, because they know they can relieve themselves very speedily during a paroxysm, by the use of *colchicum* or the *eau medicinale*.

There is a very satisfactory method of explaining why gout should be imagined, by people unacquainted with medicine, to be ultimately conducive to health, and to rid the constitution of something noxious. Observing people perceive, that some constitutional ailments, such as indigestion and its attendants, always precede a gouty paroxysm; and that after the fit subsides, these no longer exist. Now this is no doubt correct, that the external inflammation has the effect of relieving the internal disease. But there is another circumstance which is not observed, or which is lost sight of, and that is, that persons who have suffered the agony attending a paroxysm of gout, subsequently, for a considerable time at least, avoid all causes which they know will expose them to the return of such a torturing visitor; they also attend to their bowels, and take more exercise. I know many, even highly predisposed persons, who have thus warded off the disease for years.

Regarding the disease according to the views I have endeavoured to point out, the treatment is generally quite simple.

In a first paroxysm of gout, and in all slight cases, little constitutional treatment is necessary further than keeping the bowels gently open by any mild laxative exhibited every six or eight hours, and restricting the diet to very small quantities of farinaceous food, or merely allowing thin gruel or arrow-root; and the best ordinary drinks are whey, barley-water, or toast-water. The patients are to be kept cool and quiet, and if the pain and inflammation of the affected part be slight, a tepid, evaporating lotion, composed of three or four ounces of tincture of camphor to a pound of water, is to be applied to the part, by means of linen several times folded and kept constantly wetted. This does not differ from the lotion recommended by Dr. Scudamore, which consists of one part of alcohol to three parts of the mistura camphoræ, and which he says he has used with great satisfaction to himself, and with the best success, and he recommends its temperature to be from 75° to 85°.

In more severe cases, however, venesection may be required, but should never be adopted upon slight grounds, even if the patient be plethoric. The circumstances which serve to render general bleeding necessary, are, symptoms threatening an apoplectic attack, or showing the existence of inflammation in some internal organ; and, as Dr. Scudamore justly remarks, "in the circumstances in which bleeding is a proper remedy, its *early* employment is a point of much importance. When delayed, it will be found that the depression of strength resulting from the excessive irritation of the nervous system counteracts its advantages in a great degree." The pulse, in some measure, affords a guide; if it be full and hard, accompanied with a hot skin, thirst, and scanty high-coloured urine, general bleeding can rarely do harm, and is absolutely necessary if inflammation of any internal organ exist. The quantity of blood which ought to be abstracted is regulated by circumstances that have been already fully considered when treating of many other diseases; but so cautious should we be about opening a vein, that I would strongly recommend, in the first instance, the application of a considerable number of leeches to the affected part, particularly if much local

inflammation exist. This practice is recommended because it seems to be following the course pointed out by nature. In determining the number of leeches that may be necessary, it is much safer to err by applying two or three too many, than too few, because, if a sufficient quantity of blood be not drawn, the advantages from the depletion are counterbalanced by the additional irritation from the bites. But we must always keep in view, in the treatment of gout, that the disease is produced by constitutional causes, and is not to be altogether relieved by local means. The practice of leeching the part affected is noticed by Cullen, and has, in some measure, received his sanction, although, it would seem, he had not often employed it. In par. 563, he says: "I believe, however, that bleeding by leeches upon the foot and upon the inflamed part, may be practised and repeated with greater safety (than general bleeding;) and I have known instances of its having been practised with safety to moderate and shorten paroxysms; but how far it may be carried, we have not had experience to determine."

Emetics have been extolled by some, but are only to be administered if indigestible food is suspected to be lodged in the stomach, and when there is distressing irritation from slight nausea, and hot acid eructations.

Mercurial preparations are to be occasionally given in conjunction with laxative medicines, particularly if the stools show either a deficiency of bile, or are dark-coloured and fetid. It is immaterial whether we use calomel or the blue pill; sometimes, indeed, when the liver seems implicated, a slight mercurial course is necessary.

In cases where there is a burning heat at the pit of the stomach or other signs indicating inflammation, or even a high degree of irritation of the mucous membrane of the stomach and bowels, a sufficient number of leeches must be applied, or cupping had recourse to, followed by rubefacients or blisters. I have often seen considerable benefit in cases which indicated, not only the existence of abdominal, but also of thoracic disease, by producing two or three successive crops of eruptions, by means of the tartar-emetic ointment.

Opiates are highly serviceable in allaying pain and producing sleep, and have been in greater favour with practitioners than any other class of remedies; but they are inadmissible before the bowels have been sufficiently relieved—when the patient is threatened with apoplexy, or any other cerebral affection—and, indeed, when there is local inflammation of any internal organ, unless they be conjoined with the remedies necessary for its cure. When opium disagrees, hyoscyamus may be substituted.

Many years have not elapsed since the *eau medicinale* was in high repute, but it has now shared the fate of the Portland powder and of all other pretended specifics for gout.

The *colchicum autumnale* has been highly recommended during paroxysms of gout, and has been used with the best effects, not only in alleviating the immediate sufferings of the patient, but in breaking the severity of the disease; but it has no claim to the title of a specific. There is considerable difference of opinion among practical

men as to which preparation of colchicum is the most efficacious. Some recommend the powder of the bulb; others that of the seed; many prefer the wine of the seed; while others extol the acetic preparation. I have used all the preparations, but find a saturated infusion of the seeds in wine to answer better than any other. It is to be exhibited, according to the age and constitution, in doses from twenty to a hundred and twenty drops, conjoined either with the same quantity of tincture of hyoscyamus, or with a half, or even a third part of the sedative solution of opium, which will be found to answer better than laudanum. In some cases, when the stomach is exceedingly irritable and when the colchicum cannot be retained, leeches may be applied, or a blister over the epigastric region, and a pill with two, three or four grains of calomel and two of opium, may be exhibited. In treating a case of the gout with colchicum, it is by no means to be trusted to alone, as if it were a specific; it is necessary to attend to the state of the bowels, and allay local inflammation in the same manner as if colchicum were not employed.

Alkalies are very serviceable when there is acidity in the stomach, or when there is much irritation in the urinary organs, particularly when the urine is high-coloured, and deposits a red, sandy sediment. If it be necessary, at the same time, to give any laxative medicine, we may use Henry's calcined magnesia, in which are conjoined antacid as well as aperient properties.

During paroxysms of those forms of gout which have been termed "atonic" and "retrocedent," we must treat each case according, not only to the organ affected, but to the nature or kind of the affection. We must be careful not to confound mere functional disorder with inflammation, an error which young practitioners are very liable to commit, but which is not attended with fatal consequences nearly so often as mistaking inflammation for the other class of affections.

In cases where pain and inflammation are shifting about from place to place, it is a good plan to leech such parts, as well as to produce contra-irritation on the chest if respiration be at all affected or the patient troubled with palpitations: and on the epigastric region, if there be evidence of much gastro-intestinal irritation. Should inflammation attack any organ, it must be treated upon general principles, always, if possible, making use of leeches or applying cupping-glasses instead of venesection, unless the patient be young and plethoric, or there be signs of local congestions or unusual determinations of blood to any particular organ.

Management of Gouty Subjects during the Intervals.

As soon as a gouty paroxysm begins to subside, it is our duty to make the patient aware of the usual progress of gout in undermining the constitution, in order that he may the more readily submit to directions which he is to receive for his future management. It ought to be impressed upon him that medicines can be of little comparative service, unless he live abstemiously and alter many of his habits. Perhaps the point of most importance is a proper regulation of the diet, so as to make it correspond to the degree of his daily exercise.

I am aware how impossible it is to prescribe a proper diet for each individual, until we come to know his peculiarities of constitution and previous habits, but there are certain general directions which it is advisable to give in all cases, in the first instance, at least, which can be modified and changed afterwards according to circumstances.

At breakfast the patient may be allowed one large breakfast-cup of milk, tea, coffee or chocolate, according to his taste, with an egg and bread and butter. Meat and fish should be interdicted at this meal, which should be taken at eight o'clock in the morning, to ensure his rising early; as well as for the purpose of regulating the hours for the other meals. From that time he should take nothing till dinner, which should be about two o'clock; when he may be allowed a moderate quantity of animal food, not exceeding from a quarter to half a pound, cooked in a plain way, perhaps on a gridiron is the best, with as much stale bread as he chooses, and a small quantity of any of the ordinary vegetables that agree with him; but he must dine upon one dish, particularly for some time after a paroxysm. At any subsequent period, should he wish to partake of two articles at one meal, the quantity of each must be regulated in such a manner that the stomach is never over-distended. Should he take fish, it must be eaten without melted butter, a good substitute for which is meat gravy; and the reason why vegetables should be avoided as much as possible, is that they tend to produce acidity and flatulency in the stomach and bowels, when their functions are in a weakened state. For drink, I believe that good, sound table-beer will be found to agree very well with the generality of people, if it be not hard or too weak, and if it be taken in moderate quantity. If beer should disagree, a dessert-spoonful of brandy in a tumbler of water will be found a very good substitute. With respect to wine, the use of it depends entirely upon former habits; were old gourmands deprived altogether of their usual stimulus they would quickly sink; but in younger subjects, when the constitution is as yet unbroken, it will be well to advise the patient to avoid the habitual use of any stimulant whatever. At 7 o'clock in the evening, the patient should have another meal, consisting of the same articles as at breakfast; and if he take any thing afterwards, which I do not, however, think necessary, it may be a teacupful of gruel at ten o'clock, on retiring to rest. He should sleep in a large, well-aired room, with sufficient clothing to make him feel comfortable, but not to produce perspiration, the continuance of which tends to occasion constitutional debility, perhaps more than any other circumstance whatever. It should be ascertained, when the patient goes to bed, that his feet are comfortably warm; if not, friction should be used, or he should be supplied with a bottle of hot water; whereas, if they should be too hot, which is sometimes the case, they should be bathed for some minutes in milk-warm water. A gouty person, in particular, should not sleep on a feather bed, nor should he indulge in the use of soft pillows, more especially if there be any tendency of blood to the head, when his head and shoulders ought to be considerably elevated. The bowels should form a chief object of attention; they must not be allowed to be constipated; but the opposite extreme is fully, if not more inju-

rious. Many individuals are injured by the pernicious habit of taking some strong physic now and then; but it will be invariably observed that the bowels become afterwards more torpid. All laxative medicines, which operate violently or produce watery stools, should be avoided. Patients should be furnished with different kinds of pills, of which they should regularly take such a quantity as will produce one, or at most two evacuations daily, or a teaspoonful or two of Henry's calcined magnesia, sometimes by itself, at others joined with six grains of rhubarb and three or four of ginger.

During the day care must be taken to preserve the feet in a proper degree of warmth; and the patient should at first be very cautious not to use too much exercise, which will not only weaken the body and derange the functions of the stomach, but will injure the limb which has been recently the seat of inflammation. By degrees the exercise may be increased, but should never be violent or carried to such an extent as to create fatigue. Till his health is completely established he should avoid exposure to night air, and at all times carefully protect his body against the influence of atmospheric vicissitudes.

At any period that digestion becomes impaired, which will be indicated by a loaded tongue and a sense of fulness and distension after meals, patients should not depend so much on drugs for relief as on the restrictions of diet, but I do not mean to undervalue the effects of medicines. Every practical man must be aware how advantageous are a blue pill or a grain or two of calomel and a small quantity of extract of colocynth when the tongue is loaded with a white or with a yellowish fur. These, with the addition of from ten to twenty drops of nitric acid in four ounces of infusion of quassia, compound infusion of gentian, or in water along with two grains of the sulphate of quinine, once, twice or thrice a-day, are often beneficial. In some constitutions the occasional use of the warm bath will be found serviceable, while in others the cold bath will best agree. There is almost no individual so situated that he cannot obtain the advantages frequently found to result from the shower-bath, which may at first be used warm, and afterwards gradually made more and more cold as the strength increases.

CHAPTER II.

RHEUMATISM.

Most authors describe two, others three varieties of rheumatism, viz.: the acute and chronic rheumatism and rheumatic gout, which last is so termed from its resemblance to both diseases. The following is Dr. Cullen's definition of acute rheumatism:—"A disease produced by an external cause which is, in general, known, attended with pyrexia; pain about the joints, following the tract of the muscles, attacking the knees and larger joints in preference to those of the feet or hands, increased by external heat."

Dr. Mason Good has given the following definition: "Pain, inflammation and fulness, usually about the larger joints and surrounding muscles; often wandering; urine depositing a lateritious sediment; fever a *cauma*" (inflammatory).

ACUTE RHEUMATISM.

Although the diseases cannot certainly be identified, yet there are many strong points of analogy between gout and rheumatism. Few men can be long in practice without meeting with cases which have some resemblance to gout, and some to acute rheumatism, so much so, that it is a common enough circumstance to hear practical men speak of "rheumatic gout." Some, indeed, maintain that gout and rheumatism are only varieties of the same disease; while others allege that, although they are not exactly the same, yet the one often passes into the other.

Acute rheumatism generally attacks young people, or those rather below than above middle age, after long exposure to cold and moisture, as sleeping in damp sheets, remaining long in wet clothes, particularly after fatigue, or from changing winter clothing too early in spring, to which people are often tempted by a few successive days of warm weather.

Symptoms of acute rheumatism.—After exposure to some of the above-mentioned causes, the patient complains of rigors or chilliness, with a general feeling of numbness, pain or aching: febrile symptoms soon follow, when the skin is pungently hot and the pulse quick, full, hard and bounding, even in weakly subjects, and will be found to beat from 100 to 140, perhaps even higher. As the febrile symptoms increase, the pain becomes more acute; it is generally an aching

or gnawing pain, with numbness and powerlessness, and it sometimes even possesses the pungent, hot, lancinating character of gout. The pain is sometimes general, but some one joint is more intensely affected than the rest; and we also see translations of the disease take place, which are so frequently observed in gout. In acute rheumatism, the parts affected usually become red, swollen and tender to the touch, although in some cases it is observed that the redness and swelling are slight in comparison to the degree of pain. The least motion aggravates the pain, as in gout, and it often shoots with great severity, either along the course of the muscles or the nerves and their ramifications.

Sometimes local pain exists before the general febrile commotion, although this is rare, unless a patient with chronic rheumatism, from imprudent exposure or other causes, excites the acute form of the disease. The pain and febrile symptoms abate and increase irregularly; generally speaking, however, the patient is most tormented at night, which circumstance is observed in almost all other diseases. The muscles often feel hard, rigidly contracted and sore to the touch; the intercostals are occasionally affected in such a manner as to resemble in every respect an attack of pleurisy, which has been already noticed, when treating of that disease, under the term "Pleurodinia." The muscles of the abdomen are occasionally painful to the touch, without hardness of the part, so as to resemble peritonitis. The muscles of the back are often affected, the complaint being well known by the term "lumbago." Another affection, either of the sciatic nerve or of the muscles which pass from the trunk to the lower extremities, sometimes takes place, which is called "sciatica." These latter affections, however, very frequently occur without fever, unless during the night, and are usually described under the head of chronic rheumatism.

In acute rheumatism the tongue is generally loaded, often red, particularly round the edges, and fissured; the appetite is destroyed; the thirst excessive; the urine scanty and high-coloured, depositing a heavy sediment, as in gout. There are sometimes nausea and vomiting, with considerable internal heat, particularly in the epigastric region, with irregular, generally costive bowels and fetid evacuations. At others there are headache, with intolerance of light, and sometimes even inflammation of the eyes, which is well known to attack a particular part, viz. the sclerotic coat. On other occasions, symptoms of cerebral irritation or inflammation take place; and it is well known that dissection has frequently and unequivocally revealed an inflammatory condition of the membranes of the brain. But the pericardium of all parts is the most liable to the occurrence of inflammation during the course of rheumatic affections—a most insidious disease, under any circumstances, but more particularly so when the attention of both patient and practitioner is attracted to the pained joints. The skin is generally dry and hot in acute rheumatism, but is sometimes bathed in a clammy sweat.

In the consideration of all diseases, after becoming acquainted with their phenomena, the most important point is to determine their nature and seat. With respect to acute rheumatism, some allege that

it is a disease of the sanguiferous, others of the nervous system. My own opinion is, that both systems are deeply implicated, but that the real nature of the disease is inflammatory. All the symptoms prove this position, for even in the weakest subject the pulse is quick and strong; the fever is undoubtedly inflammatory; the affected part generally possesses all the characters of inflammation; and blood, when drawn from a vein, shows an inflammatory crust.

