A practical treatise on the diseases of children / By James Milman Coley.

Contributors

Coley, James Milman.

Publication/Creation

London : Longman, Brown, Green, & Longmans, 1846.

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A

PRACTICAL TREATISE

ON THE

DISEASES OF CHILDREN.

BY

JAMES MILMAN COLEY, M.D.,

MEMBER OF THE ROYAL COLLEGE OF PHYSICIANS IN LONDON, &c.; AUTHOR OF "A TREATISE ON THE REMITTENT FEVER OF INFANTS," &c., AND OF "ESSAYS ON PHLEGMONOUS ERYSIPELAS," ON "SCHIRROIDE, KELOIDE, OR CANCROIDE," &c. &c.

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INTRODUCTION.

The principal object I have had in view in writing the following pages, has been to present to the Medical Profession and the Public a comprehensive work on the Diseases of Infants and Children, which the physician, the surgeon, and the general practitioner may consult as a work of reference. The practical portions have been the result of an experience of forty years, during which time I have been constantly engaged in recording cases, accumulating facts, and pursuing pathological inquiries. In addition to the various information afforded by my private practice, the numerous and interesting diseases occurring among the poor of an extensive district, to whom I was in the habit of giving gratuitous advice and assistance, either at my own residence, or at an infirmary and dispensary, which I established in my native town, supplied me with opportunities rarely enjoyed for prosecuting the useful profession, to which my whole life has been devoted.

The diseases of children have attracted the attention of physicians in all countries, many of whom have published useful essays on the subject. Among the modern writers may be mentioned Astruc, Armstrong, Hamilton, Cheyne, Heberden, Becker, Plenk, Auvity, Burns, Capuron, Clarke, Gardien, Comet, Gölis, Dewes, Underwood, Billard, Meissner, Marley, Maunsell, Evanson, Barrier, Barthez, Rilliet, Rees, &c. I am not aware, however, that any author, British or Foreign, has published a work comprehending all the diseases incident to children, and their appropriate surgical as well as medical treatment. This omission may be accounted for by the division of the profession, which has limited the education and practice of physicians, who have hitherto been the principal or only writers on infantile disorders.

Having received a surgical as well as a medical education, and having been extensively engaged with operative surgery in the country, many years previous to my connection with the Royal College of Physi-

cians, and my residence in London, I have enjoyed singular opportunities of observing the origin and progress of surgical as well as medical cases, and acquiring that discrimination and manual dexterity, which are necessary qualifications in any one who undertakes to instruct others on subjects requiring a practical knowledge of both branches of the profession. The education required for candidates for the fellowship of the Royal College of Surgeons, and the searching and extended examinations which the licentiates of the Royal College of Physicians in London are now compelled to undergo, added to the liberal conduct for some time adopted by the latter College with respect to practice, will in future provide practitioners who will possess a knowledge of the whole science. I cannot, I think, illustrate the disadvantages arising from a purely medical education more forcibly than by adducing the pathology and treatment of the erysipelas of infants, which has always been considered a disease *sui generis*, and almost invariably fatal in a short time; although, as I have explained in the following pages, the very description given of it by physicians perfectly identifies it with the phlegmonous species, with which, and its curability by an operative proceeding, all well-educated surgeons are now familiar.

In consequence of the practice of ophthalmic medicine being confined to surgeons, the affections of the eyes, to which infants and children are commonly subject, have been almost entirely omitted by the physicians, who have written on infantile and puerile diseases. This omission I have supplied from my own experience, corroborated by frequent reference to works of established reputation on ophthalmology, particularly those of Mr. Lawrence and my esteemed friend, Mr. Middlemore.

In the progress of the work I have also availed myself of the valuable writings of German and French physicians, in the department of morbid anatomy, which our continental neighbours have far better opportunities of pursuing than British practitioners, on account of the extent and liberality of their institutions, and their national taste and respect for medical science. I must not omit to acknowledge the assistance I have received from the writings of my own countrymen, Sir James Clarke, Sir Benjamin Brodie, Dr. Copland, Dr. Bright, Sir C. Bell, and Dr. Marshall Hall.

In Clinical Practice much interestive and unerring knowledge of disease may be acquired by a nice observance of the manner, expression, and position of the patient; nature being in these, as in all other instances, certain, constant, and infallible,—especially in children too young to practise dissimulation. Hence, whenever I have considered

the diagnosis to be difficult or obscure, I have endeavoured to represent a perspective and striking view drawn from physiognomical and characteristic signs occurring to my own observation.

With respect to Treatment, my aim has been to simplify it as much as possible, owing to the difficulty of administering medicine to children, and a natural dislike to polypharmacy; which every experienced physician must acquire, as my late surgical master, Abernethy, used to say, in proportion to his familiarity with, and advanced knowledge of, the nature and cause of disease. The indiscriminate employment of poisonous medicines in the treatment of Infantile Disorders cannot, in my opinion, be too strongly reprobated. If we take Hooping-Cough as an instance, we shall find opium, hemlock, deadly nightshade, foxglove, arsenic, lunar caustic, prussic acid, camphor, cantharides, and lead, used and recommended by different authors; yet, unless some concomitant disease is present, it will be found from reading the article on that subject in the following pages, that the only essential, is a properly regulated and *uninterrupted* thermometrical treatment. In proportion as we advance in the science of pathology, our treatment must naturally become more special; and nothing affords a more striking proof of the solid improvement which medical philosophy has undergone, than the refinement and accuracy now exercised by men of science in the exploration of disease.

It will be found that I have introduced some innovation, and, I trust, improvement, in the pathology of some of the Affections of the Skin, as, the Erysipelas of Infants, Erythema Nodosum and Phyma, and in their treatment and that of Porrigo. I have adopted the arrangement of Willan, in preference to the anatomical classification of Wilson, for the reasons I have assigned; and I hope my original views on the subject of Dentition, in reference to Cutaneous as well as Intestinal and other Diseases, may have the effect of correcting professional as well as popular errors on these subjects.

I trust also, that my pathology of Cholera, and the delineation of the various and sometimes obscure forms, which the Dysentery of Children assumes, may improve the diagnosis and treatment of Intestinal Diseases.

The attention of pathologists has of late been much engaged by the important subject of Tuberculization; some contending, that it is the result of inflammation, and others, of an opposite condition. The disposition to this morbid process, as I have stated, may be hereditary, or acquired; but I have endeavoured to show, that its development is dependant on vascular excitement, produced by external injury or

atmospherical vicissitude, and that the process, by which the morbid product is deposited, is of an inflammatory nature. The prophylactic care and antiphlogistic treatment, which this theory suggests, will often be found to possess the advantage of modifying or averting the specific production, especially in that form of the disease, which we denominate, Scrophula.

The few philological remarks, which occur in the course of the work, have been introduced for the purpose of correcting an erroneous etymology, which has in some instances been copied by successive compilers, and led to improper views and practice.

I have endeavoured to apply the modern discoveries in the physiology of the nervous system, in my attempt to elucidate the pathology and regulate the treatment of the diseases of that important system. Much, however, remains to be done in so difficult and complicated a department, to enable us to establish fixed rules, whereby we may explain in an uniform manner, the phenomena dependant on the disordered functions of various organs furnished with vital powers by the several nervous centres. In speaking of General Convulsions and the Diseases of the Alimentary Canal, I have alluded to what is commonly called Cerebro-spinal Irritation; and therefore I have not introduced a separate article on that subject; as the disease, in the forms, in which it is usually recognised, occurs almost exclusively to young persons, especially females, after the age of childhood. The term *irritation*, indeed, in my opinion, is calculated to mislead the practitioner; as it implies a direct impulse imparted to the excitor nerves, and thence to the cerebro-spinal axes without the intervention of vascular congestion, and is liable to be confounded with *irritability*, which is a property inherent in the abdominal ganglionic fibrils, entirely independent of the brain, and consequently unconnected with sensation. Hence, not only may the voluntary muscles be excited into convulsion, but sensation may be exalted or perverted by the reflex function of the nerves proceeding from the medulla spinalis and the brain, varying from cutaneous tenderness, perceptible on the application of the slightest touch to the most agonizing neuralgia. The *domestic processes of washing, dressing, clothing, feeding*, and *nursing* infants, have been so minutely described by Drs. Underwood, Maunsell, and Evanson, that it has appeared to me quite superfluous to enter upon those subjects in the present work.

JAMES MILMAN COLEY.

47 Chester Square, London,
March, 1846.

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A TREATISE

ON

THE DISEASES OF INFANTS AND CHILDREN.

DISEASES CONNECTED WITH THE SEPARATION OF THE UMBILICAL CORD.

THE removal of the funis umbilicalis occurs spontaneously about the fifth day after birth. It is effected by a process of ulceration, which casts off the dead from the living structure, and cicatrization of the ulcer takes place on the tenth or twelfth day, at the navel. When friction or undue pressure has been applied, suppuration occurs, accompanied with a species of erythema, extending some distance around the navel, and denoted by heat, tumefaction, and deep, red colour.

Treatment.—A little ung. hydrargyri should be spread over the inflamed parts, and an evaporating poultice, composed of bread and water, applied twice or three times a-day.

TUMOURS AT THE NAVEL.

When cicatrization is interrupted, after the separation of the funis, fungous flesh is apt to appear, which either assumes a mulberry appearance, being of a dark red colour, and irregular on its surface, or, being covered with a fine cuticle, resembles a polypous tumour.

Treatment.—A fine ligature is the best remedy for both these morbid growths, and argenti nitras afterwards, should any attempt to reproduce them be discovered, or ulceration follow. Should

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the ulcer be found obstinate, the following lotion, applied on lint twice a day, will soon effect a cure:—

R—Tincturæ Myrrhæ . . . . . ʒj.
Liquoris Calcis . . . . . ʒv.—M.

UMBILICAL ENCYSTED TUMOUR.

An encysted tumour is sometimes found on the navel of infants. Great circumspection is required to distinguish this disease from hernia; as the treatment proper for the former would be dangerous or fatal to the latter. The encysted tumour may be distinguished from hernia by placing the finger and thumb on its posterior surface.

Treatment.—The tumour may be removed either by the ligature or the knife.

UMBILICAL HERNIA.

This consists of a protrusion of the omentum or a portion of intestine through the opening at the umbilicus left for the passage of the funis. The tumour is covered by integuments, and is readily replaced. It is much more frequent in female than male infants.

Treatment.—The cure of this infirmity should be commenced without delay. The following mode of treatment will be found invariably successful:—A conical pad, composed of successive layers of adhesive plaster, spread on thick, white leather, should be applied with its apex on the tumour, and confined by means of a strip of adhesive plaster long enough nearly to surround the body, and two-and-a-half or three inches in depth. The pad and long plaster should be removed and renewed once a-week, or oftener, when they become loose. By this proceeding, the cure will be complete in a few months.

CONGENITAL HERNIA.

This form of rupture is occasioned by the aperture in the inguinal canal left by the passage of the testicle in the male infant, which occurs a few months before birth. The testis is originally situated near the kidney, and about the fifth or sixth month, while the fœtus is in the uterus, it descends into the scrotum, bringing with it a portion of peritoneum, which ultimately forms the tunica vaginalis. After this descent of the testis, the opening at the groin, through which it has passed, is obliterated; but in some instances this closure of the passage does not follow, and the canal remaining pervious, permits a portion of intestine to accompany

the testis. This constitutes the common congenital hernia, and may be called scrotal congenital hernia, in contradistinction to another form of the disease met with in the groin, which is produced by the same cause, and the detention of the testis at that part. This latter variety may be denominated congenital inguinal hernia. In both cases the intestine lies in front of the spermatic cord, and, unless connected by accidental adhesion, may be placed within the abdomen; but as soon as the pressure of the fingers has been removed, it descends. Sometimes a serous effusion escapes through the abdominal opening, and produces a swelling in the tunica vaginalis resembling hernia.

Treatment.—The congenital scrotal hernia should be replaced, and afterwards retained within the abdomen, by means of a small spring truss, as early as possible after birth. The slight inflammation produced by the pressure of the pad at this early age, has the effect of speedily curing the disease. The other variety of hernia must not be interfered with, as the pressure of a truss would not only injure the testis, but prevent its descent. The effusion of serum into the tunica vaginalis, will be absorbed without any artificial assistance. When congenital hernia occurs in the female infant, a spring truss must be applied without delay.

INGUINAL HERNIA.

Hernia may appear in the groin at any period after birth, and after the canal, through which the testis has descended, has become closed. If neglected, it may gradually terminate in scrotal hernia. It is for the most part occasioned by violent fits of crying or coughing.

Treatment.—A spring truss should be adapted to the rupture, as soon as convenient; and its application should be continued, until the abdominal opening has become obliterated.

STRANGULATED HERNIA.

When the intestine or omentum becomes so confined by the neck of the herniary sac, that it cannot be returned into the abdomen, the disease is called strangulated hernia. Infants and children are not so liable to it as adults, because they are not exposed to such violent exertions. The symptoms are, pain in the bowels, and constant vomiting, accompanied with constipation; and when the strangulation has not been removed, sooner or later inflammation of the peritoneum and of the incarcerated intestine succeeds, and advances to mortification, accompanied with derange-

ment in the functions of the brain, which ends in the death of the patient; unless he should escape by the destruction and sloughing of the sac and its contents, together with the superincumbent integuments, and the formation of an artificial anus. At the commencement of the attack, it is not uncommon for the lower intestine to evacuate its contents, in consequence of the tenesmus, or inclination for stool, produced by the stricture. This must not mislead the medical attendant, whose attention should be confined to the strangulation. He should explore the inguinal, scrotal, and umbilical regions; and, should he discover a rupture in any of those situations, he should, by gentle efforts, endeavour to return the incarcerated parts. With the view of assisting this attempt, the body of the patient should be bent forward, to relax the abdominal muscles. If repeated gentle pressure should not succeed, some ice or equal parts of nitrate of potash and chloride of soda, together with a little water, may be put into a bladder, and applied to the rupture, until the skin covering it feels cold; when another attempt may be made to reduce the strangulation. In case these attempts should also fail, the child should be placed in a warm bath, at 100 degrees of heat, and retained there during fifteen or twenty minutes, unless he should previously become very faint. After his removal from the bath, during the state of fainting, or that approaching to it, which will be found to occur, advantage must be taken of the relaxation of the muscles and fibrous structures, resulting from the bath, to repeat the attempts to reduce the rupture. At this crisis, should the foregoing attempts fail, it is customary to try the effects of the tobacco injection. For children, I would not venture on so hazardous a remedy, which, even in adults, has been found to produce fatal results.

"In two cases I have seen fatal effects decidedly produced by the tobacco, the patient having expired in the state of collapse and exhaustion occasioned by its use; and in another instance it had nearly caused death when administered to a very valuable professional friend."*

I have also seen fatal effects result from the tobacco injection, and therefore, even for adults, I seldom recommend it. It is perfectly useless, in these cases, to administer purgative medicines, as they only offend the stomach, and increase the distress of the patient. It may, however, be advisable to try every expedient before we have recourse to operation, which is the only resource when all others fail. Exhaustion of the contents of the intestines below the stricture, by means of the stomach-pump, has been several times

* "Observations in Surgery and Pathology," by W. J. Clement, p. 55.

successfully tried.* So also has copious injection of warm gruel by Mr. A. J. Lawrence.† In the "Lancet," vol. xvii., p. 835, Dr. Witherhead suggested the puncture of the hernial tumour, with a minute trochar for the purpose of extricating the flatus in the intestine, which he supposed to be the principal cause of the incarceration; but no trial of this experiment appears to have been made until 1841, when Dr. Dacer made two punctures with a long fine needle into a strangulated hernia, with complete success.‡ Another expedient has been introduced of late, and much extolled; I allude to the exhibition of large doses of opium: four grains once in four hours to adults.§

I have mentioned these various remedies in order that those, who have a decided objection to a surgical operation on infants or children, may have an opportunity of trying other means. The operation, however, should not be delayed till tenderness of the abdomen and a rapid pulse, indicating peritoneal inflammation, come on; as the operation, under such circumstances, cannot be performed with any prospect of success, and every experienced surgeon admits that the principal danger of the operation arises from its improper delay.

Operation for Strangulated Hernia.—The child being laid on his back with his thighs raised and separated, the surgeon rendering the skin over the tumour tense, should make an incision with a knife through the integuments, commencing an inch above the abdominal ring, in the course of the fibres of the external oblique muscle, and extending nearly to the bottom of the rupture. The superficial fascia, which lies immediately beneath the integuments, must next be divided by successive strokes of the knife, with the assistance of small forceps, till the cremaster muscle is exposed, the fibres of which are to be divided. A small opening must now be made in the sac, and a director introduced, on which the sac must be divided up to the ring. The surgeon may now try, by the taxis, to return the strangulated intestine. If reduction cannot be easily and quietly effected, the fore-finger of the left hand should be passed up to the stricture, which being found either at the external or internal ring, must be divided

* See a case by Mr. Webber, of Oxford, "Lancet," May, 1842; also "Lancet," April 29, 1843.

† "Lancet," Jan. 1842, p. 608.

‡ "Edinb. Med. and Surg. Journal," Oct. 1841, p. 549.

§ See a case by Dr. Back, "Medical Record," vol. i., p. 55. See also a case by Dr. Bell, "Lond. and Edinb. Monthly Journal of Med. Science," Sept. 1841, p. 653; and a case by Dr. Davis, of Presteign, "Provincial Med. and Surg. Journ.," Aug. 28, 1841, p. 434; also a case by Mr. Walker, of Newcastle-on-Tyne, in which the practice was successful, "Med. Gaz.," 1844, p. 484.

upwards by a probe-pointed bistoury. A very small incision of the ring will be sufficient. The protruded parts being thus liberated, must be carefully returned into the abdomen. Should the intestine be black and gangrenous, it must not be replaced. After the intestine has been returned, the wound must be brought together by means of adhesive plaster and a T bandage.

In operating for strangulated congenital hernia the tunica vaginalis should not be divided lower than the upper end of the testis.

Soon after the operation has been performed, and the patient laid in bed, the natural action of the bowels will be restored; but should not this occur in a reasonable time, a small dose of castor-oil or sulphate of magnesia may be given. A purging sometimes occurs from slight inflammation in the mucous coat of the intestine. This, if severe, may be relieved by a small dose of opium.

Operation for Strangulated Umbilical Hernia.—As the sac and integuments covering the hernia are in general very thin and consolidated, the surgeon must proceed with caution in making his incision, which may either extend from the top to the bottom of the tumour, beginning about half an inch above the opening in the linea alba, or it may be formed in the shape of the letter T inverted. The stricture being removed by cutting upwards with a probe-pointed bistoury conducted on the fore-finger, and the protruded parts replaced, the wound must be united by sutures or adhesive plaster. When the state of the parts will admit, it will be advisable to replace the parts without opening the sac, or only to expose so much of the sac by the opening as may be required to enable the operator to divide the stricture. In two instances Mr. Cooper succeeded by adopting this precaution;* and, as the operation is a very hazardous one, every thing should be done to obviate peritoneal inflammation and its often fatal results. So also the surgeon should replace the adherent intestine or omentum, without attempting to separate them by tedious dissection. Should the intestine be found in a state of mortification, it must not be replaced, but left for nature to separate the dead from the living parts, and form an artificial anus.

HYDROCEPHALUS EXTERNUS, OR CEPHALÆMATOMA.