It would be interesting if we knew whether the inflammation were situated in the cellular substance, in the muscles, nerves, blood-vessels or lymphatics. That the inflammation is not seated in the cellular substance is rendered probable from its rarely terminating in suppuration, ulceration or gangrene. I cannot pretend to determine the seat of the inflammation; but from the quick translations which take place and the resemblance which rheumatism in many points bears to gout, it is very probable that it involves the nervous filaments more considerably than any other tissue. But I have seen cases which presented symptoms similar to those of rheumatism, in which, after death, the lymphatics of the limb were found inflamed and filled with a puriform fluid. Many French pathologists have come to the conclusion that rheumatism is nothing more than acute inflammation of the lining membrane of the arteries.

Treatment of acute rheumatism.—Many writers insist much upon the importance of a proper diagnosis between gout and rheumatism; but practical men know how difficult this is in many cases, how impossible in some, and I might add unprofitable in many, as both diseases must be treated very much upon the same principles, with this exception, that rheumatic subjects bear bleeding better than gouty, and that in them it is generally more beneficial.

The following diagnosis has been drawn between the two diseases:

Gout.	*Acute Rheumatism.*
Gout is a disease which rarely attacks the young; males are more frequently affected than females.	The young are as liable to this disease, if exposed to its causes, as those more advanced in age, and females as well as males.
Gout is more connected with some internal disease, more particularly with disorder of the viscera connected with indigestion.	Rheumatism frequently attacks people in perfect health, and is always to be traced to cold and moisture, although acute inflammation of an internal organ may be produced at the same time with the original disease, or may be subsequently engrafted on it by translation or otherwise.
Gout generally infests the smaller joints.	Rheumatism attacks the larger joints.
In gout, the pain is burning, pungent and lancinating.	The pain is generally gnawing and numb, occasionally pungent and lancinating.
In gout, the external inflammation is a bright, intense red: the swelling takes place rapidly and the part is much more sensible and tender.	In rheumatism, the inflammation is said to be less intense, and the swelling not so great or, at least, so rapid. It is said also that rheumatism shows more regular exacerbations towards night than gout; and that the pulse is more full, hard and bounding, which characters it often preserves for a considerable period after the subsidence of the external inflammation.

A great deal of discussion has taken place in the profession respecting the treatment of rheumatism. One set of practitioners depend entirely upon venesection; another upon purging; a third upon exciting long-continued profuse perspirations; a fourth upon the exhibition of bark alone; and a fifth upon a course of mercury to produce salivation. It is no wonder, therefore, under such empirical treatment, that an attack of the disease used formerly to continue violent for such a long period of time. Formerly an attack of acute rheumatism, with its sequelæ, generally confined the patient for twelve months, that is to say, before he regained his ordinary state of health, and few got off with less than six months' confinement to bed. Of late years, more common sense pervades the profession, and each case is now treated more upon pathological principles. The best remedy we possess for the cure of acute rheumatism, is venesection, provided the patient be plethoric or have an unbroken constitution, and the disease be in its early stages. The general inflammatory diathesis which prevails, the local inflammation in the parts, the highly inflammatory state of the blood and the knowledge which we have derived from *post mortem* examinations—all proclaim the propriety of general bleeding, in severe cases, in the circumstances already mentioned. The precise quantity of blood to be taken, can only be determined by watching its effects upon the constitution. We frequently, however, meet with people of nervous, irritable habits of body, and others who have been much injured by dissipation, in whom venesection will, in general, prove injurious; and I may add that it will often produce bad effects even in the strongest constitutions, unless it be followed up by proper after treatment.

The good effects of the tartrate of antimony in small but frequently repeated doses, so as to keep up slight nausea without producing vomiting, cannot be praised too highly; but the patient should be lightly covered with bed-clothes, so as not to excite perspiration. I have often employed antimony with great success in cases where general bleeding was inadmissible; but if there be considerable plethora, and a strong, hard, bounding pulse, antimony will have a better effect when venesection is premised.

Local bleeding by leeches has very good effects, and ought never to be neglected when the inflammation runs high. When leeches are employed, however, a considerable number should be used; and I make it a rule, after the leeching is commenced, to chase the disease, as it were, from joint to joint without intermission, pursuing other means of treatment at the same time.

In many cases, decided and immediate advantage will be derived from the employment of colchicum, combined with the sedative solution of opium, or with large doses of the tincture of hyoscyamus, precisely in the same manner as has been recommended in gout. It sometimes succeeds after the failure of antimony; but in general I like to try the latter before having recourse to the colchicum.

It is highly necessary, throughout the whole course of the disease, to keep the bowels moderately open; but violent purging is by no means necessary, and is often injurious. If the tongue should be loaded with a white or yellow crust, two or three grains of calomel,

combined with four or six of rhubarb, or four grains of colocynth, may be given at bed-time, and the operation assisted next morning by castor oil or an injection.

The old plan of sweating patients for ten or fourteen days, by means of large and repeated doses of Dover's powder, warm diluents, and a load of bed-clothes, is, I hope, now very generally abandoned, as it is attended with the same injurious effects as too frequently repeated and indiscriminate bleedings.

I can say nothing, except in condemnation, of another plan too indiscriminately followed, viz., the calomel and opium treatment. I have often seen the tongues of patients swollen and ulcerated, and profuse salivation produced without the least sign of amendment.

The Peruvian bark was formerly highly extolled in acute rheumatism, and has been used and approved of by many celebrated physicians of the last age. Dr. Haygarth came to the conclusion that "bark does not cure an ague so certainly and so quickly as it does the acute rheumatism." It is impossible to reconcile such a statement with the opinions maintained by others respecting the same medicine. "The Peruvian bark (says Cullen, par. 469) has been supposed a remedy in some cases of this disease; but we have seldom found it useful, and in some cases hurtful." I formerly tried bark in all its forms, and my experience exactly corresponds with that of Dr. Cullen; in fact, I have never seen it useful, except in one case, when it was employed after copious venesection. There can be no doubt, however, that cases may occur in which the sulphate of quinine will be found beneficial, where the bark in substance would prove injurious, and the infusion, or any other preparation, too weak to have any effect whatever; and there is much good sense and discrimination in the following passage from Cullen. Speaking of bark, he says,—"It appears to me to be fit in those cases only in which the phlogistic diathesis is already much abated, and where, at the same time, the exacerbations of the disease are manifestly periodical, with considerable remissions interposed."

With regard to stimulants, such as gin and brandy punch, and a bottle or two of port-wine daily, which are so generally prescribed by some, I shall say nothing. It is to be regretted that the laws applicable to medical men in China cannot be had recourse to in this country.*

Blisters ought never to be employed in acute rheumatism, at least in the early stages, unless there be evidence of the existence of pericarditis, or inflammation of some other internal organ.

Fomentations are seldom serviceable, and the warm bath is often injurious in acute rheumatism, from the increased pain produced by the motion which it requires. The sulphurous vapour bath, however, has been much praised by several individuals, but in looking at a table of M. Galé, I find nothing to recommend it. The plan was tried in sixty-five cases, of which twenty-five only were cured, thirty-two were stated to have been much relieved, and eight derived no benefit from the remedy.

* Vide Penal Code of China, by Sir George Thomas Staunton, 1812, page 319.

The diet should be antiphologistic during the acute stage, and farinaceous and unstimulating for some time after, until the pulse ceases to be full and bounding. After the patient has been for some time convalescent, when the limbs are stiff, and the joints somewhat rigid, good effects will be occasionally produced by general cold bathing; but the health and strength must be in other respects quite restored, and all the functions natural. Frictions with a hair glove are to be used and persevered in.

CHRONIC RHEUMATISM.

This form of rheumatism sometimes succeeds the acute disease and may be confined to one part of the body, or may be general. The patient complains of a dull, gnawing pain, increased on motion, with little or no fever or local inflammation. There is frequently swelling about the joints and occasionally contraction, and the muscles are sometimes rigid. The pains are often relieved by the application of heat, but are always aggravated by exposure to cold, damp air, and occasionally also by the application of heat, so that frequently patients pass painful and restless nights.

In this form of the disease, the warm water and the vapour bath, together with rubefacients are found more beneficial than in acute rheumatism. The Russian plan of treatment is said to be decidedly superior to any other, which is to expose the patient to vapour at a very high temperature, in a room where the evaporation of water is produced by dashing it upon stones intensely heated. After this has been persevered in for some time, the patient still remaining in the same apartment, small quantities of cold water are dashed upon the parts affected; the body is afterwards well rubbed. I am told by a gentleman who has undergone the process, that the relief is very decided.

If there be any fever, the antimonial treatment will be found beneficial, as well as colchicum; and, in several cases, I have seen permanent advantage produced by the combined effects of the wine of colchicum and tincture of hyoscyamus.

It has been already mentioned, that rubefacients are sometimes serviceable, and it may be now stated, that excellent effects have been occasionally observed to follow the application of blisters, but more particularly the contra-irritation produced by antimonial ointment and moxas, a remedy in great repute on the continent.

Train oil, obtained from the liver of the codfish, is highly extolled by Dr. Percival, and has since been used by other individuals, particularly by Dr. Bardsley, who exhibited from one to three tablespoonfuls daily. I have seen it tried, and persevered in for some weeks at a time, without observing any benefit whatever from its use; and I can only wish a few doses were exhibited to those gentlemen who have the patience to prescribe it for others.

The arsenical solution and bark have been recommended, when the disease shows any tendency to periodicity.

Of late years acupuncturation, which is said to be an eastern

remedy for this disease, has been employed in various parts of Europe for the cure of chronic rheumatism, and with most astonishing good effect; the operation is said to produce little or no pain, and no hæmorrhage. A single puncture has been found sufficient to remove an ache of some years duration; generally from two to six sharp-pointed needles are used at once, and are pushed, at a little distance from each other, into the affected part to the depth of half an inch, and in fleshy parts, even of an inch; each needle is allowed to remain for about five minutes before it is withdrawn. It is observed that the pain sometimes leaves the part into which the needles have been introduced and flies to another; but we are told to follow it with the instrument.

Lumbago and sciatica appear to me to be more decidedly of a nervous nature than any other, and are to be treated in the following manner:—viz., by gentle laxatives, frictions and rubefacients, and the frequent use of the hip-bath. But what answers fully better, is to pour a small stream of very hot water over the part affected, the patient being placed in a comfortable posture, either sitting on a bidet, or any convenient article to receive the water, which should be heated to 130° or 140°. In fact, it should be so hot that the finger cannot be kept immersed for any time. Acupuncturation may also be necessary in sciatica, which is the most intractable of the two affections, although commonly not so severe. I have seen the best effects produced, even in old-standing cases, by wearing a chamois-leather jacket and drawers in all the forms of chronic rheumatism. It is of the utmost consequence to regulate the diet, as relapses may be frequently traced to indigestible articles of food. It is said that individuals previously liable to attacks of lumbago and sciatica, have escaped further annoyance by wearing a piece of stick-sulphur in their breeches pockets; and it is well known that the internal use of sulphur is a popular remedy for all forms of rheumatic complaints.

RHEUMATIC GOUT.

I do not consider it necessary to give a description either of the phenomena of this disease or its treatment, as it is sufficient for all practical purposes to refer to what has been already said respecting gout and rheumatism.

CHAPTER III.

SCROFULA.

Dr. Cullen has given the following definition of scrofula:—"Enlargement of the conglobate glands, especially in the neck; the upper lip and columnæ nasi and lower part of the nostrils tumid; the face florid; the skin soft; the abdomen enlarged."

Dr. Mason Good, who applies the term "*struma*" to this class of affections, gives the following definition:—"Indolent, glandular tumours, chiefly in the neck; suppurating slowly and imperfectly and healing with difficulty; upper lip thickened; skin smooth; countenance usually florid."

The belief is almost universal that this class of diseases is hereditary, and that it is confined to an unhappy few, who transmit it from father to son, from one generation to another, far more regularly than they transmit their money or virtuous reputation. I must confess my scepticism upon this point, as many instances might be quoted where both parents were strongly marked with all the appearances described as scrofulous, nevertheless their children were very healthy. On the other hand, cases are often seen where the parents had no vestige of the complaint, and yet the children were scarcely ever without some of the affections generally denominated scrofulous. Many authors, aware of these circumstances, observe that it is true the parties are not born with the disease, but only with a greater aptitude to receive certain morbid impressions, which may bring the latent disposition into action. This is a very plausible salvo, but it is too vague to be received as medical evidence. They also say, that a remarkable circumstance attending scrofula is, that it does occasionally pass over one generation, and appear again in the next, so that "the grandfather and grandson shall be both scrofulous, while the intermediate person, who holds the most intimate relation of father and son, and connects the two others, shall be exempt from any attack of the disease.

My opinion with respect to glandular affections denominated scrofulous, is, that they are generally engrafted on the constitution by improper food and deficient clothing;—by neglect or bad medical treatment during the period of dentition; the progress of scarlet fever, measles and other eruptive fevers, as well as during the ordinary eruptions and affections of the throat. And lastly, that they are produced by mismanaging swollen and inflamed glands during their early stages. Hence it is a disease with which some of the members

of almost every family in this climate are at one time or another affected. We see glandular affections in persons of every variety of colour of the hair, eyes and appearance of the skin, and in every variety of constitution. I have, therefore, long ago persuaded myself that they depend upon gastro-intestinal irritation, which point of pathology has been clearly established with reference to the most scrofulous of all scrofulous diseases, viz., that which is termed "*tabes mesenterica.*" This view is much strengthened by the following circumstances:—Scrofula is a frequent disease among the poor, and those who are fed upon large quantities of weak broth, coarse, ill-baked bread, or hard, indigestible puddings. From these causes the disease is often seen in charitable establishments for children; and I have also seen it traced to English boarding-houses, where the children are crammed with hard pudding before they are allowed even to smell meat, and are told "*that the young ladies and gentlemen that eat most pudding shall have most meat.*"—Poor children! Another important fact may be mentioned, that scrofulous affections can be produced in a short space of time in many of the domestic animals, by unwholesome feeding. Thus I have seen them purposely produced in poultry, rabbits and pigs, by such means. A pig is called "*measly,*" when it is affected with a very general disease of the glands throughout the body, which is well known to depend upon the manner in which it has been fed.

It has been my belief, for many years, that many of the affections called scrofulous, may, in a considerable number of instances, be traced to the exanthemata. In order to obtain precise facts upon the subject, I requested Dr. Robertson, Surgeon to the Edinburgh Eye-Dispensary, to preserve a list of all diseases of the eye usually denominated scrofulous, as well as those accompanied by glandular and cutaneous affections, usually attributed to scrofulous action, in order to ascertain how many were attributed by the parties themselves or their parents to the exanthemata and hooping-cough. Dr. Robertson accordingly directed his attention to this point, and, in the course of twelve months, informed me that almost all the cases were attributed by the parties themselves, or their friends, to those diseases. This investigation took place nine years ago; and Dr. Robertson informs me that he has seen nothing in his extensive experience, since that period, to weaken the effect which it made upon his mind. It may be added, that the result of my daily practice confirms and supports the views already stated.

There seems good ground for the following statement, made by Mr. Lloyd, in his valuable Treatise on Scrofula, p. 7.:—"Among the symptoms indicating a disposition to scrofula, it has been already observed that a fair complexion and light hair and eyes are generally mentioned; but I believe there are no legitimate grounds for such distinction. Indeed, I am fully convinced, from a very extensive investigation of the subject, that persons of every variety of complexion are alike subject to this disease; and that it is only necessary to place them in circumstances favourable for its development, to have it fully established."

The reasons will now appear evident why scrofula is a disease that

no one can properly define; every physician having a definition of his own. The term is applied too often to diseased states of the system, with the nature of which the physician is entirely unacquainted; and it is too frequently used for the purpose of concealing professional ignorance, when he is puzzled and foiled in the treatment of disease.