This is a tumour found on the head of the infant generally after a tedious labour, especially when the action of the uterus has been long resisted by the bones of the pelvis. The swelling consists of

* See "Cooper on Hernia," part ii., pp. 51 and 55.

blood extravasated either between the integuments and the pericranium, or between the latter and the scull. The swelling varies in size from that of a hen's egg to that of a large orange.

Treatment.—As this disease always disappears spontaneously by the gradual absorption of the blood, all we shall be required to do is to promote that process. With this view the following lotion or liniment should be prescribed:—

℞—Ammonia Hydrochloratis . . . ℥j.
Aquæ Distillatæ . . . . . ℥vj.
M. et fiant Lotio.

℞—Potassæ Iodidi . . . . . ℈ij.
Adepis . . . . . ℥j.
M. fiant Linim. singulis noctibus tumori affricandum.

℞—Linimenti Hydrargyri c. . . . ℥j.
Fiat linimentum semel quotidie parti affectæ illinendum.

When the tumour is very large, Dr. Black advises that it should be punctured or incised to evacuate the effused blood.* Mr. Waffstaff, on the contrary, says this is bad practice;† and I have never met with any case which required any other remedies than the external applications I have mentioned.

FRÆNUM OF THE TONGUE.

An adventitious membrane is frequently found extending more or less from the frænum beneath the tongue in the mesial line towards its apex.

Treatment.—The patient being laid on the nurse's lap opposite a good light, the surgeon should raise the tongue by means of his little finger, and, putting the membrane on the stretch, should divide it with a pair of scissors, taking care to avoid the frænum and its vessels, the division of which has been followed by fatal consequences.

IMPERFORATE ANUS.

This is fortunately a very rare disease. It appears in various forms. The opening may be only partially closed, or it may be obstructed entirely by a membrane extending over the orifice, and

* "Edinb. Med. and Surg. Journal," 1841.
† "Lancet," No. 743, p. 308.

projecting. In some instances the rectum terminates at a distance of several inches from the situation in which the anus ought to be found; in some the intestine is wanting; and in others it terminates in the bladder or vagina.

Treatment.—When the opening is only incomplete, it should be enlarged gradually by means of a bougie composed of lint dipped in a cerate consisting of one part wax and two parts lard, and afterwards drawn through a suitable hole made in a piece of wood. Should the opening be too small for the passage of the bougie, it should be enlarged with a knife; and the diameter of the bougie should be progressively increased, and the instrument retained several hours every day. When the closure of the anus is complete, and its situation denoted by a dark, projecting tumour, the knife should be plunged into it freely, and the contents of the bowel liberated.

The attempt to construct an artificial opening, where the termination of the intestine is uncertain, is a most hazardous operation; at the same time it is the duty of the surgeon to make the attempt, otherwise the patient would have no chance of escaping certain death; and the many instances of success which have followed the persevering efforts of patient and skilful operators ought to encourage us to leave no resource untried. In operating in such cases, an incision must be carefully made about an inch and a half long, in the natural course of the rectum, taking care to keep the instrument towards the sacrum, to avoid injuring the bladder. If the contents of the intestine are now observable, the opening should be preserved by a dossil of lint; if no meconium make its appearance, the finger of the operator should be introduced, and the divided parts explored; and a trochar being passed along the finger, it should be pushed forward as far as it can be done with safety, in a direction towards the concavity of the sacrum, which is the natural situation occupied by the rectum. In all cases great care will be required to preserve the artificial opening, when successful, by the frequent introduction of the dossils of lint, and afterwards the soft bougies before mentioned.

CLUB-FOOT, AND OTHER DISTORTIONS.

These deformities are sometimes congenital, at others they originate during infancy or childhood. They were formerly supposed to be occasioned by the absence of some portion of the distorted articulations. Modern researches have, however,

proved that they are produced by a loss of balance between antagonist muscles, arising from spasm or paralysis. The congenital cases have been popularly attributed to some alarm or aversion in the mother during gestation. The manner in which this effect is produced, through the mother, on the excitomotory system of the infant is mysterious. If it is the result of sympathy, it must follow that there is some kind of nervous as well as vascular communication between the mother and fœtus, which has never yet been demonstrated. In some instances I have found the defect to be hereditary. Nevertheless, it is difficult to explain how the reflex action of the motor nerves is excited during the intra-uterine existence of the fœtus. After birth we sometimes find the motor nerves acted upon centrically, at others eccentrically. It is of importance to distinguish these opposite causes, as the centric diseases are incurable, and the eccentric, which depend on some cause affecting the excitor nerves, generally admit of cure. Hence, those distortions, which are the result of epilepsy in infants, found in the hands as well as the feet, are incurable; while those proceeding from intestinal irritation, and accompanied with temporary defect of nutrition, as when some part of the organic system of nerves is affected, are curable. The latter diseases are apt to occur after the measles, scarlet fever, or other exanthemata. In such cases, the paralysis and innutrition of one set of muscles permit the antagonist muscles to distort the limb. This disease is generally confined to the lower extremities in children. The affected muscles are obviously reduced in bulk, while their antagonists, acquiring strength and growth with the rest of the body, turn the leg and foot inwards, and render the patient lame and awkward in his gait. There are three species of club-foot:—talipes equinus, talipes varus, and talipes valgus. The first consists of such a contraction of the heel as renders the patient unable to walk, except on the toes; in the second the toes are turned inwards, and the patient walks, as it were, on his outer ankle; in the third the foot is distorted in the opposite direction, so that the sole of the foot is turned completely outwards and a little backwards, and the patient treads entirely on the inside of the instep and on the inner ankle. Analogous distortion in the hands are met with after convulsions in infants, in which cases the strong flexor tendons, which are generally the seat of the contraction, distort the hands in a manner, which, if not interfered with, remains through life.

Treatment.—The tedious process formerly adopted, consisting of splints, &c., for the cure of club-foot and other muscular con-

tractions, are now exploded, and the more speedy and eligible operations introduced by Stromyer substituted in its stead. These consist of the subcutaneous division of the contracted tendons and their gradual extension after re-union by means of a foot-board constructed for the purpose. The only operation mostly required for the cure of talipes equinus and varus is the division of the tendo achillis, which may be effected in the following manner:— A sharp-pointed, fine knife, with a straight cutting surface, of the length of one inch, and a handle five inches long, should be in readiness. The child being then seated, an assistant should support the knee, while another person drawing downwards the heel with his left hand, and pressing upwards the toes and front of the foot with his right hand, produces the requisite tension of the tendon about to be divided. The patient being thus prepared,

"The operator, after feeling the outline of the tendon with the left fore-finger and thumb, passes the bistoury through the skin, one or two fingers' breadth above the malleolus internus, with one of its sides turned towards the tendon and the other directed towards the deeper muscles and the tibial vessels and nerves. On being satisfied that the point of the knife has been passed beyond the external edge of the tendon, and has nearly reached the skin on the opposite side, the knife is turned so as to bring the cutting edge to press against the anterior surface of the tendon, which is then divided by the action of withdrawing the knife from the limb, and commonly by a single stroke; the complete division of the tendon is known by the immediate cessation of the tense resistance, by hearing a distinct snap, and by feeling before the knife is wholly withdrawn that nothing remains undivided except the flaccid integuments. The operation does not occupy a quarter of a minute, and is almost bloodless, as usually not more than a single drop of blood is effused." *

"The division of the tendon of the posterior tibial muscle is, in my opinion, best accomplished at the distance of two or three fingers' breadth above and behind the internal malleolus. The point of a strong and straight bistoury should be introduced through the skin at the outer edge of the tendon, and passed between it and the tendon of the long flexor of the great toe, directed towards the tibia. As soon as the knife reaches the bone, the handle should be depressed outwardly, and the point carried internally beneath the posterior tibial tendon, and continued onwards until the surgeon is satisfied that the point has

* "Treatise on Club-foot," &c., by W. J. Little, M.D., p. 30.

passed beyond the inner edge of the tendon. He may then feel that he has the tendon upon the edge of the knife, when by a few slight cutting motions he may divide it without difficulty. No snapping sound, similar to that which follows the division of the tendo Achillis, is heard when the section of the posterior tibial tendon is accomplished; as the fleshy fibres of this muscle take their origin so low towards the malleolus internus, that they prevent the occurrence of any considerable retraction of the superior end of the tendon." *

The division of the posterior tibial and the tibialis anticus and flexor longus pollicis muscles is not required, except in very bad cases of long standing. When the operation on the two latter muscles is required, the following is the plan recommended by Dr. Little:—

"The most favourable situations for dividing the tendons of the tibialis anticus and flexor longus pollicis muscles, are where the former passes in front of the ankle-joint, and where the latter is felt most prominently in the sole of the foot, in those cases where division is required. The manner of dividing each of these tendons is to pass the point of a bistoury through the integuments, and then, with great care, beneath the tendon, avoiding to carry the knife farther than is absolutely necessary, and dividing the tendon from within outwards, in order not to endanger any of the neighbouring structures. The recoil of these muscles, on their tendons being divided, is distinctly felt and heard. If they be thus cautiously divided, no risk is incurred of injuring the anterior tibial, posterior tibial, and internal plantar arteries, or any of the nerves. The wounds made in the integuments are extremely small, and unite by adhesion; consequently all chance of suppuration and sloughing is avoided." †

The tendons requiring division, in cases of talipes valgus, are those of the peronei muscles and sometimes also of the tendo Achillis.

After these operations no further dressing will be required besides adhesive plaster; and the limb should be laid on its outside upon a pasteboard splint previously adapted to it, so as to preserve its deformed position during three days, at which time the ends of the divided tendons will have become re-united by the effusion of lymph. The splint being now removed, the extremity must be placed in Stromyer's apparatus, and exposed to gradual extension, which may be completed in the course of three or four

* "Little," p. 31. † Ibid.

weeks. The apparatus must be occasionally employed for some time afterwards.