I most heartily coincide with the sentiments expressed by Mr. Lloyd in the following paragraph: "In describing the symptoms indicating a scrofulous diathesis, all the authors with whom I am acquainted have fallen into the error of describing the state of a patient, after the disease has given local evidence of its existence, instead of informing us of the temperament or habit of body of the patient antecedent to this period; a circumstance which I cannot but consider as of the highest importance in our pathological research. Thus they enumerate among the symptoms of a scrofulous diathesis, or which only denote a tendency to scrofula, 'a thickened, chapped upper lip, the thickening extending to the alæ of the nose,' 'tumescence and redness of the tarsi,' with weakness of the eyes in general, 'tumid belly' and 'enlargement of the lymphatic glands, particularly those of the neck.' These, it is true, (continues he,) afford very decisive evidence of the existence of the disease, but should not be ranked among the symptoms indicating only a disposition to it. All the other symptoms illustrative of the same point, which have been adduced, are either dubious or uncertain; as fair and shining skin; light hair and eyes, females being more subject to it than males, or males, than females; both of these contradictory positions having their respective advocates." (Page 3.)

I have many cases annually under my care illustrative of these statements, and proved not only by the previous history, but by the effects of proper remedies. For, as the functions of the stomach and bowels become more impaired, the inflamed and tumid appearance of the eyes, nose or lip become more and more evident, until, perhaps, ulceration takes place. But as the condition of these functions is improved, the above described state of parts disappears.

All parts of the body are liable to be affected by scrofulous degeneration; thus it is seen in the brain, lungs, heart, liver, spleen, kidneys, muscles and bones, and also in serous and mucous membranes.

I cannot do better than extract the following description of scrofula, when left to itself, from Dr. Cullen's "First Lines on the Practice of Physic," (par. 1743, et seq.) "Frequently the first appearance of the disease is the tumid and chapped lip above mentioned. Upon these occasions, the first appearance is that of small, spherical or oval tumours, movable under the skin. They are soft, but with some elasticity. They are without pain and without any change in the colour of the skin. In this state they often continue for a time, even for a year or two, and sometimes longer. Most commonly they first appear upon the sides of the neck below the ears, but sometimes also under the chin. In either case, they are supposed to affect in these places the conglobate or lymphatic glands only; and not at all the salivary glands, till the disease is very greatly advanced. The disease frequently affects, and even at first

appears in other parts of the body. In particular it affects the joints of the elbows and ankles, or those of the fingers and toes. The appearances above the joint are not commonly, or elsewhere, small movable swellings; but a tumour almost uniformly surrounding the joint and interrupting its motion.

"These tumours, as I have said, remain for some time little changed; and from the time they first appeared in the spring, they often continue in this way till the return of the same season in the next, or perhaps the second year after. About that time, however, or perhaps in the course of the season in which they first appear, the tumour becomes larger and more fixed; the skin upon it acquires a purple, seldom a clear redness; but, growing redder by degrees, the tumour becomes softer and allows the fluctuation of a liquid within to be perceived. All this process, however, takes place with very little pain attending it. At length some part of the skin becomes paler; and, by one or more small apertures, a liquid is poured out.

"The matter poured out has at first the appearance of pus, but it is usually of a thinner kind than that from phlegmonic abscesses; and the matter, as it continues to be discharged, becomes daily less purulent, and appears more and more a viscid serum, intermixed with small pieces of a white substance resembling the curd of milk. By degrees the tumour almost entirely subsides, while the ulcer opens more and spreads broader; unequally, however, in different directions, and, therefore, is without any regular circumscription. The edges of the ulcer are commonly flat and smooth, both on their outside, and their inner edge, which seldom puts on a callous appearance. The ulcers, however, do not generally spread much or become deeper; but at the same time their edges do not advance nor put on any appearance of forming a cicatrix.

"In this condition the ulcers often continue for a long time, while new tumours, with ulcers succeeding them in the manner above described, make their appearance in different parts of the body. Of the first ulcers, however, some heal up, while other tumours and ulcers appear in their vicinity or in other parts of the body; and in this manner the disease proceeds, some of the ulcers healing up, at least to a certain degree, in the course of summer, and breaking out again in the succeeding spring; or it continues, by new tumours and ulcers succeeding them, in the spring season, making their appearance successively for several years.

"In this way the disease goes on for several years; but very commonly in four or five years it is spontaneously cured, the former ulcers being healed up, and no new tumours appearing; and thus, at length, the disease ceases entirely, leaving only some indelible eschars, pale and smooth, but in some parts shriveled; or where it had occupied the joints, leaving the motion of these impaired or entirely destroyed.

"Such is the most favourable course of this disease, and with us it is more frequently such than otherwise—but is often a more violent and sometimes a fatal malady. In these cases, more parts of the body are at the same time affected, the ulcers also seeming to be

imbued with a peculiar sharp acrimony, and therefore becoming more deep, eroding, spreading, as well as seldomer healing up. In such cases, the eyes are often particularly affected. The edges of the eyelids are affected with tumour and superficial ulcerations; and these commonly excite obstinate inflammation in the adnata, which frequently produces an opacity in the cornea.

"When the scrofula especially affects the joints, it sometimes produces there considerable tumours; in the abscesses following which, the ligaments and cartilages are eroded and the adjoining bones are affected with a caries of a peculiar kind. In those cases, also, of more violent scrofula, while every year produces a number of new tumours and ulcers, their acrimony seems at length to taint the whole fluids of the body, occasioning various disorders and particularly a hectic fever with all its symptoms, which at length proves fatal, with sometimes the symptoms of a phthisis pulmonalis.

"The bodies of persons who have died of this disease, show many of the viscera in a very morbid state, and particularly most of the glands of the mesentery very much tumefied and frequently in an ulcerated state. Commonly, also, a great number of tubercles or cysts, containing matter of various kinds, appear in the lungs.

"Such (says Cullen, par. 1750,) is the history of the disease; and from thence it may appear that the nature of it is not easily to be ascertained."

Treatment of scrofula.—In describing the treatment of scrofula, I shall confine myself to that which is necessary in glandular affections and superficial ulcerations, as the diseases of the eye and the lungs have been already considered, and as those of the bones belong more to the province of surgery. Nevertheless the constitutional treatment that I shall recommend, is equally applicable to all forms in which the disease occurs. We are told by almost every author "to correct the bad habit of body," and improve the state of the constitution; but, as far as I am aware, we have never yet been told a proper method to bring about this desirable event, or, indeed, in what the bad habit of body consists. Mr. Lloyd appears to me to have arrived nearer the truth in this respect than any other writer, but how much of his information has been drawn from Mr. Abernethy it is not easy for me to say.

"From repeated observations, however, (says Mr. Lloyd,) I am convinced that there is always a disordered state of health antecedent to those changes in the structure of parts, which are called scrofulous diseases, whether they are the effect of an acquired or of an hereditary tendency; and, therefore, that our treatment must be always founded on the same principles: so, of course, it must be modified according to any particular circumstances which may attend particular causes."—(Page 26.) In other places of his work, he attributes this condition to more or less disorder of the digestive organs, which, he says, will always be found to have existed for some time previous to the appearance of the disease in any particular part. This will be distinctly observed in the following paragraph, (at page 33.)—"From the nature of the constitutional disorder that attends and precedes this disease, we might be induced to believe

that the disease entirely depended upon the disorder of the digestive organs, produced by various causes acting immediately on them, or mediately through the nervous system." Nevertheless, Mr. Lloyd has failed to show what the true nature of the disorder is, or its precise seat, or, I may add, a more successful mode of treatment than his predecessors.

Dr. Cullen states, in paragraph 1753, that "for the cure of scrofula, we have not yet learned any practice that is certainly or even generally successful. The remedy which seems to be the most successful, and which our practitioners specially trust to and employ, is the use of mineral waters; and, indeed, *the washing out, by means of these, the lymphatic system*, would seem to be a measure promising success."

A great number of specifics have been recommended for the cure of scrofula, the chief of which are bark, mercury, steel, mineral waters, barytes, lime-water and muriate of lime; but experience has shown that they are not worthy of much confidence, and some of them are represented to have been injurious. I was once very much amazed on hearing the answer given by a physician in my presence to a lady, who was desirous of knowing how long her little girl was to be compelled to take the solution of the muriate of lime. She stated that it was a very nauseous medicine, and that it had done the child no good, although she had taken it regularly for six months. The physician replied that it would probably require three or four years before it would produce any beneficial effects, and that it must be regularly taken. Whether the physician spoke believing what he said to be true, I cannot pretend to say, but he looked grave enough.

Judging from the condition of the tongue, from the appetite, the increased thirst, the tumefaction of the abdomen, the degree of flatulency, the occasional pain in the belly, the irregularity of the bowels and the appearance of the feculent matter, I persuaded myself, many years ago, that scrofulous affections were produced by disease in the digestive organs, and that that disease, whatever else it might be owing to, consisted principally in extensive irritation and inflammation of the mucous membrane. But I had little notion that frequently there were extensive ulcerations, till I was repeatedly convinced by dissection that it was the case—since which time I have treated the disease in the following manner, and with much success.

If, along with considerable gastro-intestinal irritation, there be much fever at night, the strength being as yet unbroken, leeches ought to be applied to the abdomen, in such number as the symptoms, strength and state of the constitution require; the bowels should be kept gently open, but drastic purgatives are on no account to be exhibited. Contra-irritation should be produced on the abdomen by means of stimulating embrocations, or by what is still better, tartar-emetic ointment; and if an opiate be required to allay the irritation of the bowels, perhaps the best remedy will be a few grains of Dover's powder. It is, probably, in such circumstances that lime-water has been found beneficial, as it is a remedy of considerable power in this particular state of the mucous membrane.

The diet must be rigidly attended to, and varied according to circumstances. When the tongue is loaded and red round the edges, or universally red, the patient should be restricted to gruel, arrow-root, whey and the like, as the digestive powers will not be able to assimilate any other kind of food. Soups and animal jellies, which are so often had recourse to, prove very injurious, and aggravate the evils which it is our object to prevent. But when the marks of irritation in the stomach and bowels subside, when the tongue becomes clean, and the stomach more vigorous, a small quantity of chicken, or any other kind of meat, should be allowed, care being always taken that the patient shall take no more than the stomach can easily manage. If he do, the mischief will be soon announced by acidity, heartburn, troublesome distension of the stomach and a feverish night. For some days after such an occurrence, the articles of diet mentioned above should be used.

Calomel or blue pill is to be administered only when the tongue is furred, although there can be no objection either to an occasional grain or two of calomel or of blue pill, to act as a gentle laxative.

The great error of the system pursued by Mr. Abernethy and his disciples, arises from their giving the blue pill indiscriminately, owing, perhaps, to their not being aware that the mucous membrane is the seat of the irritation, and that inflammation and ulceration sometimes take place.

The warm bath is to be used every second night, and on the alternate days the body may be sponged with warm water and vinegar, which last is the best remedy when the patient is either very weak or when the health and strength are becoming restored. By and by, sponging with cold water, the shower-bath, or sea-bathing may be substituted.

Air and exercise are indispensable parts of the treatment, but the patient should not be exposed to a raw, cold, damp atmosphere, at least till recovery is far advanced, and not even then, unless the body be sufficiently protected by warm clothing. Flannel should be worn next the skin, and during the winter and spring months a leather jacket and drawers should be used in addition to, but outside of, the flannel.

There can be no reasonable objection against the occasional employment of mineral acids and tonics, provided they be not persisted in too long, or exclusively trusted to as specifics, or used at times when leeching and contra-irritation are actually necessary.

I cannot avoid doing Mr. Lloyd the justice of transferring the following judicious passage from his work to these pages:—"When there is what is called a weak stomach, with loss of appetite, I have often seen the different tonics, as cinchona, steel and the mineral acids, of the greatest service; but I am sure, as I have said before, that they possess no specific power over scrofula. Moreover, I feel certain that a great deal of mischief is often produced by the exhibition of these medicines in conjunction with a stimulating diet, and that diseases which might otherwise be speedily relieved, are, by these means, rendered fatal to the patients. Too often have I seen medical men, when consulted about children with swelling of the

glands of the neck, or other scrofulous affection, at once declaring them in a delicate state of health, prescribe a generous diet, as full meals of meat, with porter and wine, with the use of bark, steel, or some other strengthening medicines as they are called, merely because the disease was scrofula. Too often have I seen this plan pursued in cases where, on more accurate examination, I have found the patient requiring a plan of treatment directly the reverse."—(Page 41.) And in another place, alluding to the same treatment, he says, "It is true, however, that when children are first put on this treatment, they appear to the common observer immediately to improve in health. A species of fever is produced, the cheeks become fuller and flushed, and the exhilarating powers of the stimuli heighten the spirits of the child, so that the delighted mother feels greater confidence in her doctor, and expects soon to see her child perfectly recovered. But too soon, however, these favourable appearances are generally proved to be fallacious by the discovery of some fresh swelling, or by the child evidently becoming weaker and more irri table. It is equally true, too, that when children are put on a different plan of treatment, they often, for the first ten days or a fortnight, become paler and perhaps weaker; but after this period, if there be no important visceral disease, it will always be found that, the irritation of the disease subsiding, they gradually recover strength and flesh, though, perhaps, taking only half the food which they were accustomed to before."—(Page 42.)

These passages merit the greatest attention from those practitioners who still follow the line of treatment which Mr. Lloyd condemns; and for further particulars, I beg to refer the reader to the chapter on Tabes Mesenterica, in the first volume of this work.

It is now necessary that I should notice a remedy which has been found of great service in reducing enlarged glands, provided their structure be not destroyed by diseased action. This remedy is iodine and its various preparations, the effects of which are very wonderful in bronchocele, although its administration in scrofulous affections of the glands has not been attended with the universal success which was at one time anticipated. Nevertheless, it is a preparation which is in many instances highly serviceable, but which requires judgment and discrimination. Iodine is of no service if there be much gastro-intestinal irritation, or a loaded tongue, or if the gland be in a state of inflammation. Hence it is that it has been found so beneficial in chronic indolent swellings, as in bronchocele, and that its operation has been observed in many cases to be more rapid when its use is conjoined with local bleeding. Preparations of iodine are to be used in the manner already described when treating of diseases of the uterus.

Local treatment of the scrofulous affections of the glands.—It is to be apprehended that serious injury has been inflicted on individuals by the absurd plan of trying to "put back" glandular tumours by cold applications of various kinds. When the tumours are small and not painful, little need be done except covering the part with flannel, or rubbing them with an ointment containing iodine. But should there be any inflammation, warm fomentations,

or poultices ought to be applied, and an opening made as soon as fluctuation is discovered. Dr. James Hamilton, jun., the professor of midwifery in this university, has great merit for being among the first who insisted upon the advantage of making an early opening; and he used to take particular pains to show that so far from leaving a mark, an early puncture was the best means for preventing such a disagreeable circumstance. By making the incision, we shall prevent the formation of those small apertures which so frequently run into extensive ulcerations; and we always find that the longer the part is inflamed, and the more distended it becomes, the subsequent ulcerations are more extensive, indolent and difficult to heal. When the gland is deep seated, there is a greater necessity for letting out the matter. But should the glandular swelling be very much inflamed and tender from the first, or become so at any time before matter is formed, leeches are to be applied to moderate the violence of the inflammation, and prevent the abscess from becoming so large as it would undoubtedly do if left to run its course.

In the event of our not being called till ulceration has taken place, besides attending to the constitutional treatment already so fully described, we must have recourse to the application of various remedies. Some cases of indolent ulcer assume a healing tendency under the application of the black wash, or a solution of the acetates of lead or zinc, but it should be applied warm, and not persisted in for more than two or three days. In other cases, whether the sores are either indolent or irritable, lunar caustic will be found to have the best effects; and the reason why it has failed so often is, that proper constitutional remedies have not been employed at the same time. In some cases, immediate benefit will be derived from the application of an ointment of the acetate of copper, in the proportion of two, four or six grains of the acetate to a drachm of simple cerate. From experience, I can speak highly of the effects of pressure. In a case of deep and extensive scrofulous ulceration of the mamma, of above fourteen years standing, the part assumed a healing tendency in a few days after the application of a graduated pressure, and was completely cicatrized in rather less than six weeks; and I could mention many other successful cases.

CHAPTER IV.

DROPSY.

GENERAL REMARKS.

An unusual collection of serous or watery fluid in any part of the body, is called a dropsy; and is observed to take place in the cellular tissue and in serous cavities. Hence we find it in the general cellular membrane, which is extended over the surface of the body—in the lungs, where the air-cells and blood-vessels are enveloped by a loose cellular tissue—within the membranes of the brain—in the pericardium—and in the cavities of the pleura and peritoneum. Dropsy has therefore received distinct appellations, according to the locality of the effusion; and, in noticing these circumstances, Dr. Cullen observes, (par. 1645,) that "although the particular instances of such collection are to be distinguished from each other according to the parts they occupy, as well as by other circumstances attending them, yet all of them seem to depend upon some general causes, very much in common to the whole. Before proceeding, therefore, to consider the several species, it may be proper to endeavour to assign the general cause of dropsy." I shall pursue the same course as Dr. Cullen, who, although he seems to have directed considerable attention towards the acquirement of an intimate knowledge of the morbid alterations found in different organs in dropsy, yet was too anxious to insist upon a loss of tone in the absorbent extremities of the lymphatics and laxity of the exhalent vessels as causes, to allow sufficient influence to internal organic disease, or to a general plethora or inflammatory diathesis.

"In persons in health (says Dr. Cullen), a serous or watery fluid seems to be constantly poured out or exhaled in vapour, into every cavity and interstice of the human body capable of receiving it; and the same fluid, without remaining long or being accumulated in these spaces, seems constantly to be soon again absorbed from thence by vessels adapted to the purpose. From this view of the animal economy, it will be obvious, that if the quantity poured out into any space happens to be greater than the absorbents can at the same time take up, an unusual accumulation of serous fluid will be made in such parts; or though the quantity poured out be not more than usual, yet if the absorption be any ways interrupted or diminished, from this cause, also, an unusual collection of fluid may be occasioned.

"Thus, in general, dropsy may be imputed to an increased effusion or to a diminished absorption." (Par. 1645.)

He considered that increased effusion may happen either from a preternatural increase of the ordinary exhalation, or from the rupture of vessels carrying, or of sacs containing, serous or watery fluids. The ordinary exhalation may be increased from an interruption which resists the free passage of the blood from the arteries into the veins, which interruption increases the force of the arterial fluids in the exhalents from which the effusion takes place. This interruption may be owing to the following circumstances; disease of the heart, particularly certain conditions "in the right ventricle of the heart itself," which prevents it from receiving the usual quantity of blood from the veins to obstructions in the vessels of the lungs, preventing the entire evacuation of the right ventricle, and thereby hindering its receiving the usual quantity of blood; "thus, (says he,) a polypus in the right ventricle of the heart, and the ossification of its valves, as well as all considerable and permanent obstructions in the lungs, may be considered as causes of dropsy." (Par. 1649.)

The only additions which can be made to these last observations are, that it is now well known every kind of organic disease of the heart and of its valves may give rise to dropsical effusion, if the patient be not cut off early in the complaint; and there can be no doubt, also, that all considerable and permanent obstructions to the circulation in the lungs will occasionally give rise to dropsy; but, in a practical point of view, it is important to know that chronic bronchitis is the diseased condition of those organs on which it most frequently depends. But in either of these cases, there is something more to account for the dropsical effusion, than the mere obstruction to the circulation—the functions of the lungs are embarrassed, and the blood itself does not undergo those changes which are necessary to constitute health.

Dr. Cullen supposed that "it may serve as an illustration of the operation of these general causes, to remark, that the return of the venous blood is in some measure resisted when the posture of the body is such as gives occasion to the gravity of the blood to oppose the motion of it in the veins, which takes effect when the force of the circulation is weak; and from whence it is that an upright posture of the body produces or increases serous swellings in the lower extremities." (Par. 1650.) It appears more probable, however, that the collection of serum in the lower extremities is rather to be attributed to the fluid gravitating from superior parts to those most depending, than to an increased effusion from the vessels arising from the posture of the body, and the weakness of the circulation.

"Not only (continues Dr. Cullen) those causes interrupting the motion of the venous blood more generally, but further, the interruption of it in particular veins, may likewise have the effect of increasing exhalation and producing dropsy. The most remarkable instance of this is, when considerable obstructions of the liver prevent the blood from flowing freely into it from the vena portarum and its

numerous branches, and hence these obstructions are a frequent cause of dropsy." (Par. 1651.)

"Scirrhosities of the spleen and other viscera, as well as the scirrhosity of the liver, have been considered as causes of dropsy; but the manner in which they can produce the disease, I do not perceive, except it may be when they happen to be near some considerable vein, by the compression of which they may occasion some degree of ascites; or, by compressing the vena cava, may produce an anasarca of the lower extremities."

Dr. Cullen also thought that, even in smaller vessels, the interruption to the motion of the blood, in particular veins, has a similar effect: "Thus a polypus formed in the cavity of a vein, or tumours formed in its coats, preventing the free passage of the blood through it, have had the effect of producing drospsy in the parts towards the extremity of such veins." (Par. 1653.)

"But the cause most frequently interrupting the motion of blood through the veins, is the compression of tumours existing near to them; such as aneurisms in the arteries, abscesses and scirrhous or steatomatous tumours in the adjoining parts. To this head may be referred the compression of the desending (*ascending*) cava by the bulk of the uterus in pregnant women, and the compression of the same by the bulk of water in the ascites; both of which compressions frequently produce serous swellings in the lower extremities." (Par. 1654.)

The statements contained in the above paragraphs appear to me to be far too mechanical. When an obstruction takes place in the liver, it proceeds either from abscess, tubercular formation or scirrhous degeneration; consequently, the functions of the organ must be embarrassed to a greater or less extent; the mesenteric blood which passes through it cannot undergo the necessary changes, and must therefore operate prejudicially on the system at large. Besides, if dropsy were owing to the mere mechanical obstruction, preventing the blood from flowing freely through the vena portarum, ascites only should be the consequence, and not general dropsy. With respect to Dr. Cullen's observations concerning the compression produced by the gravid uterus, and that occasioned by the bulk of water in ascites, as being the frequent causes of œdema in the lower extremities, it may be further remarked that, in many cases, the embarrassed functions of the kidneys will be found to be the cause of the effusion; and that, by increasing the flow of urine in the former, the swelling in the extremities will permanently disappear, although the uterus goes on for months increasing in bulk as well as in weight. In some of the most exquisite examples of dropsical effusion, confined to the cavity of the abdomen, which have fallen under my observation, no œdema of the lower extremities took place. I have often made a similar remark, in cases of enlarged ovaria and other uterine tumours, in many of which the pressure must have been more considerable than either during gravidity or ascites.

Dr. Cullen seems to have forgotten that, in the case of mere obstruction in any one particular vein, unless it be the trunk leading from an extremity, the blood which ought to pass through it will find

its way by some other route. The crural and iliac veins have been found not only obstructed, but diseased, in cases of *phlegmasia dolens*, in which, instead of œdema of the limb, a general inflammatory affection is produced in it; and although the nature of the disease has not yet been fully investigated, all the phenomena in the limb are different from those accompanying œdema.

"It may be supposed (says Dr. Cullen, par. 1655), that a general preternatural plethora of the venous system may have the effect of increasing exhalation; and that this plethora may happen from the suppression of fluxes or evacuations of blood, which had for some time taken place in the body, such as the menstrual and hæmorrhoidal fluxes. A dropsy, however, from such a cause, has been at least a rare occurrence, and when it seems to have happened, I should suppose it owing to the same causes as the suppression itself, rather than to the plethora produced by it.

"One of the most frequent causes of an increased exhalation, I apprehend to be the laxity of the exhalent vessels. That such a cause may operate, appears probable from this, that paralytic limbs, in which such a laxity is to be suspected, are frequently affected with serous, or, as they are called, œdematous swellings.

"But a much more remarkable and frequent example of its operation occurs in the case of a general debility of the system, which is so often attended with dropsy. That a general debility does induce dropsy, appears sufficiently from its being so commonly the consequence of powerfully debilitating causes, such as fevers, either of the continued or intermittent kind, which have lasted long; long-continued, and somewhat excessive evacuations of any kind; and, in short, almost all diseases that have been of long continuance and have at the same time induced the other symptoms of a general debility.

"Among other causes inducing a general debility of the system and thereby dropsy, there is one to be mentioned as frequently occurring, and that is, intemperance in the use of intoxicating liquors, from whence it is that drunkards of all kinds, and especially dram-drinkers, are affected with this disease.

"That a general debility may produce a laxity of the exhalents will be readily allowed: and that by this especially it occasions dropsy, I judge from hence, that while most of the causes already mentioned are suited to produce dropsies of particular parts only, the state of general debility gives rise to an increased exhalation into every cavity and interstice of the body, and therefore brings on a general disease."

It appears to me that the illustrations which Dr. Cullen has used in proof of the laxity of the exhalent vessels, which he considers the chief circumstance in the pathology of dropsy, and therefore terms the *hydropic diathesis*, are most unfortunate. If they were correct, we should invariably see paralytic limbs œdematous, which is far from being the case. With respect to fevers, whether continued or intermittent, which have lasted long, we may certainly expect occasionally to see dropsical affections, not so much from debility, however, as from changes in the structure of internal organs: and, lastly, as to intemperance, and especially dram-drinking, these habits no

doubt produce general debility, and likewise dropsy, in consequence of the diseased conditions of the stomach, liver or kidneys, which they occasion.

Dr. Cullen also considers that dropsy may be produced by a preternatural abundance of serum in the blood-vessels, which may be sometimes owing to drinking a large quantity of very cold water, or to absorption from a moist atmosphere, or to a fault in the digestive and assimilating powers in the stomach and other organs. Besides these, he mentions other causes which are more likely to produce inflammation than dropsy—as the rupture of the thoracic duct, and a consequent effusion of chyle and lymph into the thorax; and a rupture or erosion of the kidneys, ureters and bladder of urine—"whereby the urine has been poured into the cavity of the abdomen, and produced an ascites." (Par. 1661.)

From these theories I turn with pleasure to the pathological work of Dr. Blackall, and the still more useful and splendid production of Dr. Richard Bright, of London.

Dr. Blackall seems to have been the first author who drew the attention of the profession in a particular manner to the coagulable state of the urine, and to the prevalence of an inflammatory diathesis in some kinds of dropsy. He proved by dissection that the pleura, the peritoneum and pericardium are often unequivocally inflamed, covered with false membrane, and adhering to adjacent parts;—that the liver and kidneys are frequently enlarged and otherwise diseased;—that the lungs sometimes show marks of inflammation;—that the lymphatic vessels themselves are found unusually thickened and distended in dropsical bodies, so much so, that he alleges such subjects are much preferred for anatomical preparations;—and, lastly, that the cellular membrane, in dropsical parts, frequently presents an unusual resistance to the knife, and that the cells contain an effusion somewhat transparent and coagulated.

Dr. Blackall thinks that the inflammatory nature of dropsy is so far made out by the following facts:

"1. The serum of the affected cavities has been often found opaque in various degrees, discoloured and containing pieces of lymph; and in one instance, even the fluid of the cellular membrane coagulated spontaneously.

"2. In addition to these appearances of the dropsical fluid, which argue a secretion often different from that of mere relaxation, the membranes likewise are sometimes greatly inflamed and disfigured.

"3. Many of the remedies are antiphlogistic; and there is a certain stage in almost every case of the disease, in which tonics do material injury.

"4. The frequent buffiness of the blood, and that, too, sometimes of a peculiar kind, is not to be overlooked in this investigation; and it is worthy of much notice, that whilst the blood and the secreted serum are accused of being too watery, the urine, which commonly contains little or no albumen, is loaded with it in a great and unnatural proportion. This phenomenon could hardly be expected as the result of too thin a condition of the fluids, and a deficiency of coagulable matter; on the contrary, it is a very strong proof, if not

of its excess, at least of some newly-acquired properties with regard to separation, and of an altered texture. I add, as a fact on which we cannot too often reflect, that where the urine is most loaded, coagulates by the lowest heat, and most firmly, the blood is likewise most buffy, and the whole system bears the greatest marks of inflammation."

That part of Dr. Bright's work relating to dropsy, is divided into three parts. In the first, he gives twenty-four cases of dropsy illustrative of the coagulability of the urine,* with a number of very interesting dissections in which a peculiar diseased condition of the kidneys was discovered. In the second, eleven cases illustrative of the disease of the liver connected with dropsical effusion are noticed. And in the third, four cases illustrative of some of the appearances observable where the disease is connected with the viscera of the thorax.

In the first part, Dr. Bright, besides mentioning the great and tangible causes of dropsy—as diseases of the heart, lungs and liver; the pressure of tumours; the obliteration of veins; and certain inflammatory appearances of the pleura and peritoneum—makes the following observations respecting the alteration of structure in the kidneys, and its connection with albuminous urine: "There are other appearances to which I think too little attention has hitherto been paid. They are those evidences of organic change which occasionally present themselves in the structure of the kidney; and which, whether they are to be considered as the cause of the dropsical effusion, or as the consequence of other disease, cannot be unimportant. Where those conditions of the kidney to which I allude have occurred, I have often found the dropsy connected with the secretion of albuminous urine, more or less coagulable on the application of heat. I have, in general, found that the liver has not, in these cases, betrayed any considerable marks of disease, either during life or on the examination after death, though occasionally incipient disorganization of a peculiar kind has been traced in that organ. On the other hand I have found that, when the dropsy has depended on organic change in the liver, even in the most aggravated state of such change, no diseased structure has generally been discovered in the kidneys, and the urine has not coagulated by heat. I have never yet examined the body of a patient dying with dropsy, attended with coagulable urine, in whom some obvious derangement was not discovered in the kidneys. Whether the morbid structure by which my attention was first directed to this subject, is to be considered as having, in its incipient state, given rise to an alteration in the secreting power, or whether the organic change be the consequence of a long-continued morbid action, may admit of doubt; the more probable solution appears to be, that the altered action of the kidney is the result of the various hurtful causes influencing it through the medium of the stomach and the skin, thus deranging the healthy balance of the circulation, or producing a decidedly inflammatory state of the kidney itself, that when this continues long, the structure of the kidney becomes per-

[* See Albuminuria, p. 721.]

manently changed, either in accordance with, and in furtherance of, that morbid action, or by a deposit which is the consequence of the morbid action, but has no share in that arrangement of the vessels on which the morbid action depends.

"The observations which I made respecting the condition of the urine in dropsy, are, in a great degree, in accordance with what has been laid down by Dr. Blackall in his most valuable treatise.

"Where anasarca has come on from exposure to cold, or from some accidental excess, I have, in general, found the urine to be coagulable by heat. The coagulation is in different degrees; it likewise differs somewhat in its character; most commonly when the urine has been exposed to the heat of a candle in a spoon, before it rises quite to the boiling point, it becomes clouded, sometimes simply opalescent, at other times almost milky, beginning at the edges of the spoon, and quickly meeting in the middle. In a short time the coagulating particles break up into a flocculent or a curdled form, and the quantity of this flocculent matter varies from a quantity scarcely perceptible floating in the fluid, to so much as converts the whole into the appearance of curdled milk. Sometimes it rises to the surface in the form of a fine scum, which still remains after the boiled fluid has completely cooled. There is another form of coagulable urine which, in my experience, has been much more rare; when the urine on being exposed to heat, assumes a gelatinous appearance, as if a certain quantity of isinglass had been dissolved in water. I have, indeed, met with this in one or two cases only.

"During some part of the progress of these cases of anasarca, I have, in almost all instances, found a great tendency to throw off the red particles of the blood by the kidneys, betrayed by various degrees of hæmaturia from the simple, dingy colour of the urine, which is easily recognized; or the slight, brown deposit, to the completely bloody urine, when the whole appears to be little but blood, and when not unfrequently a thick, ropy deposit is found at the bottom of the vessel."

And again he states: "In all the cases in which I have obtained the albuminous urine, it has appeared to me that the kidney has itself acted a more important part, both functionally and organically, than has generally been imagined."

Case I.—*In the first case*, published by Dr. Bright, of anasarca with coagulable urine, there were marks of pericarditis; the heart was large and firm; a triangular and solid deposit of bone was found in the angle between two of the aortic valves; the left lung adhered, and was in every part converted into a gray hepatized structure, very few portions admitting partially the entrance of air; the right lung was œdematous, and surrounded but not compressed by effusion of serum; there were some marks of former inflammation on the peritoneal coat of the liver; the spleen was dark-coloured, with a slight adventitious covering like that on the liver. The KIDNEYS were completely granulated throughout; externally the surface was rough and uneven; internally all traces of the natural organization nearly gone, except in the tubular parts, which were of a lighter and more

pink colour than usual. The granulated condition of the kidney was in an advanced stage of the disease.