Children should not be exposed to this treatment until they are twelve or fourteen months old, and able to bear restraint and confinement; but in cases of T. varus very early means should be used to reduce the disease to that of T. equinus. The plan pursued for this purpose with infants under six months is the following:—

"It consists of the application of a smooth and narrow roller-bandage around the foot and leg, from the extremity of the toes to the knee; interposing along the inner margin and sole of the foot, and posterior and internal part of the leg, a quantity of cotton wadding, to protect those parts from pressure: the limb should then be firmly and evenly bandaged in a tin splint, somewhat differently constructed to those usually employed, the entire attention of the surgeon being first directed to the removal of the inward tendency of the toes, and the reduction of the T. varus to the condition of T. equinus. The limb, when properly secured in this splint, is exposed to pressure in the direction the toes would maintain, if held outwards with the hands in the position of T. equinus, the inside of the metatarso-phalangeal articulation of the great toe and inside of the superior extremity of the tibia being the fixed points towards which the bandage presses the ankle and tarsus, tending to overcome the unnatural curve presented by the deformed foot.

"Much care is requisite in the application of the splint, as pressure in an improper direction might at this early period of the development of the tissues of the foot produce a permanent displacement or flattening of the bones of the tarsus.

"The back of the splint should be applied to the posterior part of the leg and foot, and the raised part should extend along the inside of the leg and inner margin of the foot. Should the splint have slipped around the leg, it must be immediately re-applied. The whole apparatus should also be removed on every occasion that the bandages become soiled by the infant, and immediately re-applied; for if the foot were permitted to remain a few hours without the restraint of the splint, more progress would during that period be lost than had been gained during its application for treble the length of time."*

Proper knives and the foot-board of Stromyer may be purchased at the shop of Mr. D. Ferguson, Instrument maker to St. Bartholomew's Hospital, Giltspur Street, London.

* "Little," p. 176 and 177.

Those cases of paralysis which proceed from compression on one of the nervous centres are, as I have said before, incurable. Those which occur during dentition or remittent fever, or follow the exanthemata, will generally give way to early and proper medical treatment. Such cases are connected with a torpid state of the bowels, which is apt to occur from the relatively increased circulation and excitement of the nervous system, which prevail in the alveolar membranes and skin during the development of the first set of teeth, and of remittent and eruptive fevers. By promoting the peristaltic action and the natural secretions of the intestinal canal, the healthy functions of the excito-motory nerves are restored, and the paralysis, when the ganglionic system is unaffected, ultimately disappears. These objects are best accomplished by purgative doses of chloride of mercury and jalap, repeated every third morning, and by strychnine, which should be commenced with the dose of one-twentieth of a grain for a child about four or five years old twice or three times a-day. When the paralytic muscles are in a state of atrophy and the superincumbent skin deprived of proper temperature, the remedies should be such as are calculated to act upon the sympathetic ganglia. For this purpose some of the preparations of steel are the best, particularly the oxide. In obstinate cases, and those of long standing, it may be found necessary to divide the tendo Achillis and apply the foot-board.

For further information respecting the mechanical treatment of club-foot, and the different operations for it, which may be performed at any age after twelve or fourteen months, the reader is referred to the valuable treatise on the subject before referred to, published by Dr. Little.

DISEASES OF THE EYES.

PURULENT OPHTHALMY.

The *Purulent Ophthalmy* of infants is the earliest of the diseases of the eyes, to which the attention of the physician or surgeon is called. It commences about the third day after birth with a slight redness of the outer or conjunctive coat, especially observable at the canthi, accompanied with a little discharge, which agglutinates the lids. In a few days a thick yellow, purulent discharge escapes, and on examination the conjunctiva is found inflamed and the upper lids swollen. As the

inflammation advances, the discharge becomes more copious and the upper lids assume a dark red and almost purple colour on their external surface, while their inner coat is highly inflamed. In this stage of the disease the mucous membrane in front of the globe will be found on examination infiltrated and elevated, and the cornea dull and void of transparency. This state of the mucous membrane is called chemosis, and its advance is limited at the cornea by its intimate connexion with that part. Extreme intolerance of light accompanies the progress of the inflammation, and when the disease is not retarded by proper remedies, the conjunctiva assumes a villous appearance, resembling inflammation in the mucous coat of the intestines, and a granular state succeeds, attended with a bloody and thinner discharge. The effects produced upon the cornea are various. There may be effusion of lymph between its superficial layers constituting temporary blindness; or ulceration of a destructive character may creep round its margin, and terminate in gangrene or mortification, and incurable opacity; during which process the lens may escape; or ulceration may present itself at one spot either through the mucous or serous envelope of the cornea, and terminate in proptosis or staphyloma; or ramollissement or softening of the cornea may occur, followed by an aperture through which the humours of the eye may escape; or suppuration of the globe may be the final result. This softening of the cornea, it must be observed, however, is not peculiar to this disease, as it was produced by an experiment made by Majendie on a dog, which he had confined exclusively to the use of sugar for food, whereby it was reduced to extreme exhaustion and marasmus;* and Dr. C. M. Billard has seen many infants in the Foundling Hospital at Paris afflicted with softening of the cornea and escape of the crystalline lens, who had been reduced to a state of complete marasmus by long-continued gastro-intestinal disease, and had no palpebral inflammation.† I may also add that softening of the cornea has appeared in my practice in the adult as well as in infants as a consequence of purulent ophthalmy, when the patient has been subject to derangement in the chylopoietic viscera, which in this disease as well as in iritis, it will be found essentially necessary to modify or remove. Mr. Middlemore has once seen dropsy of the eye follow this form of purulent ophthalmy.‡ As results of this disease the iris may become closed, the pupil may be rendered

* "Précis Elémentaire de Physiologie," tom. ii. p. 209.

† "Traité des Maladies des Enfans," p. 667.

‡ "A Treatise on Diseases of the Eyes," by Richard Middlemore, 1835, p. 1603.

angular, the iris may form adhesions with the lens or cornea, or be projected through an ulcer in the cornea producing proptosis of the iris.

It appears to be the general opinion that this disease owes its origin to the introduction of morbific secretions between the eyelids of the infant during his passage through the vagina of the mother; and its early appearance after birth and its greater prevalence among the children of the poor than the rich are adduced as reasons for entertaining this opinion. This conjecture is not altogether supported by facts, as the disease has been known to occur and pass through all its stages and end in opaque cornea *in utero;* and congenital opacity has been observed to disappear gradually by absorption after birth.* There can be no doubt that gonorrhœa and other acrid discharges are frequent causes; but, as far as my own observation has gone, I have been satisfied that the disease has originated from exposure to cold, and especially an easterly wind, more frequently than from any other cause; and my belief that such is the most common origin of the disease is confirmed by the extensive experience of Langenbeck of Vienna, who remarks that the children in the Foundling Hospital in that city who are exposed to cold, and nearly dead from starvation when admitted, are much more frequently attacked with purulent ophthamy than those who have the advantage of maternal care in the Lying-in-Hospital, whose mothers are women of the lowest description and almost invariably labouring under gonorrhœa.†

Hurletoup attributes the frequency of purulent ophthalmy at the Foundling Hospital in Paris to the crowding together a great number of infants in badly ventilated wards, where, he may have added, they are left at that helpless age with only one or two attendants in each apartment.‡ My own experience proves that the purulent ophthalmy of infants occurs during the month of May, when the easterly wind and erysipelas prevail in the proportion of 7 to 8 compared with all the other months in the year.

Treatment.—In the commencement of the disease an injection, composed of sulphate of zinc and distilled water, in the proportion of two grains of the former to an ounce of the latter, will be sufficient to effect a cure. It is customary also to give the infant a few doses of carbonate of magnesia. Alum, in the proportion of five to ten grains to the ounce of water, is a good application; but

* "Lancet," No. 858, p. 713, and "Medical Gazette," Dec. 11, 1840, p. 432.

† "Neuve Chir. Bibliothe," vol. iii., p. 208.

‡ "Inflammation de la Membrane Mug. Gastro-pulm. chez les Nouveaux Nés." 1823, Dis. inaug., p. 16.

when the disease resists these milder remedies, the most effectual injection will be found to consist of nitrate of silver, which may be used in the proportion of from five to ten grains to the ounce of water. The injection in every instance should be introduced frequently every day by means of a glass or bone syringe, passed under and along the upper eyelid at the outer angle. When the granular condition of the mucous membrane obstinately persists, the morbid surface should be rubbed daily with sulphate of copper; but it must be observed that such a state of that membrane would not be met with if local depletion be timely adopted. Hence, at the commencement of a severe attack, leeches should be applied to the upper eyelids; but after the acute stage has passed by, stimulants will be found the best applications. These opposite modes of treatment are rendered necessary by the state in which the disease is found when the practitioner is consulted, and therefore must not mislead the inexperienced into a belief that every case can be safely treated alone by stimulants. The nature of the disease is the same as that of purulent ophthalmy in adults, which it is well known cannot be safely treated, when severe, without active and decided sanguineous depletion in the commencement. When suppuration of the globe takes place, the patient experiences great suffering, which should be relieved by puncturing the cornea. Mr Walker, of Manchester, is a strenuous advocate for the exclusively stimulant treatment. He says the best remedy, especially to prevent ulceration of the cornea, is the application of nitrate of silver in substance to the lining membrane of the palpebræ. His practice consists in applying the caustic not only to the inner surface of the lids, but to the chemosed, conjunctival covering of the front of the globe, and holding it there a few seconds. As the disease advances, he states that the facility of its application increases. He never uses bleeding of any kind, and repeats the caustic once or twice a day, according to the state of the eye. When ulceration has taken place he applies it twice a day, and says little else is necessary.*

ULCERATION OF THE CORNEA.