Case II.—On dissection the KIDNEYS were both found of unusual size, certainly half as large again as most commonly seen, but the right was the largest. On an external view they were obviously granulated, with a large proportion of yellow granular matter; on taking off the proper tunic, this was more distinctly seen; and on cutting in, the whole of the cortical structure seemed to be converted into a yellow substance in appearance like fat in many parts; though in other parts the change had not gone so far. In this case the urine was coagulable.

Case III.—In this case, which was connected also with some degree of coagulability of the urine, the KIDNEYS were found in the following condition. Externally, somewhat misshapen from the tubercular character of their structure; the form did not depend upon any disease analogous to true tubercles, but upon a general change in the substance of the kidney, some parts projecting, of a white colour upon a pinkish ground, the small star-like vessels running over them. The size was but little altered; the proper tunic adhered very closely. Internally, the whole cortical structure was of a pretty uniform yellowish colour, with many small, opaque, and indistinct yellow spots.

Case IV.—The urine coagulated by heat was of a brown colour, apparently from a mixture of the red particles of the blood; and the KIDNEYS afforded, on dissection, throughout the whole cortical structure, a curious specimen of disease, apparently the commencement of granulation; they were rather large and soft; their general colour was pale, and on taking off the tunic, the whole surface was seen speckled with minute yellowish bodies; on making a longitudinal section, the same bodies were seen pervading the whole cortical substance, assuming, near the surface, somewhat of the striated arrangement observed in the structure of the kidney at that part, and irregularly disseminated through the other parts.

Case V.—The urine coagulated strongly by heat; and the KIDNEYS were found large, very dark on their upper surface; on the lower mottled with yellow; no elevated granulation to be seen externally, but many small yellow specks. Internally, the substance was remarkably pale, and had assumed the appearance of a fatty substance, with some traces of a granulated structure throughout: this, however, depended in part on a flaky opaque matter thickly disseminated; and this same appearance became very obvious over the whole external surface after the kidney had been kept in pure water for a day or two.

Case VI.—The KIDNEYS afforded very fine specimens of the confirmed granulated change. They were rather large and bulky; the granulation was seen externally over every part of the surface, even

before the tunic was removed. The granular bodies were small, of a yellow colour, and the surrounding substance more pink. On cutting longitudinally through the kidney, it was seen that the whole cortical substance was composed of the same altered structure, and the striated arrangement near the surface was almost lost. Dr. Bright gives no account of the state of the urine, as he did not see the patient.

Case VII.—The urine was scanty, and coagulated very considerably on the application of heat, becoming first milky and then loaded with a great number of flakes; and on dissection the KIDNEYS were found small, rather lobulated, of a semi-cartilaginous hardness, completely granulated; the small whitish or yellow granules projecting with red, intervening spaces, so as to form a scabrous surface, both appearing and feeling rough. On making a longitudinal section, the kidney cut with the resistance of a scirrhous gland; the tubular part was drawn much nearer to the surface than is natural; the cortical part indistinctly granulated throughout, of a grayish drab mixed with purple.

Case VIII.—The urine was of a deep yellow colour, clear, and coagulated in a very marked manner by heat, assuming a white curdled form; and on dissection the KIDNEYS were observed to be very small and hard in consistence, feeling most cartilaginous; their prevailing colour was purplish; on their external surface they were distinctly granulated in texture; and on making a longitudinal section, the same was perceptible throughout; it was remarkable that the cortical portion was exceedingly thin, so that the distance between the termination of the tubular part and the external surface was much less than in the healthy organ.

Case IX.—The urine was scanty, and when first passed, was clear, but of a dingy brown colour; it became turbid on cooling, grew clear on the application of a gentle heat, and by raising the temperature nearly to the boiling point, it coagulated in a very marked degree, so that it put on the appearance of thick treacle-posset. On examination of the body after death, the KIDNEYS presented most decidedly the granulated structure; this was somewhat marked externally, the lighter points of the granulation being smaller than Dr. B. has often observed; and, on cutting into the substance, it was seen that the natural structure was destroyed throughout the whole cortical part, which was mottled as in the two last cases; but this morbid structure appeared in its most advanced stage around the tubular parts.

Case X.—At first the urine was scanty, and coagulated decidedly, though not to the extent usually observed, and in the progress of the disease it always continued very scanty. Sometimes it was tolerably clear, but became turbid on cooling; at other times it bore the dingy colour which usually denotes the presence of blood; almost always it retained its coagulability, but in general this was limited to a dense

deposit of brownish flakes, the whole fluid not becoming milky or curdled. On dissection, the KIDNEYS were contracted and hard, and on removing their tunic, the surface was scabrous; but the projecting roughness was of a pretty uniform gray, purplish colour, and the same was observable on making a section.

Case XI.—The KIDNEYS were most decidedly diseased. They did not feel so firm as natural, were almost white in external appearance, rather large and lobulated, without any signs of granulation, and only showing a few star-like vessels distributed on the surface; otherwise of nearly one even surface, and on most minute inspection no mark of structure, as usually seen on the surface of the healthy kidney, was discoverable. On making a complete longitudinal section, the same gray-white colour pervaded all the cortical part, with little sign of natural structure; the faint appearance which did exist preserved those marks of lines proceeding towards the surface, which are often more evident in the healthy kidney. The tubular part was also faintly coloured. In this case Dr. Bright could not ascertain the state of urine.

Case XII.—The urine was scanty and of a slightly dingy colour, coagulating decidedly by heat; and on dissection, the KIDNEYS were found disorganized throughout, smooth in their external texture, rather lobulated, of a pale yellow colour, with a few superficial vessels; and on being examined internally, the same gray yellow colour pervaded the whole cortical part, with some more opaque yellow spots irregularly intermixed. The tubular structure pale and indistinct; in a word, approaching more to the condition of the kidneys mentioned in the last case than any others.

Case XIII.—The urine coagulated, was turbid, and became dingy as from a slight admixture of blood. On dissection, the KIDNEYS very pale and rather soft, discovered externally nothing but the natural structure, rather more marked than usual, but internally was plainly to be traced a motley granulation, very small and faint in its colour and markings.

Case XIV.—The urine coagulated by heat more or less during the course of the disease, had a dark brown tinge, being a mixture of the red particles, and at length became quiet red, depositing a quantity of ropy mucus. On dissection, the KIDNEYS presented a very curious appearance. They were easily slipped out of their investing membrane, were large and less firm than they often are, of the darkest chocolate colour, interspersed with a few white points, and a great number nearly black; and this, with a little tinge of red in parts, gave the appearance of a polished fine-grained porphyry or green stone. On cutting longitudinally into the kidney, this structure and these colours were found to pervade the whole cortical part; but the natural striated appearance was not lost; and the external part of each mass of tubuli was particularly dark; the whole mammillary processes were also of a dark colour. On being cut through

and left for some time, a very considerable quantity of blood oozed from the kidney, showing a most unusual accumulation in the organ; and, indeed, it seemed to be from this cause that the peculiar appearance and colour arose, the very dark spots being the effect of blood either extravasated, or in vessels greatly gorged.

The immediate cause of death in this individual seems to have been *œdema glottidis.*

Having now extracted from Dr. Bright's work the principal diseased appearances in the kidneys, I shall proceed to give short extracts from the second part, of some of the appearances of the liver and gall-bladder, connected with dropsical effusion.

"Although (says Dr. Bright), I am strongly impressed with the belief that many cases of dropsy have been supposed to depend on disease of the liver, when the kidneys have, in fact, been chiefly in fault; yet there is little doubt that, in many other cases, the liver is the real cause of the dropsical effusion, frequently showing most extensive disease when the kidneys are quite healthy.

"I have already remarked, when relating the cases of anasarca, connected with organic disease of the kidneys, that the liver has seldom been perfectly healthy, though the deviation from the natural structure has often been so slight, as to render it doubtful whether it should be noticed amongst the morbid appearances; and in describing this state, I have sometimes used the expression that the liver showed a tendency to granulation. The fact is, that the liver, in these cases, has usually preserved its natural figure; the acute margin has been perfect, and the general size has not been augmented; the peritoneum has been quite transparent, and attached only in the ordinary degree to the viscus; the texture of the liver has neither been unnaturally firm nor morbidly flaccid; but, on examining the surface, it has been evident that the colour was less uniform than in perfect health; the whole was marbled, consisting of very small light spots in a darker ground; but on making a section perpendicular to the surface, though the same general variety of colour has been observed, yet in some parts of the section it has been doubtful whether the darker or the lighter part should be considered as the groundwork; in general, however, by attentive observation, it will be found, that in the centre of the lighter spots small depressions or openings are visible, and that the darker parts appear to be the connecting medium of the lighter parts, which seem to be the acini of the glandular structure. Although, in most cases, these appearances scarcely attract attention, yet in other cases they become more obvious, either the white portions becoming larger in proportion, or the whole viscus appearing to have lost a little of its natural pliability, to have become hard, and to break down with a slightly granulated fracture. I have scarcely, in any instance, seen this derangement of the liver go farther, except in the case of STEWART, where most decided morbid change had taken place. The liver had assumed more of a lobulated form than in health, and the acute margin had become rounded. In all these cases, the secretion of bile is tolerably natural, the gall-bladder being well supplied with bile of a sufficiently dark yellow colour Besides this more common appearance of the liver in the class of

dropsies of which I have been treating, the liver has occasionally deviated a little in its consistence from its natural state, being either too firm or too flaccid; but where this has been the case, the deviation has only been such as is constantly occurring in cases where neither effusion nor any other marked symptom of disease has arisen during life. From the very prominent place which the disease of the kidney has appeared to hold in these cases, I have been inclined to consider the derangement of the liver as a secondary effect, or at least a subordinate disease, though not impossibly the state of both these organs depends on the same general constitutional affection; and I have sometimes even thought that the tendency to granulation, where it existed, maintained a certain relation in its progress to the disease of the kidney.

"There are, however, hepatic derangements, unaccompanied by obvious disease of other organs, which may probably with justice be considered as laying the foundation of dropsical effusions. And of these, I shall now detail a few examples, in which it will be seen that the morbid appearances presented by the liver are very various, arising, as it would seem, from morbid actions, essentially differing from each other."

Case XXV.—"Liver contracted, and throughout of a morbid structure, apparently by the deposition of minute portions of a yellow matter. The surface, covered by a very fine peritoneum, quite transparent, even more thin than usual, presenting a rough, granular, and therefore uneven surface, of what might be called liver-coloured red and yellowish gray. On being cut into, the same structure of a less red colour pervaded the whole. The liver was thicker and rounder than natural, and rather smaller; and on pressure broke down easily, with a brittle or crisp fracture, uneven and granular. The gall-bladder, opaque and thick, containing the usual quantity of bile. The common duct was pervious, but at its entry into the duodenum, was contracted in a nipple-like projection, with an orifice not much larger than to admit the point of a pin. On opening the gall-bladder and letting out the deep-coloured viscid bile with which it was filled, a number of small yellow bodies, larger than millet-seeds, and soft, adhered to the villous surface of the gall-bladder, chiefly on the side where it is attached to the liver." The urine, in this case, did not coagulate on the application of heat.

Case XXVI.—"The liver externally tuberculous, of a light yellow colour nearly approaching to that of a lemon, with deep fissures in the surface, apparently arising from partial contraction taking place in the substance of the organ, and partly depending on the contraction of the thin adventitious membrane which covered the peritoneum. The whole liver was enlarged about one-third above its natural size; it was greatly increased in firmness and specific gravity; it felt firm and hard; cut with considerably more resistance than boiled udder, to which it might be said to bear some general resemblance; and on examination, its whole structure was composed of bright yellow granules distributed in a transparent pinkish ground,

the two parts bearing about an equal proportion; and although on the surface the pinker part appeared the basis, yet in the section the yellow rather seemed to be so. The two parts did not separate, or in this respect resemble one body imbedded in another; nor was there any appearance of tubercular structure in the substance of the organ. The gall-bladder very much contracted, containing a small quantity of dirty-looking bile." Urine not coagulable by heat.

Case XXVII.—"The substance of the liver hardened throughout, the structure nearly resembling scirrhus, with bands of thickened cellular membrane like ligamentous matter pervading every part, and in some parts forming one-third of the whole structure; although when seen externally the liver appeared tuberculous and knotty, yet when examined internally there were no tubercles. The outside was smooth, though not even, and on pressure between the fingers, gave almost the resistance of cartilage. A piece of the substance taken without the peritoneal and adventitious membrane, was still so hard as not to be broken down by the same pressure; there were some adhesions, old but web-like, between the liver and diaphragm. The gall-bladder was contracted, and covered by the false membrane; it contained bright yellow bile, and the ducts were pervious." Urine not noticed.

Case XXVIII.—"The liver was drawn up under the diaphragm to which it was fixed by a firm old adhesion; it was stiff and rigid, and being covered with the adventitious membrane, bore no resemblance to a natural liver. It was contracted in size, and throughout every part extremely hard, so as to cut with difficulty, and almost with a cartilaginous resistance. It was of a speckled yellow green, with lighter bands running through it, but these bearing a small proportion to the whole. It was compared by some to a decomposing coarse-grained sand-stone, and would not break down under any ordinary pressure of the fingers. The gall-bladder of tolerable size, and moderately filled with viscid yellow bile, which, when seen in the mass, appeared of its full dark colour; indeed, I should say that it was by no means unhealthy bile. There were five gall-stones in the bladder the size of peas which appeared like inspissated bile." In this case, there was evidently chronic peritonitis, and the omentum was dense and hard. The kidneys were healthy in structure. The urine did not coagulate by heat.

Case XXIX.—"The liver was found to have undergone nearly the same change as that described in Case XXVII.—The kidneys were large, and in a very unhealthy condition, quite dissolved and watery in their texture, with light yellow stripes through the cortical substance. The urine was high-coloured, coagulating a little on the application of heat, so as to become, for a short time, turbid, and then let fly a flaky deposit, leaving the fluid clear."

Case XXX.—"The liver was drawn up almost entirely within the concavity of the diaphragm, to which it was attached by several

very firm cord-like organized adhesions. This organ, throughout its whole substance, was quite changed in structure, as if in progress of becoming uniformly tubercular; its whole structure changing into small round masses of the size of large peas, not much altered from its natural colour, but capable of being picked out, leaving imperfect cavities. The gall-bladder was very small, and at least twenty times its natural thickness, opaque yellow, but containing a small quantity of bile; the ducts pervious. There was, besides, considerable disease of the peritoneum and intestines, and the spleen was four times the natural size. The kidneys, though large, were not unhealthy." The state of the urine is not noticed.

Case XXXI.—"The liver was rather contracted in size, of a yellowish drab-colour externally, the whole granulated in appearance, so as nearly to resemble a coarse-grained sand-stone, of which the component granules projected slightly on the surface, and were generally about the size of small lupine seeds, varying a little in colour—gray, brownish and yellow. The liver was somewhat tough, and gave considerable resistance to the knife: the altered structure pervaded the whole, and the rounded bodies were formed into clusters, many of which were of a light yellow colour; and this was particularly remarkable near the acute margin. The gall-bladder was distended with watery bile. The kidneys had a few vesicles in the substance of the cortical portion; otherwise their structure and consistence were perfectly healthy; and on stripping off the tunic, they presented a smooth and yielding surface." The state of the urine is not noticed.

Two or three other cases are subjoined in Dr. Bright's work, but I shall pass them over. I hope the appearances already described, of alteration in the structure of the kidneys and liver, will be a guide to my readers in making similar investigations; and will induce them to peruse the work of Dr. Bright, from which they will derive much pathological and practical information.

My attention has long been attracted to diseases of the liver, peritoneum, heart and lungs, in connection with dropsy; and my portfolio contains many drawings in illustration of these appearances; but it is only within these few years, since Dr. Bright's work appeared, that it was directed to the morbid structure of the kidneys. Since the publication of the last edition of this work, several cases have fallen under my observation, in which the kidneys presented the exact appearances so beautifully delineated by Dr. Bright. Some of these cases were dropsical, others not. These disorganizations of the kidneys are, for the most part, however, connected with dropsical effusions, and are announced by scanty secretion of urine of low specific gravity, containing a large quantity of albumen and a diminished proportion of urea. At the same time, I must state the fact, that I have several times seen the urine coagulable by heat, the specific gravity low, (109°,) along with general dropsical diathesis, and yet the patients recovered perfectly; which could not have taken place had the kidneys been disorganized. I cannot but conclude, therefore, that the urine may be in this condition, and dropsical effu-

sions may take place from functional disorder of these organs, as well as from organic lesions.

The profession owes much to the labours of Dr. Bright, and it is deeply to be deplored that other hospital physicians, with similar advantages, have not made the same good use of their opportunities.

General remarks on the symptoms of dropsy.—In this place, it is my intention to give a slight sketch of the general symptoms which accompany dropsical complaints, reserving those which are peculiar to effusions in the thorax, abdomen, &c., until I come to treat of the particular forms of dropsy. The general symptoms are, a sallow complexion; dry skin; costive bowels; urine in small quantity and of a high colour, in some cases coagulable by heat, and of low specific gravity; *muscular* emaciation; general debility; febrile symptoms particularly towards night; want of appetite and indigestion, and sometimes nausea, vomiting and diarrhœa. In some cases there are cough, difficulty of breathing, particularly in the horizontal posture, and occasionally expectoration. Sometimes there are a sense of suffocation, violent palpitation and startings during sleep. The pulse is sometimes slow, at others quick, often irregular and intermitting; the tongue is sometimes furred and moist, at others parched and red and sometimes it is preternaturally clean and florid. Occasionally erysipelatous inflammation takes place, or the skin cracks, allowing a watery fluid to ooze out.

The duration of dropsy is very various, and depends almost entirely upon the nature of the disease, by which the effusion is caused.

General remarks on the treatment of dropsy.—Among the remedies employed in dropsy, the consideration of blood-letting is the most important; because it is indispensably necessary in some cases, while its employment is doubtful in others, and would be decidedly injurious in many. In the treatment of dropsy, many insurmountable obstacles are experienced in investigating and deciding what organ or organs are affected; besides which, sudden changes take place from the occurrence of inflammatory action in other parts, so that it requires no ordinary share of pathological and practical knowledge to act decisively, and yet cautiously. Dr. Cullen gives three general indications of cure:—

1. The removing of the remote causes of the disease.
2. The evacuation of the serous fluid already collected in the cellular texture.
3. The restoring of the tone of the system, the loss of which may be considered in many cases as the proximate cause of the disease.

The endeavour to fulfil these indications has, I apprehend, been the cause of much embarrassment to practitioners, and increased distress to patients. With respect to the first, practitioners will, in many instances, be found contending with mere shadows, and wasting much valuable time, because the disease may exist after the removal of its cause, or be even incurable, and the patient may yet be enabled to live a considerable number of years with tolerable comfort, following his business, provided the attention of the practitioner be directed to certain consequences, the occurrence of which is con-

stantly to be dreaded. According to Dr. Bright, "the two great sources of casual danger will be found in inflammatory affections, more particularly of the serous, sometimes of the mucous membranes, and in the effusion of blood or serum into the brain, and the consequent occurrence of apoplexy. Of the secondary or casual dangers, we have illustrative examples in many of the cases which have been stated above. Out of the seventeen dissections we have found ten or eleven betraying inflammation of the pleura, generally old, but sometimes of recent date. We have found three instances in which the patients had suffered decided attacks of inflammation in the pericardium shortly before death, and in two of these cases, we had proof of some previous affection of the same kind. In one only were the signs of inflammation in the peritoneum well marked. Five out of the seventeen had altogether escaped inflammatory affections of the serous membranes, and one of these died with inflammation of the epiglottis. With regard to the cerebral affections coming on in the progress of these diseases, we find, in the cases above related, both apoplexy and epilepsy to have occurred; and a very well-marked instance of the former was witnessed in a patient in the clinical ward in 1825."

The second indication, "evacuating the serous fluid," may be fulfilled in two ways. 1. By evacuating by means of a surgical operation, the effused fluid. 2. By exciting the action of the absorbents, and producing an increased discharge from some of the excretory organs. These are no doubt great objects, if they could be attained; but we must always recollect that the dropsy is a mere symptom or consequence of functional or organic disease in some other organ, and unless that be cured, much mischief may be done, not only by wasting precious time, but by exhibiting medicines which are sometimes manifestly injurious to the patient.

Against the third indication—"restoring the tone of the system, the loss of which may be considered in many cases as the proximate cause of the disease,"—I have to enter a strong protest, from the injurious consequences which I have seen result from attending to it in practice. It accords, however, with Dr. Cullen's notion, that the disease is owing to a general debility, producing a laxity or want of tone in the exhalents.

There is a time that we may stimulate and give tonics with advantage, when we have conquered the cause of the disease perhaps by debilitating remedies, and when the strength must be supported. It will be sufficient for me again to refer to the cases and dissections of Dr. Bright, to show the dangers which must often arise from following such treatment, except under the above restrictions. I have met with several medical men in extensive practice, whose invariable method of treating dropsy is by giving digitalis and large quantities of strong gin-toddy, containing an English pint, and sometimes even two of the spirit, in the course of twenty-four hours. I would implore these individuals to peruse with care the works of Drs. Blackall and Bright, who have given us additional guides in the treatment of dropsy, by showing the inflammatory diathesis which generally prevails, and by directing our attention to the coagulability

of the urine, as indicating an affection of the kidneys, which affection almost always terminates in inflammatory action, to the destruction of the organ.

It is believed by many, and it certainly appears probable, that bleeding and the antiphlogistic regimen, within certain limits, act upon the absorbent system, by creating greater activity. Blood-letting, therefore, as already observed, stands the foremost remedy; but in using it, we must be guided by the age, strength, habits and peculiarity of constitution of the individual—the duration of the dis ease—and also by the state of the pulse. Should the condition of the pulse and other circumstances contra-indicate venesection, local bleedings may be had recourse to, either by means of cupping-glasses or leeches, and are peculiarly serviceable when applied to the loins in cases of diseased liver and kidneys. The propriety of repeating the abstraction of blood may be discovered from the state of the blood itself, the strength of the pulse and the relief afforded. The rash conduct of some practitioners in taking away large quantities of blood in all cases, is to be deprecated, because, although it may be successful in some instances of dropsy, it will be found to be very injurious and even fatal in a majority; and it is greatly to be feared that the indiscriminate employment of general bleeding in this disease has too frequently led to the adoption of the opposite mode of practice already noticed.

I have seen several cases in which chronic bronchitis existed with dropsy, whether as cause or effect, I could not in some instances discover; but in all, great and permanent advantage was obtained from venesection.

Purgatives stand next in importance to blood-letting. In all cases it is necessary to keep the bowels open; and, in many, we are obliged to depend on the use of free purgation, when the constitution is not sufficiently strong to stand the effects of venesection; consequently, we find that powerful doses of jalap, gamboge, scammony and elaterium, have been highly recommended by different authors. I have heard many practitioners declare that they have *never failed* in curing dropsy by elaterium; but individuals who make such assertions, must either have been singularly fortunate in meeting with slight cases only, not produced or accompanied by organic disease, or they must have been short-sighted or forgetful. In using this class of remedies, practitioners should recollect that violent and long-continued purging is fully as debilitating as venesection, and in point of fact, I have seen several individuals die under the action of purgatives, to all appearance from syncope.

I had the satisfaction lately of curing a case of ascites of some standing. The disease came on after child-bed, and the abdomen was very much distended, when the woman was sent from a distance for my advice. After exploring the chest, and ascertaining that all the organs were sound, I had confident expectation of curing her without tapping. There was no fever or pain, neither was the urine coagulable. She was first put under the action of a combination of calomel, squills and digitalis, and kept under it for several weeks, without much amendment. Afterwards, powerful doses of

elaterium were employed, and with the happiest effects. The woman returned home perfectly cured; I have since heard of her, and she continues well.

In the case of Evans, who recovered, Dr. Bright gave first half-a-grain of the extract of elaterium every six hours, and afterwards one grain twice a day, and with considerable benefit; but he was subsequently bled, and took several doses of opium. Dr. Bright seems to prefer, however, the saline laxatives, which unite a certain degree of diuretic power, and, amongst these, he found the supertartrate of potash the most efficacious; indeed, it will be seen, on perusing the cases, that in several he trusted almost entirely to this remedy.

Diuretics have been long used in *all* cases of dropsical effusion, apparently with the simple intention of "pumping the water out of the system;" but I am convinced that the active and indiscriminate use of these, as well as of drastic purgatives, will become less general as our pathological information increases. It appears to me that little benefit will be derived in many cases from the use of diuretics, even should the effused fluid be absorbed, if the original disease, whether it be of the heart and large blood-vessels, the liver or the kidneys, remain; and, indeed, in several lingering instances, which I have treated by these means, so far successfully as to get rid of the dropsical effusions, the symptoms afterwards became more urgent, and the disease more active.

The principal diuretics employed are squills; foxglove; acetate of potash; supertartrate of potash; infusion of fresh brooms; cantharides; oil of turpentine; and balsam of copaiva. Of these, the squills and balsam of copaiva I believe to be the best; Dr. Bright prefers the former, which he finds to act best in combination with hyoscyamus, or when a grain of opium has been at the same time taken once or twice a day; indeed, he says that he considers these two substances to form an important part of the treatment, by diminishing the irritation of the kidneys, as well as by allaying the general disturbance.

The propriety of tapping is very questionable, unless we are convinced there is no incurable organic disease; but I shall return to the consideration of this point, when treating of hydrothorax and ascites.

Scarifications are frequently practised in anasarca, and occasionally with advantage; but I believe it will, in general, be only temporary; and, in many constitutions, inflammation, ulceration of a bad character, and even mortification, sometimes ensue.

Emetics were formerly in great repute in the treatment of dropsies, owing to the high encomiums passed upon them by the illustrious Sydenham, who says that antimonial emetics do not seem merely to evacuate the stomach, but open some passages from the cavity of the abdomen into the intestinal canal. Whatever may be the cause I cannot tell, but they seem now to be very much laid aside; there can be no doubt, however, that emetics, either of antimony or copper, do promote absorption in a wonderful manner, in induration of the testicle; and although these good effects have been much overrated by Sydenham, still, perhaps, they have been abandoned by practitioners of the present day without sufficient examination.

Mercury has been often used in dropsy; and there can be no doubt that it has been frequently serviceable. It would be a matter, however, of the first practical importance, if we could determine precisely the cases in which it may be expected to prove beneficial, in order to prevent the loss of much valuable time. We now, by means of auscultation and percussion, possess advantages which those who lived before us did not enjoy, and almost any ear will be able to detect disease of the heart or chronic bronchitis—very frequent causes of dropsy—in which the action of mercury will certainly not be so serviceable as if the liver were diseased. Dr. Bright has shown that dropsies frequently depend upon disease of the kidneys, in many cases of which mercury may prove decidedly injurious, unless preceded or accompanied by general or local bleeding. In many instances it will be found serviceable, after bleeding, to prescribe a combination of calomel, squills and digitalis, in the form of pill, to be repeated in proper doses three or four times a day. But Dr. Bright assures us, that the cases which have proved most successful in his own practice, have generally been those in which the use of mercury has been rigidly abstained from; and he further states, that in some cases he has seen the good effects of other remedies entirely interrupted by the mercurial action and he has likewise seen several instances in which the cure, when mercurials have formed part of the plan, has been protracted to a great length. (Page 73.)

Poultices made of the *male fern* applied to the abdomen, have been used in several cases of dropsy by Dr. Shortt, in the infirmary of Edinburgh, with a view of promoting an increased flow of urine, and, it is stated, with remarkably good effects. I have tried this remedy in two cases, but without success, although every care was taken to procure the plant fresh.

Blisters and contra-irritation, produced by other means, have been occasionally found of great service in dropsies, produced by whatever cause. They merely act by translating inflammatory action from an internal organ to the skin, and not, as was formerly imagined, even by Dr. Blackall, by evacuating the dropsical fluid.—I have often seen the best effects from their judicious employment, and they appear to be more particularly useful when applied to the loins after topical bleeding in cases of diseased kidney. Formerly, when used for the purpose of drawing off the dropsical fluid, they were applied to the extremities, and frequently caused sloughing ulcers.

Great difference of opinion exists as to the quantity of fluid which ought to be allowed to a patient labouring under dropsy; some allow as much drink as the patient feels inclined to take—others, none at all; but I believe that a medium plan is the best to follow. If the patient be thirsty, and is interdicted from taking a drink, additional suffering and many a sleepless night are the consequence; whereas, if he be encouraged to drink, he may subsequently experience great uneasiness from the over-distended state of the stomach. In practice, we often take advantage of the thirst to introduce a sufficient quantity of the supertartrate of potash into the system. I believe that some who interdict liquids, do so for no better reason than be-

cause it has been stated by authors that dropsical complaints have been produced by drinking a large quantity of fluid!

I shall now proceed to notice three varieties of dropsy—viz.: anasarca; hydrothorax; ascites.

ANASARCA.

The term anasarca implies a preternatural collection of serous fluid in the cellular texture; and when partial, it is often called œdema. This form of dropsy generally comes on slowly, unless it succeeds to scarlet fever, when, perhaps, the whole body is observed to become suddenly affected; it also occurs occasionally after taking a large drink of cold fluid when the body is much heated.

In general, the feet are at first observed to be affected in the evening, and to pit on pressure; the swelling gradually ascends higher, and sometimes distends the cellular tissue of the whole body. The urine is always scanty and high-coloured; the bowels are generally tardy, although now and then they are in a contrary state. The general symptoms, as well as the progress and termination of the disease, vary according to the organ affected. Sometimes there is considerable fever and dry skin; and the heat of the parts affected is sometimes increased, although, in general, it is diminished, and occasionally mortification takes place.

Treatment of anasarca.—This must be conducted upon the principles already so fully mentioned.

HYDROTHORAX.

Hydrothorax may exist on both sides of the chest, or on one only, and may be complicated or not with effusion into the abdomen, and also with general œdema. In the commencement of hydrothorax, the symptoms which particularly indicate this form of the disease, are, in general, so slight as not to attract much attention, and may continue so for a considerable period, although other circumstances denoting bad health may exist. The general symptoms are those which accompany all forms of dropsical affection. Those which are peculiar to hydrothorax are now to be mentioned. At first, slight difficulty of breathing is experienced, which is increased, during exercise, but more particularly when the body is placed in the horizontal posture, and is generally attended by a dry and annoying cough. The feet are observed to be swollen towards the evening; the extremities become more and more œdematous as the disease advances, when the patient frequently complains of palpitation, increased dyspnœa, which is worse at one time than at another, sometimes producing a dread of suffocation, particularly during the night. As the disease goes on to a fatal termination, the patient can never lie down, or even recline backwards, or go to sleep in any position, without starting up suddenly with increased dyspnœa. The surface shows signs of impeded circulation; the cheeks and lips in

particular become livid or deadly pale; and the pulse, if it have not hitherto been irregular and intermittent, now becomes so. At length the patient dies from suffocation and exhaustion, or becomes comatose. The progress of the disease depends much upon the organic lesion, and more particularly upon the disease affecting both cavities of the pleura, or one only; in which latter case, its progress will be much slower, the symptoms much slighter, and the patient will be able to repose in the horizontal posture, but on one side only. Corvisart has observed that, in the cases where hydrothorax exists on one side, œdema also affects the corresponding lower extremity.

Stethoscopic signs.—Before the discovery of auscultation, practitioners were always in doubt as to the existence of fluid in the chest; now, however, by applying the ear to the chest, and by percussion, *in addition* to the other symptoms, the existence of hydrothorax can be detected with the greatest certainty. In hydrothorax percussion produces a dull sound; and the respiratory murmur is either not heard or it is very obscure, except along the vertebral column, where it is heard more distinctly. The appearance and shape of the chest also afford us additional evidence, but they cannot be depended on without having recourse to auscultation and percussion; the thorax will be observed to be more rounded than natural, and the intercostal spaces increased.