As one of the most frequent consequences of purulent ophthalmy, ulceration of the cornea claims our attention. This ulceration is either circular or oval, or it may partly or entirely surround the cornea. The cornea, like the cartilages of joints, in its healthy state possesses but little sensibility compared with that

* "Walker's Oculist's Vade Mecum and Medical Retrospect," vol. 8, p. 290.

which is excited by inflammation and consequent ulceration. Sometimes these ulcers are superficial and smooth, at others deep and ragged. If permitted to proceed, they are apt to terminate in the complete perforation of the cornea and consequent projection of a portion of the membrane of the aqueous humour with or without procidentia iridis, or in an attenuated and projecting state of the cornea, constituting staphyloma.

Treatment.—While any considerable vascularity and extreme photophoby exist, it will be proper to apply leeches immediately below the lower eyelid, or to the temple. After the inflammation has been modified, the ulcer should be touched daily, or every second day, with nitrate of silver scraped to a point, and a little oil should be afterwards dropped between the eyelids. During chemosis from conjunctival inflammation, the vessels of the cornea are strangled, and Mr. Tyrrel has discovered that radiated incisions, dividing the cornea from the centre to the sclerotic, immediately stops the ulcerating and sloughing process. Care must be taken to let the incisions of the membrane pass between the recti muscles to avoid the large vessels. For the cure of ulceration of the cornea and incipient pannus, M. Ammon performs the following operation with a remarkably successful result: a transverse fold is made in the upper lid, and the base of this fold is pierced by a curved needle with two threads of cotton, which form a seton. The ends of this seton are then to be fixed on the forehead by means of a piece of diachylon, the eyelid being so sufficiently raised as not to touch the globe. This suspension of the eyelid has a double influence. It acts as a seton on one hand, and on the other preserves the eye from the contact of the inner surface of the eyelid, which is often granular, and produces and continues the inflammation. There is one objection to this operation, which is, that it may excite erysipelas of the lids.*

OPACITY OF THE CORNEA.

This may be either partial or complete, and it may be seated in the anterior, middle, or posterior laminæ of the cornea. Different names, as *nebula, albugo, leucoma*, &c., have been given to it, according to the appearance and extent of the opacity. The colour of the opaque cornea may be pearly white, or grey, red, or black.

Treatment.—Those slight obstructions to the transmission of light which are produced by the effusion of lymph between the

* "Annales Belges d'Oculistique."

front layers of the cornea in infants, in general spontaneously disappear by absorption; and when that restorative process has commenced, it should not be interrupted by any interference. Several months, or even years, may elapse before complete absorption may be accomplished. Should it prove obstinate, a little of an ointment composed of five grains of biniodide of mercury and a drachm of lard may be applied to the inner edge of the lower eyelid every night. It occasions considerable pain and smarting, but I have found it very useful in such cases. Care must be taken to avoid the use of any stimulant during the existence of inflammation. Mr. Middlemore recommends the alternate use of drops composed of bichloride of mercury, nitrate of silver and vinum opii, adhering to each one week at a time.* The same writer states that he has been successful in removing the more deep-seated and dense opacity, called leucoma, by the application daily or on alternate days of the nitrate of silver ointment and the external exhibition of mercury, so as to keep up gentle ptyalism.† The ointment to which he alludes, I conclude, is that of Mr. Guthrie, which is composed of nitrate of silver ten grains, liquor plumbi diacetatis twelve drops, lard one drachm. The nitrate of silver ointment spoken of by Mr. Middlemore in another place is composed of four grains of the nitrate and one of lard.

When a sound and transparent portion of cornea is left by the disease, and the opacity is incurable, useful vision may be restored at a proper age by the operation for artificial pupil, by cutting away a corresponding portion of the iris for the transmission of light. Other ingenious expedients have also been adopted for the purpose of transmitting light to the retina. One of these consists in the division of one of the recti muscles, for the purpose of producing squinting; whereby, in cases of central opacity, the light is admitted through the pupil at the side, instead of the front of the eye. M. Florent Cunier has published several successful operations of this kind.‡ Another expedient, the propriety of which appears to me to be very questionable, has also been practised by Dr. Gultz, of Vienna, namely, the slicing off some of the front opaque laminæ of the cornea with a cataract knife.‖

* "Treatise on Diseases of the Eyes," vol. i. p. 451.
† "Loco citato," p. 453.
‡ "Medical Chir. Review," Jan. 1842, p. 211.
‖ "Lancet," new series, No. 2, Mar. 30, 1844, p. 45. See also "London and Edinburgh Med. and Surg. Journal," Mar. 1844, p. 199.

HERNIA AND FISTULA OF THE CORNEA.

When the ulceration in the cornea penetrates almost entirely through its laminæ, the remaining layers, together with a portion of the aqueous humour, and its serous envelope, are forced through the aperture, and protrude. This is called hernia of the cornea. As the disease advances, the hernia gives way, and a fistulous opening, discharging the aqueous humour, is formed.

Treatment.—Before the distended layers of the cornea give way, a lotion, composed of five grains of nitrate of silver to an ounce of water, should be applied to the projection twice a-day; and, as soon as the fistulous opening is observed, its orifice must be touched daily with nitrate of silver, ground to a fine point, and a strong solution of extract of belladonna should be applied on the eye-brow every night, to dilate the iris, and prevent it from being forced into contact with the opening in the cornea. When slight adhesion of the iris to the fistulous opening has taken place, it will often be removed by this treatment; the artificial dilitation of the iris dragging away its adherent fibres. This is a matter of great importance to the patient, and ought never to be neglected. Mr. Walker, of Manchester, says, that when the iris is in contact with the ulcer, at the margin of the cornea, the belladonna should not be applied; and that when the iris projects through the opening, the projecting part should be removed with scissors.* The effect of the nitrate is that of producing a small eschar, which facilitates the cicatrisation of the ulcerated opening.

STAPHYLOMA OF THE CORNEA.

One of the most unfortunate results of purulent opthalmy, is staphyloma. This consists of a conical projection of the opaque cornea, more or less complete. In extreme cases, the projection is so great as to prevent the lids from closing, and to constitute a most miserable and frightful deformity. It is produced by the destruction of the anterior laminæ, or the morbid softness and want of elasticity of the cornea, occasioned by antecedent ulceration or chemosis. When the whole of the cornea is involved, the disease is called spherical cornea, and the lens, iris, and part of the vitreous humour, are included in the tumour. In conical staphyloma, the lens retains its situation, and prevents a more extensive projection.

* "Lancet," July 1840, p. 519, 522.

Treatment.—It sometimes happens that nature reduces the deformity by repeated bursting of the tumour, which at length collapses. In general, some operation will be required. The tumour may either be repeatedly tapped, by means of a small needle adapted for the purpose, or it may be excised. When puncture is decided upon, the opening should be made at the thinnest part. Various proceedings have been adopted to produce counter irritation, in the hope of rendering a repetition of this operation unnecessary. Of these lunar caustic, seton, and double ligature, are the principal. They are, however, all uncertain, and tedious in their operation; and therefore I should advise the more certain expedient of removing the tumour with the knife, which I have many times performed with success. For this operation, a cataract knife is recommended; but a very small scalpel will answer the purpose. Inflammatory subjects, and those who indulge in free living, and are in a state of plethora, should, previously to the performance of the operation, be bled and purged, and confined to a reduced scale of diet, to prevent subsequent inflammation, which, although it seldom occurs, may happen. Violent purulent ophthalmy accompanied with chemosis, followed the operation in a medical student, on whom Mr. Lawrence operated. The operation ultimately succeeded.* Such a result will rarely occur to the poor, who are sufficiently prepared by low diet, and are the most frequent subjects of the operation, in consequence of the neglect of the previous ophthalmy, or the ignorant manner in which it has been treated. The mode of operating which I adopt, is the following:—The eyelids being separated by an assistant, the operator transfixes the staphyloma with a hook, and then with a stroke of the knife divides the opaque cornea near its circumference, beginning at the upper part. Instead of the hook, some surgeons transfix the cornea with a needle and ligature. Some linen rag, dipped in cold water, should be bound over the eye, and frequently moistened and replaced. In a few days a transparent, horny substance, resembling the cornea, will be found to have closed the opening, and at the end of a week blood-vessels may be seen traversing the new cornea, and giving it the appearance of an aneurismal varix. At the end of fourteen or eighteen days, all discharge will be found to have ceased, and the cornea to have resumed its opacity and consequent tolerance of light; and the staphylomatous projection having been removed, the patient may then avail himself of the use of an artificial eye, which being made of enamel, may be constructed so as to present a perfect resemblance to the sound one.

* "Treatment on Diseases of the Eyes," p. 375.

Mr. Middlemore recommends the removal of the staphyloma midway between its centre and margin, with the view of preventing the escape of the lens, which he considers has the effect of restoring the external form of the eye better than the larger incision. With respect to the conical and partial staphyloma, when it becomes troublesome by the irritation it excites on the lids, it may be excised down to its base, leaving the remainder of the cornea. Should inflammation commence, bleeding, general and local must be had recourse to, as well as purgatives and low diet. Considerable hæmorrhage sometimes follows the excision of a vascular staphyloma. The best mode of restraining it is to allow a coagulum to form and fill up the opening.*

PUSTULAR OPHTHALMIA, OR PUSTULAR OPHTHALMY.

The children I have found most liable to this disease, are those who are delicate, and descended from scrophulous parents, and have been the subjects of remittent fever. It appears in the form of small vesicles or pustules on the outer or mucous membrane of the eye, which is liable to the same affections as the skin and other mucous tunics. Several prominent red vessels are seen passing horizontally from each pustule towards the outer or inner angle of the eye; and when the disease is seated near the margin of the cornea, it stops short at that part, or becomes crescentic, in consequence of the very close connection existing between the conjunctiva and cornea at that part bounding its progress. Several pustules sometimes appear at the same time, and the mucous membrane extended over the cornea is also liable to their invasion, and to be streaked with red vessels. In this situation, in consequence of the more intimate union of the conjunctiva with the cornea, just alluded to, and the resistance afforded by the former, absorption and perforation of the cornea are apt to occur, and to endanger perfect vision. The pustule is generally round and prominent, occasioning irritation to the palpebræ; but it is sometimes diffused on the membrane covering the sclerotic, where the attachment between those parts is comparatively loose. The eruption first assumes a vesicular, and afterwards a pustular appearance, and manifests itself in some children speedily after exposure to cold. The disease is, for the most part, attended with more or less inflammation of the tarsal membrane, but not to such an extent as in scrophulous ophthalmy.

* "Middlemore Provincial, Med., and Surg. Transactions," vol. iv. p. 533.

Treatment.—A lotion, containing two grains of nitrate of silver to an ounce of water, a purgative every third morning of chloride of mercury and jalap, and the following ointment applied to the inner edge of each of the lower eyelids, every night, will constitute all the treatment required; except perforation of the cornea, and proptosis of the membrane of the aqueous humour should have taken place:—

R—Hyd. Nitrico Oxyd. Pulv., gr. x.
Adepis ʒ ij. m. et fiant unguentum.

The following are the proportions of chloride of mercury and jalap I have found useful:—

R—Hydrarg. Chloridi, gr. j.
Pulv. Jalapæ, gr. iij. m. fiant pulvis.

This is a suitable dose for a child one year old, double the quantity for one two years, treble the quantity for one three years, and four times the quantity for one four or five years of age.

When the ulceration extends through the cornea, the daily application of argenti nitras, in form of a pencil, will be requisite.

The lymph, which may have been effused between the layers of the cornea, is almost invariably absorbed in the course of time. Indeed, it is astonishing to see the reparation effected by the absorbents after the pustule or ulcer has been healed. Even the perforation and proptosis, when properly attended to, ultimately leave much less disfiguration than might in the first instance have been expected.

SCROPHULOUS OPHTHALMY.

This disease is usually found in children from the first to the sixth year. Those most subject to it have what is called the scrophulous diathesis; viz., light hair, blue eyes, delicate skin, thick lips, great irritability, and precocity of intellect; or, black hair, brown thick skin, mental torpor, sluggish circulation, and long eye-lashes. Its attack commences with slight redness in the conjunctiva, a deeper redness in the tarsal membrane, marked intolerance of light, profuse discharge of tears, and frequent sudden contractions of the muscles of the lids. The intolerance of light, and the force with which the muscles conceal the eye, are so great, that it is almost impossible to separate the lids. The patient sits or stands in such a position as to avoid the light of the windows, and often seeks a dark corner of the room, with his back towards the light, for the same purpose,

holding his hands almost constantly over the lids, to exclude more effectually the rays of the morning and mid-day sun. This photophoby, especially when little apparent redness or actual pain is present, is characteristic of the disease, and denotes the highly sensitive state of the retina, which, as the sun retires in the evening, in a great degree subsides; so that it is not uncommon to find the patient, at the evening twilight, enjoying his playthings with his eyes almost wide open. The orbicularis palpebrarum and the corrugator muscles are assisted by those of the face and angle of the mouth, in closing the lids, and their strong and continual action during the middle of the day, adds to the peculiar features which the disease presents. In a short time red vessels may be perceived ramifying over the conjunctiva, and sometimes the cornea; and small pustules often appear, which are liable to terminate in ulceration, and to penetrate through the cornea. These pustules are said by some to be peculiar to children of dark complexion; while the vesicles, which also are met with, containing only serum, and sooner admitting of cure, are supposed to be confined to those of fair complexion. Ulceration of the cornea also takes place in some cases, without preceding vesicle or pustule, leaving a kind of superficial cup or cavity, as though a small portion had been cut out, itself and the adjoining parts being perfectly transparent. Inflammation of the meibomian glands, or small pustules on the eyelids, are apt to attend. The effects of scrophulous ophthalmy are often serious; as iritis, destructive ulceration of the cornea, terminating in discharge of the aqueous humour and procidentia iridis; opaque cornea, staphyloma, or pannus.

Among the exciting causes of this disease, worms and dentition are mentioned by writers, of which, as actual causes, I entertain great doubts. There can be no question, however, that it is often a sequel of measles, small-pox, and scarlet fever; inflammation of the conjunctiva always accompanying those eruptive diseases, especially the two first.

Treatment.—In the management of this disease, it is of great importance to attend to the constitution of the patient, as well as to appropriate local remedies. It must be borne in mind, that scrophulous subjects are irritable, inflammatory and weak, and incapable of bearing great fatigue or confinement without injury. Such patients should therefore be advised to enjoy country air, and to avoid exposure to cold and moisture, to take regular and gentle, but not fatiguing exercise, and to avoid late dinners, late hours, and pastry, and all other unwholesome and indigestible food. In short, it must be observed, that any abuse of exercise or food,

which repose or abstinence would speedily rectify in a sound person, will excite or aggravate disease in a scrophulous constitution. The same remarks will apply with respect to clothing. A ridiculous prejudice prevails with some persons on this subject, which induces them to expose their children to cold for the purpose of hardening them—a prejudice which may be traced to the writings of such learned men as Locke, who, although he wrote a most elaborate essay on the human understanding, being ignorant of the animal economy, committed an egregious error in his little work on education, by expressly recommending the exposure of children to cold. Every young animal requires warmth, and, from the reports of the Royal Agricultural Association of England, it appears that the nutrition and perfect health of maturer animals, and the economy of their food, are promoted by warmth. Exposure to the open air in fine weather should by no means be forbidden, but proper care should be taken to preserve the animal heat on the surface by clothing adapted to the season.

With respect to internal remedies, our chief reliance must be placed on active purgatives, followed by tonics. The best purgative is the chloride of mercury with jalap, which should be repeated every third morning; and the most useful tonic is disulphate of quina, of which half a grain or a grain may be given three times a day. In some cases of this disease, when the intolerance of light is the most urgent symptom, quinine acts almost like a specific in affording relief for that symptom. In other cases the oxyde of iron will be found the best tonic; and when irregularity of the bowels, tumid abdomen, and emaciation are present, hydrargyrum cum cretâ, combined with rhubarb, may be administered every alternate night with advantage. It is asserted by Mr. Hamilton of Dublin, that this disease is rapidly cured by bichloride of mercury, given to children in doses of one twelfth or one sixteenth of a grain.*

As to local remedies, vinum opii, or drops composed of equal parts of tincture of opium and water, will afford great comfort, and often enable the child to bear exposure to a moderate light. Mr. Middlemore† extols the former application when phlyctenulæ are not present. For this purpose, Mr. Lawrence considers Mr. Battley's liquor, opii sedativus, an eligible form for an opiate application.‡ When these small pustules appear, nitrate of silver drops will be the most efficient application, and should be used twice or three times a day. The most convenient mode of intro

* "Dublin Journal of Med. Science," July 1840, p. 425.
† "Treatise on Diseases of the Eyes," v. i., p. 292.
‡ "Treatise on Diseases of the Eyes," p. 255.

ducing these drops will be found by cutting a quill into the form of a pen, and rounding off the point. This being dipped into the solution, will take up a sufficient quantity, to be introduced between the separated lids upon the surface of the eye. When the cornea has become ulcerated, and the ulcer continues stationary and indisposed to heal, it should be touched daily, or every second or third day, with argenti nitras, pointed like a pencil. Dr. Hocken informs us, that the intolerance of light and lachrymation are speedily removed by lunar caustic, drawn over the surface of the upper eyelids: one or two applications generally suffice.* This application is supposed to act on the filaments of the ophthalmic branch of the fifth nerve, and on the retina; and thus the contraction of the pupil, the unavoidable closure of the lids, and the lachrymation and intolerance of light, are removed by the sensibility of the nerves, affecting the lens, retina, &c., being paralyzed. Dr. Furnival, of Hertford, states, that the same good effects results from the external application of tincture of iodine on the upper and lower lids.† Dr. Hildreth, of Tancaville, Ohio, assures us, that an ointment prepared with ten, twenty, or thirty drops of creosote, and an ounce of ung. hydrargyri insinuated under the upper lid, and thence distributed over the eye, is sometimes a better remedy than nitrate of silver.‡ Should the ulcer have made its way through the cornea, extract of belladonna, softened with water or oil, must be spread on the eyebrow, without delay, every morning and evening, to prevent the adhesion of the iris to the ulcerated aperture. In this case, the nitrate of silver drops should be substituted for the solid caustic. The eye should be excluded from the light by means of a shade, but free access of fresh air should be allowed.

After the disease has been subdued, the strictest attention should be paid to the locality of the patient, so that he may avoid a cold or humid atmosphere; and the bowels should be gently moved twice a week by salts and senna: and an issue may with advantage be inserted, and continued some time, in one of the arms. I have observed the greatest possible benefit derived, after the inflammation has subsided, from residence at the sea-side during the months of July and August. Small portions of lymph will occupy the seat of the pustule or superficial ulcer; but as in pustular ophthalmy, these are gradually absorbed, leaving the cornea in general entirely transparent.

* "Lancet," Nov. 1842.
† "Lancet," Dec. 10, 1842, p. 405.
‡ "American Journal of Medical Sciences," Oct. 1842, p. 364.

VARIOLOUS OPHTHALMY.