Treatment of hydrothorax.—The plan of treatment must depend upon the cause of the effusion, which may be an organic lesion of the heart or lungs, or inflammation of the pleura; and these are to be managed upon principles already laid down in the general remarks on dropsical effusions. In cases of threatened suffocation, or even when the dyspnœa becomes very severe, it will be proper, in many cases, to draw off the water; but we must be careful not to hold out the prospect of a cure from such an operation, although we may safely promise considerable temporary relief. We may nevertheless entertain some hope, if the effusion be confined to the chest, and have been produced by inflammation of the pleura, uncomplicated with disease either of the heart or lungs, and if the patient's strength be good. When treating of chronic pleurisy, in the first volume of this work, a successful case of empyema is noticed where the operation of *paracentesis thoracis* was performed by Dr. Pitcairn, of Edinburgh; and there are many others on record.

ASCITES.

Ascites, or dropsical effusion within the abdomen, may exist either alone or complicated with hydrothorax and general anasarca. The symptoms, as in the other forms of dropsy, vary according to the nature of the cause. On some occasions, the disease is ushered in with well-marked symptoms, such as fever, pain in the loins or region of the liver, and corresponding disorder of all the functions of the body, announced by thirst, loss of appetite, sometimes nausea and vomiting, foul tongue, constipated state of bowels, scanty high-

coloured urine, dry, parched skin, &c. After these symptoms have continued for some days, the abdomen will be observed distended; upon percussion it will yield a dull sound, and fluctuation will be felt, unless the quantity of the effusion be small, or the intestines tympanitic.

On other occasions, the disease goes on insidiously, the enlargement of the abdomen being often, for a considerable time, attributed to corpulency; and the other symptoms, such as restless nights and loss of appetite, to want of exercise and debility. At length the secretion of urine becomes almost suppressed, when symptoms indicating a cerebral affection sometimes take place and create alarm; or, along with scanty urine, the legs become œdematous, and excite, for the first time, a correct notion as to the nature of the patient's complaints.

In all cases of ascites, the most careful examination should be made respecting the state of the thorax, as it is much more likely we shall be successful in the treatment of a case which is unconnected with any organic affection of the contents of the thorax, or with effusion into its cavities. We must have recourse, therefore, to auscultation and percussion, for we cannot judge with any degree of certainty from the dyspnœa or the posture of the patient. In ascites there may be great dyspnœa from hurried circulation, or from the effusion in the abdomen encroaching on the thorax, from which causes, also, there may be inability to lie in the horizontal posture.

In females we may have considerable difficulty in determining between ascites and the diseases of the ovaria, in which there is considerable enlargement; and when treating of diseases of the uterus, it was stated how difficult it occasionally is to determine the existence of fluid in the abdomen.

Treatment of ascites.—This must depend, as in other dropsies, upon the organ affected, and upon the extent and nature of the disease. With respect to tapping, it should be avoided as long as possible. We should be guided chiefly by the sufferings produced by the distension as well as by the difficulty of breathing. I have been frequently on the point of directing the operation to be performed when absorption commenced, and afterwards went on rapidly; and on the other hand, I never once had occasion to regret delay. The same objection to the operation may be made, as was formerly urged, when considering ovarian diseases, that when once we begin to tap, we cannot leave off, as the effusion subsequently takes place with greater rapidity. The successful case of ascites cured by elaterium, noticed at p. 501, was sent to Edinburgh expressly for the operation. When the operation is finally determined upon, care should be taken, in my humble opinion, to have the patient under the influence of diuretics for some days before it is performed. Contra-irritation has appeared to me to be more serviceable in ascites than in some other forms of dropsy.

[APPENDIX:

CONTAINING UPWARDS OF ONE HUNDRED MEDICAL PRESCRIPTIONS.]

☞ *Many of these prescriptions are referred to by corresponding numbers in the text. The classification is one of mere convenience.*

CATHARTICS.

No. 1.—*Seidlitz Powders.*

℞. Tart. sodæ et potassæ, ʒij.
Supercarb. sodæ, ℈ij.
Make a powder, to be dissolved in a gill of cold water.
℞. Acid. tartaric. pulv. gr. xxv.
To be dissolved in the same quantity of water as the preceding powder, the two then mixed, and drank in a state of effervescence.

No. 2.—*Calomel and Extr. of Jalap.*

℞. Calomel, gr. xij.
Extr. jalapæ, gr. xvj.
Ft. pil. iv. One to be taken every four hours, until they operate.

No. 3.—*Calomel and Rhubarb.*

℞. Calomel, gr. xv.
Pulv. rhei, gr. xxv.
Conserv. rosar. q. s.
Ft. pil. viii. Two to be taken at bed-time, followed by a dose of magnesia next morning.

No. 4.—*Aloes, Rhubarb, &c.*

℞. Pulv. aloes, pulv. rhei āā gr. xij.
Mass. ex. hydrarg. gr. xij.
Saponis Hispan. q. s.
Ol. carui, gtt. ij.
Ft. pil. viij. One every three hours until they operate.

No. 5.—*Rhubarb and Soap.*

℞. Pulv. rhei, ʒj.
Saponis purificat. gr. x.
Ft. pil. xv. Two or three to be taken at bed-time.

No. 6.—*Senna and Manna.*

℞. Fol. sennæ, ʒvj.
Mannæ, ʒj.
Sem. fœniculi, ʒij.
M. Infuse in a pint of hot water, and give when cold in divided doses.—If a powerful cathartic is desired, add ʒj. Epsom Salts.

No. 7.—*Croton Oil.*

℞. Ol. Croton. tiglii, gtt. iv.
Sacch. alb.
Gum arab. āā ʒj.
Aquæ menthæ, ℥iv.

M. Dose, a tablespoonful every hour or two hours until it operates.

No. 8.—*Colchicum and Magnesia.*

℞. Magnes. ustæ, ʒjss.
Gum. arab.
Sacch. alb. āā ℈ij.
Vini colchici, gtt. xl vel lx.
Aquæ menthæ, ℥iv.

M. Dose, a tablespoonful every two or three hours, watching its effects. *In gout and rheumatism.*

No. 9.—*Magnesia and Rhubarb.*

℞. Magnesiæ ustæ, ʒj.
Pulv. rhei, gr. x.
—— zinziber. gr. v.

M. To be taken in syrup.

No. 10.—*Castor oil, or Oleaginous Mixture.*

℞. Olei ricini, ʒj.
Pulv. gum. arab. ʒiss.
Sacch. alb. ʒj.
Aquæ destillatæ, ℥iij.
Ol. anisi, gtt. ij vel vj.

To be rubbed up in a mortar. Dose, a tablespoonful every hour until it operates.

No. 11.—*Calomel and Gamboge.*

℞. Calomel, gr. xvj.
Gum gambogiæ, gr. ij.
Conserv. rosæ, q. s.

Ft. pil. viij. One to be given every two hours.

EMETICS.

No. 12.—*Sulphate of Zinc and Ipecacuanha.*

℞. Sulph. zinci, ʒj.
Aquæ destillatæ, ℥iij.
Ipecac. pulv. ʒss.

M. A tablespoonful every fifteen minutes until it operates, giving, at the same time, draughts of warm water.

No. 13.—*Solution of Tartarized Antimony.*

℞. Antimonii tart. gr. iv.
Aquæ destillatæ, ℥ij.

M. A tablespoonful to be given every ten or fifteen minutes until emesis follows.

No. 14.—*Solutio Vitrolica of Dr. Mosely.*

℞. Sulph. zinci, ʒiss.
Sulph. alum. et potassæ, ʒss.
Aquæ ferventis, oct. ss.

Dissolve and filter. Dose, a tablespoonful for adults, and a teaspoonful for a child six months old, every morning on an empty stomach.

DIAPHORETICS.

No. 15.

℞. Antimonii tart. gr. j.
Spts. nitri dulcis, ℥j.
Aquæ destillatæ, ℥iv.
M. Dose, a tablespoonful every hour or two, unless it sickens the stomach.

No. 16.—*Neutral Mixture.*

℞. Succi limonis, ℥iss.
Sub-carb. potassæ, q. s. ad saturandum.
Sacch. albi ℥iss.
Tart. antimonii, gr. ss. vel gr. j.
Aquæ destillatæ, ℥iv.
M. Dose, a tablespoonful every two hours: in fevers.

No. 17.—*Nitrous Powders.*

℞. Nitrat. potassæ, ℥j.
Tart. antimonii, gr. ss. vel gr. j.
Calomel gr. ij.
Ft. pulv. viij. One to be given every two hours.

No. 18.—*Dover's Powders.*

℞. Pulv. opii,
——Ipecac. āā gr. iij.
Sulph. potassæ, gr. xxiv.
Ft. pulv. iij. One to be given every three or four hours.

EXPECTORANTS.

No. 19.—*Prussic Acid.*

℞. Acid. Hydrocianici secund. Pharmac. Lond. gtt. xij.
Syrup. tolutan, ℥ss.
Pulv. gum. arab. ℥iij.
Aquæ destillatæ, ℥viiss.
M. Dose, a tablespoonful every three hours.

No. 20.—*Brown Mixture.*

℞. Extr. glycyrrh.
Gum arab. āā ℥ij.
Aquæ fervent. ℥iv.
Dissolve and add—
Spts. nitri dulcis, ℥j.
Vini antimonii, ℥ss.
Tinct. opii, gtt. xl.
M. Dose, a tablespoonful every hour, or two hours.

No. 21.—*Tolu Mixture.*

℞. Gum arab. ℥j.
Aquæ fervent. oct. j.
Syrup. tolutan. ℥iss.
Morphiæ sulph. gr. ss.
Antim. tart. gr. j. vel ij.
M. Dose, a tablespoonful every hour or two hours.

No. 22.—*Seneka Root and Squills.*

℞. Rad. senegæ, ℥j.
Scillæ pulv. ℈j.
Aquæ ferventis, oct. j.
Make an infusion.—Dose, a teaspoonful frequently repeated.

No. 23.—*Copaiva Mixture.*

℞. Balsami copaibæ, gtt. xl.
Sacch. albi, ʒij.
Gum. arab. ʒj.
Aquæ destillatæ, ℥iv.

M. Dose, a tablespoonful every two hours.

No. 24.—*Peruvian Balsam, &c.*

℞. Balsami Peruv. ℥ss.
Mel. despumat. ʒj.

Rub them together in a mortar, and slowly add—

Aquæ destillatæ, ℥viij.

M. Dose, a tablespoonful every half hour or hour. *In catarrh.*

No. 25.—*Uva Ursi and Potash.*

℞. Potassæ subcarb.
Pulv. uvæ ursi āā ʒj.

Ft. pulv. viij. One to be given every three hours.

No. 26.—*Gum Ammoniac with squills.*

℞. Gum ammoniac. ʒj.
Aquæ destillatæ, ℥iv.

Dissolve and add—

Oxymel. scillæ, ℥ij.
Tinct. opii camph. ℥ss.

M. Dose, a tablespoonful every two hours.

DIURETICS.

No. 27.—*Digitalis, Squills, &c.;*

℞. Pulv. digitalis, gr. vj.
Pulv. scillæ, gr. xij.
Calomel, gr. viij. vel xij.

Ft. pil. xij. One to be given every four or six hours, followed by diuretic drinks.

No. 28.—*Squills and Nitre.*

℞. Pulv. scillæ, gr. vi.
Nitrat. potassæ, ʒss.
Pulv. zinzib. ℈ss.

Ft. pulv. vj.—One to be given every three or four hours, unless they produce emesis.

No. 29.—*Oil of Juniper and Nitre.*

℞. Ol. juniperi, gtt. x. vel xij.
Sacch. alb.
Gummi arab. āā ʒj.
Aquæ destillatæ, ʒiv.
Spts. nitri dulc. ʒj.

M. A tablespoonful every two hours.

No. 30.—*Colchicum and Digitalis.*

℞. Vini colchici, gtt. lx.
Tinct. digitalis, gtt. xl.
Aquæ destillatæ, ℥iv.

M. Dose, a teaspoonful every two or three hours, watching the effects.

No. 31.—*Turpentine Mixture.*

℞. Ol. terebinth. gtt. cxx.
Gum arab.

Sacch. alb.	āā ℥iss.
Aquæ destillatæ,	℥iv.
Ol. juniperi,	gtt. iv.

M. A tablespoonful every two hours.

No. 32.—*Copaiva and Cubebs.*

R. Balsami copaib.	
Pulv. cubebæ,	āā ℥iss.
Gum arab.	
Sacch. albi,	āā ℥iss.
Aquæ menthæ,	℥iv.

M. Dose, a tablespoonful three or four times a day.

No. 33.—*Bicarbonate of Soda and Digitalis.*

R. Bicarb. sodæ,	℥iss.
Aquæ destillatæ,	℥iv.
Tinct. digitalis,	gtt. xx.

M. A tablespoonful to be given every two hours.

No. 34.—*Mixture of Dandelion and Potash.*

R. Extr. taraxaci,	℥iss.
Carb. potassæ,	℥j.
Aquæ destillatæ,	℥iv.
Ol. menthæ vel fœniculi,	gtt. ij.

M. Dose, a tablespoonful four times a day.

ALTERATIVES.

No. 35.—*Iodine and Iodide of Potassium.*

R. Iodid. potassii,	gr. vj.
Iodini,	gr. iij.
Aquæ destillatæ,	℥j.

M. Dose, from six to twelve drops thrice a day, in a little cold water.

No. 36.—*Blue Pill, Antimony, &c.*

R. Sulph. antimonii præcip.	gr. v.
Mass. ex hydrarg.	
Extr. hyoscyami,	āā ℈j.

Ft. pil. x. One to be given three times a day. *In gastrodynia, irritable stomach, &c.*

No. 37.—*Muriatic Acid Mixture.*

R. Acidi muriatic.	℥j.
Decocti hordei,	Oj.
Sacchar. purificati,	℥j.

M. Dose, a tablespoonful three or four times a day. *In chronic hepatic affections.*

No. 38.—*Nitric Acid Mixture.*

R. Acid. nitrici diluti,	℥j.
Aquæ puræ,	Oj.
Extr. taraxaci,	℥ij.
Syrup. zinzib.	℥ij.

M. Dose, a tablespoonful every two or three hours. *In chronic hepatitis.*

No. 39.—*Hydriodate of Iron.*

R. Iodid. ferri,	℥j.
Aquæ destillatæ,	℥j.

M. Dose, six to twelve drops three times a day, in a little cold water.

No. 40.—*Blue Pill and Rhubarb.*

℞ Mass. ex hydrarg. ℈ss.
Pulv. rhei, ℈j.
Ol. anisi, gtt. v.
Conserv. rosæ, q. s.

Ft. pil. x. A pill to be taken morning and evening.

No. 41.—*Blue Pill and Gentian.*

℞ Mass. ex hydrarg. ℈j.
Extr. gentianæ, ℈ss.
Conserv. rosæ, q. s.

Ft. pil. x. One to be taken every night at bed-time.

No. 42.—*Blue Pill and Camphor.*

℞ Camphoræ gum. gr. xvj.
Mass. ex hydrarg. gr. viij.
Mucilag. acaciæ, q. s.

Ft. pil. viij. One to be taken morning, noon and night. When a decided anodyne effect is desired, add from half a grain to a grain of opium to each pill.

No. 43.—*Camphor with Laudanum, &c.*

℞ Aquæ camphoræ, ℥iv.
Tinct. opii, gtt. xl. vel lx.
Tinct. lavend. compos. ʒj. vel ʒij.

M. Give a tablespoonful every two hours. *In diarrhœa and dysentery.*

No. 44.—*Camphor, Nitric Acid, and Laudanum.*

℞ Aquæ camphoræ, ʒiv.
Acidi nitrici, gtt. iv.
Tinct. opii, gtt. xl vel lx.

M. Dose, a tablespoonful every hour or two hours. *In diarrhœa and dysentery.*

No. 45.—*Nitro-muriatic Acid Solution.**

℞ Acid. nitric. ʒss.
—— muriatic. gtt. xx.
Aquæ destillatæ, ℥iv.
Spts. nitri dulcis, ʒss.

M. Dose, from twenty to forty drops every three hours, in a wineglass of sweetened water.

No. 46.—*Calomel and Opium.*

℞ Calomel, gr. ij.
Gum. opii, gr. iij.

Ft. pil. viij.—One to be given every three or four hours.

No. 47.—*Non-purgative Saline Mixture in Cholera.*

℞ Supercarb. sodæ, ʒij.
Muriat. sodæ, ℈iv.
Chlorat. potassæ, ʒss.

M. Divide into four powders, one to be given every hour in half a tumbler of water. To be continued until reaction takes place, and then given in proportionably diminished doses.—*Dr. Wakefield.*

EMMENAGOGUES.