The conjunctiva, being a continuation of the mucous coat, or common integument, is liable to the attack of such exanthematous diseases as affect the general surface. Hence small-pox, particularly in the confluent form, is met with on the conjunctiva, both as a primary and secondary disease, where it frequently endangers vision, when it attacks that portion of the membrane which is extended over the cornea. At this part, as I have before observed, the connection between the mucous coat and the cornea is so intimate as not to admit of any rugosity or duplication of the former—an arrangement obviously designed for optical purposes. Hence, when a variolous pustule happens to be seated in the firmly adherent membrane covering the cornea, the slough, which is characteristic of variola, and which is invariably found in the true skin, being confined by the epidermis, occasions pressure upon, and ulceration in the outer laminæ of the cornea, requiring prompt attention to prevent perforation or opacity. It is the opinion of most physiologists, that the membrane covering the cornea does not possess all the marks of other mucous tunics. The parts of which it is composed are so condensed as not to admit of separate inspection, hence it has been supposed to be a membrane sui generis. That the eye of the serpent possesses an epidermis, is proved by its annual exfoliation and regeneration; and if it did not possess a papillary or villous coat, which is the proper organ for secreting mucus, I am at a loss to know how that secretion is effected, and how the membrane covering the cornea in the human subject can participate in an affection peculiar to the cutis vera. As to a rete mucosum, it may be difficult or impossible to discover it in a part so delicate and transparent.

During the progress of small-pox, the eyelids are usually swollen and closed; but so long as there is no purulent nor acrid discharge, the eyes will be found perfectly safe. It will, however, be necessary to watch the state of the lids to prevent their agglutination, which may be followed by permanent loss of the cilia. When pustules are forming on the cornea, their presence may be discovered by a sensation of roughness, and pricking, severe pain in the eye, and intolerance of light. When the pustule is first discovered, it seems small and surrounded with a misty appearance in the cornea, the conjunctional inflammation being then but little developed. In consequence of the firm union of the mucous coat with the cornea, the purulent secretion advances laterally and inwards; and if its progress is not checked, the cornea becomes

perforated, and the matter penetrates into the anterior chamber, constituting hypopion. Should the pustule burst externally through the epidermis, all the bad effects of an ulcerated and fistulous opening through the cornea will follow.

Secondary variolous inflammation and pustulation generally occur about two or three months after the primary disease has subsided. The same appearance of white pustules and haziness and subsequent diffusion of purulent matter on the cornea may be observed, as in the primary attack, and the same results may follow. When the pustule bursts, the slough I have before alluded to, as characteristic of variola, will be found on the surface of the cornea, which, from the cause I have mentioned, will be found in a state of ulceration, as in primary small-pox. Whenever ulceration takes place, a white cicatrix is apt to be left on the cornea, more or less impeding vision.

Treatment.—No further attention will be required in the treatment of simple variolous ophthalmy than frequent bathing of the lids to prevent their adhesion. In the more severe form of the disease, if the patient is vigorous, bleeding and the antiphlogistic treatment should be carried to a full extent. If, on the other hand, great debility and collapse of the vital powers should occur, we must be content to rely on local applications, assisted by such internal remedies as the symptoms may indicate. The best local applications are lotions of sulphate of zinc and nitrate of silver and the diluted nitric oxyde of mercury—ointment, which should be applied to the eyelids every night. Particular attention should be paid to the state of the bowels, which will require to be well purged at proper intervals. The pustule should be punctured; and Mr. Lawrence thinks it may be advantageous to adopt the plan recommended by Velpeau to arrest its progress, by touching it in its early stage with a solution of nitrate of silver, or with that preparation in substance.* When the pustule has burst, and ulceration has been suspended, the solid nitrate of silver may be applied to the ragged surface with advantage. Should inflammation of the iris supervene, recourse must be had to mercury, which otherwise will require great circumspection in its adoption. The use of this medicine for the treatment of hypopion, which has been proposed, is, in my opinion, quite unnecessary, as in every instance after the inflammation has subsided the matter will be spontaneously absorbed. The pustules which appear on the lids should be punctured, and adhesion of those parts prevented by the repeated application of warm water.

* "Treatise on Diseases of the Eyes," p. 258.

MORBILLOUS AND SCARLATINOUS OPHTHALMY.

During measles, and sometimes during scarlet-fever, the conjunctiva partakes of the inflammation affecting the skin; and in the former a congested state of that membrane covering the sclerotic coat is often found to precede the rash. Except in scrophulous children, no serious effect ever results from this kind of ophthalmy. In such children we often find pustules and ulcers forming on the cornea, as the result of the inflammatory action excited by measles; and I have met with, and operated upon, capsular cataracts, which have been the result of morbillous ophthalmia.

Treatment.—The eyes should be frequently bathed with tepid water, and protected from the light, and the patient should be well purged. When the inflammation seems unusually high, leeches may be applied to the temples. This will, however, be rarely necessary, as in general the state of the mucous membrane is more that of congestion than inflammation, and usually recedes as suddenly as it supervenes. When ulceration does take place, it must be treated in the same manner as ulceration from any other cause, by a weak solution of argenti nitras, and the occasional application of the caustic in substance. The diluted nitric oxyde of mercury ointment should also be applied every night to the inner margins of the lower lids. No disease appears so liable to excite latent scrophula into action as measles, and therefore the patient should be repeatedly purged with sulphate of magnesia and senna, and confined to moderate diet during eight or ten days after the rash and ophthalmy have disappeared.

CONJUNCTIVAL ABSCESS.

Phlegmonous inflammation in the eyelids, terminating in abscess, is a rare disease. In the cases I have seen it has always occurred in the upper lid, which is red externally, and greatly distended, the tunica conjunctiva presenting itself in front of the globe turgid with matter. The external surface of the lid discovers, from its highly inflamed appearance, the character of phlegmon. I believe this disease is produced by cold.

Treatment.—When the surgeon is consulted at the commencement of the inflammation, he should apply leeches to the lid, and recommend a fold of linen rag dipped in tepid water to be retained constantly on the part, and the child should be purged with sulphate of magnesia and senna. If suppuration cannot be prevented

by these means, a small lancet must be introduced into the abcess at the most projecting part beneath the lid, and rag moistened with warm water continued on the outer surface of the palpebra, until the abscess has healed, which will take place in a few days.

CORNEITIS, OR ACUTE INFLAMMATION OF THE CORNEA.

The cornea is composed of an outer mucous membrane, laminæ, or layers, constituting its proper, horny structure, cellular membrane connecting these laminæ and a serous membrane, which secretes the aqueous humour. Acute inflammation commences with some intolerance of light and a cloudiness in the cornea, which are followed by a pink zone surrounding it, composed of minute blood-vessels. At length a pain in the forehead, like neuralgia, comes on, and the cornea assumes a milk-white appearance. When the inflammation is confined to one portion of the cornea, there is a corresponding preponderance of the small pink vessels on its margin, as in some cases of iritis. Instead of the milky appearance, which is produced by the effusion of lymph between the laminæ, we sometimes find the cornea of a dark red colour, approaching to purple, completely obscuring the iris, and becoming unnaturally prominent. This condition has appeared to me to proceed from the rupture of the congested vessels, and the extravasation of the blood-globules destined to undergo the change, which takes place in the formation of pus. When the disease is more advanced, we find purulent matter in the place of the bloody appearance, which, when active means are employed, becomes absorbed; or it may burst externally, or into the anterior chamber, constituting hypopion. Inflammation of the cornea is sometimes partial, in which case some portion of the iris may be obscurely discovered. Children labouring under this disease are generally supposed to have incurable blindness, until the nature of the case is explained by some one conversant with ophthalmic surgery; for, although the inflammation is acute in the first instance, relief is seldom applied for by the poor and ignorant until temporary loss of sight has taken place. In some cases, on minute inspection, we perceive red vessels ramifying through the cornea, before vision is suspended by the deposit of lymph; and on viewing the surface of the cornea with a microscope we perceive numerous depressions or cup-like cavities, or ulcers, presenting a glassy appearance.

Treatment.—The most active measures are required to prevent suppuration, ulceration, softening, or mortification. The patient should be well purged, and afterwards repeatedly cupped on the

temple, and be put on a mercurial course, so as to keep up a decided action on the gums until the symptoms have disappeared. These cases are tedious, but there are none in the practice of ophthalmic surgery, which terminate in so satisfactory a manner when properly treated.

Case: November 1, 1837.—Miss G——, aged ten years, was brought to me totally blind. I found the blindness had existed two months, and was occasioned by effusion of lymph within the posterior layers of the cornea, which quite obscured the pupil in each eye. The front layers of the cornea quite transparent. A slight vascularity of the cornea, but no zone was present. Leeches had in vain been repeatedly applied. I prescribed cupping on the temple, and a grain and a half of chloride of mercury once in four hours. On the 4th, a little sight was restored in the left eye. The front of the cornea projected particularly at the margin, as if the aqueous humour was too abundant. As the patient objected to the medicine in form of powder, I prescribed four grains of pil. hydrargyri once in four hours. On the 6th, the sight in the right eye was improved, and the cornea projected in the same manner as that of the left eye. She was now directed to take ten grains of pil. hydrarg. twice a-day. On the 7th, the mouth became sore, and the sight improved in both eyes. From this time the lymph became rapidly absorbed, and by the repetition of pil. hydrargyri twice a-day during a few weeks, the whole of the lymph disappeared, and the sight was perfectly restored.

Case: 1838.—William Head, aged twelve years, had acute inflammation in the cornea three months, accompanied with effusion of lymph, which obscured the iris, and obstructed the rays of light; great intolerance of light, and a pink zone round the cornea. I directed the temple to be cupped, and the patient to take ten grains of pil. hydrarg. twice a-day. On the 10th, the cupping was repeated, the pain of which he had complained being unrelieved. On the 24th, the intolerance of light was diminished, but the pain and zone round the cornea remained; the cupping was repeated; the mouth was sore. On the 1st of July, the inflammation was nearly gone, and the sight almost restored; and in the course of another week every symptom of the disease disappeared.