No. 48.—*Spurred Rye and Aloes.*

℞ Secalis cornut. ʒj.

* The nitric acid bath is made by adding an ounce and a half of the acid to a gallon of water.

Pulv. aloes, gr. viij. vel xij.
Zinzib. pulv. ℈ss.
Ft. pulv. viij.—One to be taken morning, noon and night.

No. 49.—*Savine and Sulphate of Potash.*

℞ Pulv. sabinæ,
Zinzib. pulv. āā ℈ij.
Potassæ sulphat. ʒiss.
Ft. pil. vi.—One to be taken morning and evening.

No. 50.—*Muriate of Iron with Aloes and Castor.*

℞ Tinct. ferri muriat.
Tinct. aloes compos.
Tinct. castorei, āā ʒij.
M. Give a teaspoonful three times a day, in a wineglassful of infusion of hops.

No. 51.—*Tincture of Hellebore and Myrrh.*

℞ Tinct. hellebori nigri, ʒss.
—— myrrhæ, ʒj.
—— cantharid. ʒj.
M. Dose, thirty drops morning, noon and night, in a little sweetened water.

No. 52.—*Tincture of Iodine.*

℞ Iodini, ℈ij.
Spts. vini rect. ℥j.
Spts. lavend. compos. ʒij.
M. Dose, from ten to twenty drops thrice a-day, in a little sweetened water.

No. 53.—*Guaiacum, Savine and Copaiba.*

℞ Tinct. guaiaci, ʒj.
——sabinæ, ʒij.
Balsam. copaibæ, ℥ss.
M. A teaspoonful three times a day.

No. 54.—*Aloes with Iron, &c.*

℞ Ferri sulphat.
Potassæ subcarb. āā ℈j.
Pulv. myrrhæ, ʒj.
Aloes, ʒss.
Ft. pil. xxx. Two to be taken every morning and evening.

ANTHELMINTICS.

FOR LUMBRICI.

No 55.—*Worm-seed Oil.*

℞ Ol. chenopodii, ʒj.
Sacch. albi,
Gum arab. āā ʒij.
Aquæ destillatæ, ℥iij.
M. To children of two years old and upwards, give a teaspoonful four times a day for three days, and then administer a brisk cathartic.

No. 56.—*Pink-root Infusion.*

℞ Rad. spigeliæ, ℥ss.
Aquæ bullient. Oss.
Make an infusion. When cold it may be sweetened. To children three years old and upwards, give a tablespoonful three or four times a day. To adults a small teacupful, watching its effects.

No. 57.—*Electuary of Tin.*

R. Pulv. stanni, ℥j.
Syrup. simp. ℥iv.

M. Give this mixture in four doses, on four successive days, and then follow it by a brisk cathartic.

FOR TŒNIA.

No. 58.—*Gamboge and Calomel.*

R. Gambogiæ gum. gr. vj.
Calomel, gr. xvj.
Pulv. spigeliæ, gr. x.

Ft. pulv. ij. To be taken two successive mornings, and then followed by a cathartic of senna and salts.

No. 59.—*Oil of Turpentine.*

R. Olei terebinth. ℥ij.
Gum arab.
Sacch. alb. āā ℥ij.
Aquæ menthæ, ℥iv.

M. A large tablespoonful to be taken four successive mornings. To be then followed by a cathartic.

FOR ASCARIDES.

No. 60.—*Enema.*

R. Pulv. aloes, ℥ss.
Aquæ fervent. Oss.

M. To be used as an injection.

No. 61.—*Olive Oil and Camphor Enema.*

R. Aquæ camph.
Ol. olivarum, āā ℥iij.

M. Use as an injection.

NARCOTICS.

No. 62.—*Morphia.*

R. Sulph. morphiæ, gr. ij.
Aquæ destillatæ, ℥ij.

M. A teaspoonful is equal to sixteen drops of laudanum.

No. 63.—*Opium and Hyoscyamus*

R. Gum opii, gr. iv.
Extr. hyoscyami, gr. xij.

Ft. pil. vj. One for a dose.

No. 64.—*Camphor Water and Hoffman's Anodyne.*

R. Aquæ camph. ℥iv.
Liquor. anod. Hoffmani, ℥ij.

M. Dose, a tablespoonful every two hours; diluted if necessary.

No. 65.—*Black Drop and Digitalis.*

R. Tinct. opii acetat. gtt. xl.
——— digitalis, gtt. xxx.
Aquæ destillatæ, ℥j.

M. Dose, a teaspoonful every three or four hours.

No. 66.—*Extract of Hyoscyamus and Cicuta.*

℞ Extr. hyoscyami,
—— Conii, āā ℈j.

Ft. pil. x. One for a dose, to be repeated according to necessity.

No. 67.—*Infusion of Camphor and Hops.*

℞ Flor. lupulorum, ℥j.
Gum camph. ℥ss.
Aquæ bullient. Oj.

Dose, from a tablespoonful to a wineglassful, every two or three hours.

No. 68.—*Laudanum, Digitalis and Spts. of Nitre.*

℞ Tinct. opii, gtt. lxxx.
Spts. nitri dulcis, ℥j.
Aquæ destillatæ, ℥ij.
Tinct. digitalis, gtt. xl.

M. Dose, a teaspoonful every two or three hours.

No. 69.—*Calomel and Opium.*

℞ Calomel, ℈ij.
Gum opii, gr. viij. vel x.

Ft. pil. viij. One to be given every hour or two hours. *In colic.*

No. 70.—*Ether and Camphor.*

℞ Ether. sulphuric. ℥j.
Gum camphoræ, ℥ss.

Dissolve. Dose, from five to ten drops, at short intervals, in a little cold water. *In sick stomach accompanying nervous excitement, and in cholera.*

No. 71.—*Nux Vomica.*

℞ Extr. nucis vomicæ, ℈ss.
Conserv. rosæ, q. s.

Ft. pil. xxx. One may be taken two or three times a day. *In spasmodic diseases.*

No. 72.—*Strychnine.*

℞ Strychniæ purificatæ, gr. j.
Conserv. rosar. ℥ss.

M. And divide into twelve pills. One to be taken morning, noon and night.

No. 73.—*Stramonium.*

℞ Extr. stramonii, ℥ss.
Saponis purificat. ℥ss. vel ℥j.
Mucilag. gum arab. q. s.

Ft. pil. xxx. Dose, one, morning, noon and night.

No. 74.—*Pills of Belladonna.*

℞ Extr. belladonnæ, gr. vj.
Conserv. rosæ, q. s.

Divide into twelve pills. One or two for a dose.

ANTISPASMODICS.

No. 75.—*Musk and Camphor.*

℞ Moschi opt. ℥j.
Sacch. albi,
Gum arab. āā ℥iss.
Aquæ destillatæ,

Aquæ camphoræ, āā ℥ij.

M. Dose, a tablespoonful every half hour or hour.

No. 76.—*Castor and Ether.*

R. Tinct. castorei, ℥ss.
Æther. sulphuric. ℥j.
Aquæ destillatæ, ℥iv.
Tinct. opii, gtt. xl.

M. Dose, a tablespoonful every hour or two hours.

No. 77.—*Lac Assafœtida.*

R. Gum assafœt. ℈ij.
Gum arab.
Sacch. albi, āā ʒij.
Aquæ cinnam. ℥iv.

M. A tablespoonful every hour or two hours.

No. 78.—*Assafœtida and Musk.*

R. Gum assafœt.
Moschi opt. āā ℈j.
Mucilag. gum arab. q. s.

Ft. pil. x. One to be given every hour or two hours.

No. 79.—*Spts. of Hartshorn.*

R. Spts. ammoniæ aromat. ʒss.
Aquæ destillatæ, ℥iv.

M. Dose, a tablespoonful every fifteen or twenty minutes, diluted if necessary.

No. 80.—*Valerian and Camphor.*

R. Rad. valerian. contus. ℥j.
Gum camphor. ℈ij.
Aquæ bullient. Oct. j.

M. Infuse until cold. Dose, a tablespoonful or more every hour or two hours.

No. 81.—*Ether and Laudanum.*

R. Æther. sulphuric. ʒij.
Tinct. opii, gtt. lx.
Aquæ menthæ, ℥ij.

M. Dose, a tablespoonful every ten or fifteen minutes in half a wineglass of cold water.

STIMULANTS.

No. 82.—*Spirits of Turpentine.*

R. Olei terebinth. gtt. cxx.
Gum arab.
Sacch. albi, āā ʒij.
Aquæ destillatæ, ℥iv.

M. Dose, a tablespoonful every two hours.

No. 83.—*Carbonate of Ammonia.*

R. Carb. ammoniæ, ℈ij.
Sacch. alb. āā ℥iss.
Gum arab.
Aquæ destillatæ, ℥iv.

M. Dose, same as the former.

No. 84.—*Pills of Cayenne Pepper.*

R. Pulv. capsici, ℥ss.
Mucilag. gum arab. q. s.

Ft. pil. x. One to be given every hour or two hours.

No. 85.—*Infusion of Cloves and Ginger.*

℞. Caryoph. contus.
Zinzib. pulv. āā ʒij.
Aquæ bullient. Oct. ss.
M. Dose, a tablespoonful taken hot and frequently repeated.

No. 86.—*Turpentine and Guaiacum.*

℞. Pulv. guaiac. ℈ij.
Terebinth. Venetæ, q. s.
Ft. pil. xij. One to be given every four hours.

No. 87.—*Camphor and Guaiacum.*

℞. Tinct. opii camph.
—— guaiac. ammoniat. āā ʒj.
M. Dose, a teaspoonful every hour or two hours, in a little water.

TONICS.

No. 88.—*Columbo, Iron and Ginger.*

℞. Pulv. columbo,
—— carb. ferri,
—— zinzib. āā ʒj.
Ft. pulv. xij. One to be taken thrice a day.

No. 89.—*Gentian and Quassia.*

℞. Extr. gentian,
—— quassiæ, āā ℈ss.
Ft. pil. x. One to be taken three times a day.

No. 90.—*Sulphate of Quinine.*

℞. Sulph. quiniæ, gr. xvj.
Aquæ destillatæ, ʒij.
M. Dose, a teaspoonful every hour, in the absence of fever.

No. 91.—*Wine Whey.*

℞. Lactis recent. Oj.
Vini Madeiræ, ʒij.
Boil the milk, and then add the wine.

No. 92.—*Subcarb. of Iron and Valerian.*

℞. Subcarb. ferri, ℈ij.
Pulv. valerian, ʒij.
—— zinziber. ʒss.
Ft. pulv. viij. One to be taken three times a day.

No. 93.—*Infusion of Wild-cherry Bark.*

℞. Cort. pruni virg. ʒj.
Sem. caryoph. ʒj.
Aquæ puræ, Oct. j.
M. Stand for a few hours. Dose, a wineglassful four times a day.

No. 94.—*Infusion of Peruvian Bark.*

℞. Cort. cinchonæ opt. ʒj.
Aquæ bullient. Oj.
M. And stand till cold. Dose a wineglassful three or four times a day.
N. B. The infusions of quassia, gentian, columbo, serpentaria, &c. are made in the same proportions.

No. 95.—*Nitrate of Silver.*

R. Nitrat. argenti,	gr. j.
Conserv. rosæ,	q. s.

Ft. pil. viij. vel xij. One to be taken morning, noon and night.

No. 96.—*Nitrate of Silver with Belladonna.*

R. Nitrat. argenti,	gr. ij.
Pulv. belladonnæ,	℈j.
Extr. glycyrrh.	ʒj.

Ft. pil. xxxvi. One to be given morning, noon and night. *In epilepsy and pertussis.*

No. 97.—*Aromatic Julep.*

R. Caryoph.	
Nucis moschat.	
Zinzib.	āā ʒij.

Infuse in half a pint of hot water. Dose, a teaspoonful frequently repeated. *In diarrhœa and cholera morbus.*

ASTRINGENTS.

No. 98.

R. Subcarb. sodæ,	℈ij.
Cretæ ppt.	℈j.
Pulv. gum arab.	
Sacch. albi,	āā ʒss.
Aquæ destillatæ,	ʒij.
Ol. anisi,	gtt. ij.

M. Dose, a teaspoonful every two, three or four hours. *Bowel complaints of children.*

No. 99. *Acetate of Lead, Opium and Calomel.*

R. Acetat. plumbi,	℈j.
Pulv. opii,	gr. x.
Calomel,	gr. v.

Ft. pil. x. One to be given every two, three or four hours. *In dysentery.*

No. 100.—*Chalk Mixture.*

R. Cretæ ppt.	ʒij.
Pulv. gum arab.	
Sacch. albi,	āā ʒiss.
Tinct. opii,	gtt. xl.
Ol. cinnam.	gtt. ij.
Aquæ destillatæ,	ʒiv.

M. Dose, a tablespoonful every hour or two hours. *In diarrhœa.*

No. 101.—*Infusion of Logwood.*

R. Ligni hæmatoxyli,	ʒj.
Aquæ bullientis,	Oj.

Infuse, and stand till cold. Dose, from a tablespoonful to a wineglassful, according to circumstances.

No. 102.—*Sulphate of Zinc and Myrrh.*

R. Sulph. zinci,	gr. x.
Pulv. myrrhæ,	ʒiss.
Confec. rosæ,	q. s.

Ft. pil. xx. Two may be taken morning and evening.

No. 103.— *Tincture of Muriate of Iron.*

℞ Tinct. muriat. ferri, ℥j.
Aquæ destillatæ, ℥iij.
M. Dose, a tablespoonful every three hours.

No. 104.—*Alum Whey.*

℞ Lac. bullientis, Oj.
Pulv. aluminis, ℥ij.
Boil them until the coagulum separates, and strain. Dose, a wineglassful occasionally.

No. 105.—*Yellow Wash.*

℞ Corros. muriat. hydrarg. gr. vi.
Aquæ calcis, ℥iv.
M. Used as a wash in venereal ulcers.

No. 106.—*Black Wash.*

℞ Calomel, ℥j.
Aquæ calcis, ℥iv.
M. Used as the preceding.

INJECTIONS FOR THE URETHRA.

No. 107.—*Acetate of Zinc.*

℞ Acetat. zinci, gr. vj.
Aquæ rosæ, ℥iv.
M. Injection in gonorrhœa.

No. 108.—*Opiate Injection.*

℞ Gum opii, gr. viij.
Aquæ rosæ, ℥iv.
M. In gonorrhœa.

No. 109.—*Injection of Zinc and Bole.*

℞ Sulph. zinci, ℈j.
Boli armenæ, ℈ij.
Gum arab. ℥iij.
Aquæ, ℥viij.
M. In gonorrhœa.

No. 110.—*Sulphate of Copper.*

℞ Sulph. cupri, gr. viij.
Aquæ destillatæ, ℥viij.
Tinct. opii, ℥iss.
M. Injection for *chronic gonorrhœa.*

No. 111.—*Styptic Water.*

℞ Ferri sulphat.
Alum. sulph. āā ℥iss.
Aquæ, ℥xij.
Dissolve and cool, then add—
Acid. sulphuric, ℥j.
This is the *Aqua Styptica* of the Surgical Pharmacopœia, and is used to check external hæmorrhages.

No. 112.—*Styptic Water of Copper and Zinc.*

℞ Zinci sulphat.
Cupri sulphat. āā ℥j.
Aquæ rosæ, ℥viij.
Dissolve. *Used as the preceding.*

OINTMENTS.

No. 113.—*Kreosote Ointment.*

℞ Ol. kreosot. gtt. v.
Cerat. simp. ℥j.
Camphoræ gum. ℈ss.
M. Applied to tetters and ulcerated surfaces.

No. 114.—*Red Precipitate Ointment.*

℞ Hydrarg. oxyd. rub. ℈j.
Cerat. simp. ℥j.
Ft. Unguent. In *scabies* and indolent *ulcers*.

No. 115.—*Tartar Emetic Ointment.*

℞ Tartrat. antimonii, ℈j.
Cerat. simp. ℥j.
Mix into an ointment.

No. 116.—*Iodine Ointment.*

℞ Iodini, ℈j.
Cerat. simp. ℥j.
Ft. Unguentum.

No. 117.—*Ointment of Hydriodate of Potash.*

℞ Hydriodat. potassæ, ℈j.
Cerat. simp. ℥j.
Ft. Unguentum.

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