Case: Nov. 16, 1841.—A young man, aged eighteen years, had suffered with complete blindness five months, occasioned by corneitis. The effusion between the layers of the cornea was of a dark, purple colour. He had intolerance of light, and severe pain in the eyes. I prescribed ten grains of pil. hydrargyri twice a-day. On the 26th, the mouth became sore; the front of the cornea was

transparent, while the posterior part was completely obscured by a bloody effusion, which had completely interrupted the sight; the pain had entirely subsided. On the 5th of December, the lymph became straw-coloured, and the sight was beginning to return; the mouth was very sore. On the 12th, the bloody and purulent appearance had left every portion of the cornea, and the intolerance of light had subsided; the pupil in one eye became now distinctly perceptible, and there was only a thin layer of lymph left in the cornea of each eye. On the 19th, the cornea became quite clear on one side of each eye, and before the end of the month all appearance of inflammation and opacity had ceased.

A variety of corneitis, of a scrophulous character, is mentioned by writers. All I need to observe here is, that when the disease occurs in scrophulous children it is generally secondary; the inflammation having migrated from some other structure of the eye. It is also distinguished from simple corneitis by an increased projection of the cornea, occasioned by a redundant secretion of the aqueous humour. With respect to treatment, it may require some modification. If the patient is weak and pallid, and if the mercurial treatment appears to disagree, the disulphate of quina may be substituted.

WOUNDS OF THE CORNEA.

Small particles of steel, or other hard materials, are sometimes struck against the eye and remain fixed in the cornea. The cornea is also liable to be penetrated by an iron nail, a knife, scissors, or some other sharp instrument. When the aqueous humour is evacuated by the accident, the iris comes in contact with the wound, and there is danger of its forming adhesion with the cornea, or projecting through it. Violent inflammation followed by softening and staphyloma of the cornea are also liable to follow.

Treatment.—Small portions of steel, glass, or other particles adhering to the cornea, may be easily and safely removed by means of a goose-quill cut to a sharp point. After the extraneous substance has been removed, the injured part should be examined with a microscope, in order that the surgeon may be satisfied of its entire removal, and that he may be able to convince the patient or his friends that the mark left in the cornea is only the stain occasioned by the foreign substance, which will ultimately disappear. A lotion, such as the liquor plumbi diacetatis dilutus, should be frequently applied, and in a day or two the effects of the injury will be removed.

The effects of a puncture or larger wound may be very serious. After the nail or other substance has been removed, leeches should be applied to the temple, and an active purge administered, and every thing done to obviate inflammation; and when the aqueous humour has escaped, in addition to other means, the extract of belladonna should be applied twice daily to the eyebrows to keep the iris in a dilated state; and chloride of mercury, should be given, so as to excite some sensible effects on the gums, which must be kept up until all danger of adhesion or inflammation of the iris has disappeared. In these cases inflammation, followed by considerable effusion of lymph and the usual zone in the vessels of the sclerotic coat, succeed every penetrating wound through the cornea. A lotion, consisting of two or three grains of argenti nitras to the ounce of water, will diminish the lachrymation, and promote the healing of the corneal wound.

INFLAMMATION OF THE MEMBRANE OF THE AQUEOUS HUMOUR.

This disease begins with loss of transparency in the cornea, and a cloudy appearance in the anterior chamber, attended with a pink zone round the circumference of the cornea. The natural colour and appearance of the iris are changed; it appears dark, loses its brilliancy, and its inner circle is thickened and contracted. Pain in the forehead, and a sensation of constriction are present, together with a furred tongue and fever. As the inflammation advances, portions of lymph may be seen in the aqueous humour, either in motion or deposited at the bottom of the anterior chamber. The nature of this deposit has been variously represented. Mr. Lawrence describes it as pus (" yellow matter"), Mr. Wardrop as albumen, and Mr. Middlemore as lymph. The quantity of serous fluid contained in the chambers is augmented by the excited action of the secreting vessels, and the cornea is consequently forced into a state of unnatural projection.

Treatment.—Blood should be taken away by leeches and a purgative, and afterwards chloride of mercury should be administered in small, repeated doses, combined with antimony, provided there is nothing in the state or constitution of the patient to contraindicate their employment; and if the inflammation should be tedious, counter-irritation should be excited on the adjoining temple. By these remedies this disease is in general readily removed. With the intention of relieving the tension of the cornea and the pain and sense of constriction felt by the patient, Mr. Wardrop has advised the evacuation of the aqueous humour by puncture; as this is only a palliative proceeding, and I believe

now seldom practised, it should never in my opinion be recommended for children, as we need not entertain any apprehension respecting the cure of the inflammation by other means, nor any doubt that the absorbent vessels will entirely remove any deposit of lymph or redundant fluid.

Mr. Middlemore describes a strumous variety of this disease, the symptoms of which vary little from those of the preceding, excepting that they and the inflammation producing them appear in a sub-acute form. The treatment he recommends for this variety are liquor potassæ, mineral acids, quinine, iodine, turpentine, purgatives, and local bleedings, and mercury if necessary. He judiciously cautions the practitioner against the indiscriminate use of mercury in scrophulous constitutions. In these cases a more strict attention will be required as to diet, exercise, and clothing, and counter-irritation will be found more indispensable than in the preceding variety.

SIMPLE ACUTE IRITIS, OR INFLAMMATION OF THE IRIS.

The earliest symptoms are pain in the orbit, the appearance of a red zone round the circumference of the cornea, varying in extent and intensity, discharge of tears, slight intolerance of light, diminished motion and brilliancy of the iris, with contraction of the pupil. As the inflammation proceeds, the intolerance of light and the lachrymation increase; the aqueous humour becomes turbid, and the inner margin of the iris puckered and thickened. The vessels of the sclerotic and conjunctiva become enlarged and obvious, and the colour of the iris is generally changed. The zone of pink or scarlet vessels stops short, and dips down near the cornea, leaving a pale circle intervening between them. An experienced and attentive observer will now discover shreds of lymph floating in the aqueous humour, or adhering to the inner circle of the iris, which when the aqueous humour first begins to resume its transparency, present a beautiful appearance from their delicacy and snow-white colour. If the disease is allowed to proceed, the inner circle of the iris becomes angular, and the portions of lymph approaching concur in forming a layer, which unites, consolidates, and obliterates the pupillary aperture. Some combinations are occasionally met with, as inflammation of the serous tunic of the anterior chamber, corneitis or abscess terminating in hypopium, &c. Until the progress of the inflammation is arrested, the dimness of sight increases, and in some subjects, involving most of the other structures, terminates in ophthalmitis, or in permanent adhesion of the anterior or posterior surface of the iris to the

cornea, or lens, leaving often no pupillary aperture, or only such as can serve no useful purpose for vision. As one of the results of iritis, Mr. Middlemore has formed a permanent dilatation of the iris produced by organised lymph deposited at the pupil, and rendering it thick and immovable.*

Treatment.—If the patient should be sufficiently robust, and of sufficient age to bear general bleeding, that remedy should be had recourse to; otherwise leeches should be applied to the temple, and a purgative administered. Mercury should then be given immediately after the bowels have been properly emptied. One or two grains of chloride of mercury, with the fifth or sixth of a grain of opium, according to the age of the patient, must be given once in two, three, or four hours. The effect of the mercury may be assisted by the inunction of mercurial ointment. This plan must be continued until a sensible effect is produced on the gums, or on the symptoms. Meanwhile the contraction of the iris must be counteracted by the application of extract of belladonna, every night and morning, on the eyebrow or upper lid. The extract should be moistened to a proper consistence for its application by water or by olive-oil, which has the advantage of preventing evaporation; and it may be used by means of a feather. Sometimes, especially in cold weather, the constitution appears to resist the action of the mercury, until violent tenesmus occurs, when the symptoms of iritis speedily begin to subside. This medicine should then be suspended, and a dose or two of opium given. When the tenesmus and exhaustion are excessive and alarming, an opiate enema or suppository must be administered. In such cases, when it has been desirable to expedite the sensible effects of mercury, I have succeeded, by the repeated use of the warm bath, and thus anticipated the effects of accumulated doses of the medicine. As soon as the purging and tenesmus have discontinued, the mercurial frictions, or the internal exhibition of mercury should be resumed at longer intervals, so as to maintain the specific action of the medicine on the capillary circulation in the iris. In such cases as I have just alluded to, without any effect having been produced on the gums, the disappearance of the turbid state of the aqueous humour, the thickening and discoloration of the iris, and the diminution or absence of the pink zone, have been remarkably sudden, and contemporaneous with a copious discharge of pure bile, which I conclude had the effect of unloading the congested vessels of the liver. The action of the mercury should be produced, in the first instance, as rapidly as

* "Treatise on Diseases of the Eyes," vol. i., p. 633.

possible, and afterwards kept up by a more gentle and moderate course, until the iris has entirely resumed its colour, regular shape, and dimensions, and all its fleecy and pendent lymph has been absorbed, which effects generally take place with astonishing rapidity, while the system is fully under the mercurial influence. Some auxiliaries may be employed in the commencement, to afford relief to pain, such as poppy fomentations and opiate frictions, over the orbit; and, when any circumstance renders the free use of mercury inadmissible, oil of turpentine may be administered; but to this I have had no occasion to resort in cases of acute, idiopathic iritis. Applications to the conjunctival surface are useless, unless its vessels should remain in a congested state, after the iritis has subsided.

CHRONIC IRITIS.

This sub-acute form of iritic inflammation commences insidiously, and proceeds slowly, and the patient seldom seeks advice until he experiences some dimness or defect of sight. In this state, which may have been many weeks in approaching, the cornea will be found a little dull, the aqueous humour not perfectly transparent, the pupillary aperture square, angular, oval, or otherwise irregular, thickened with lymph resembling white velvet, at one or more parts of its margin, opposite which will be visible corresponding rays of red vessels, a small distance from the outer margin of the cornea or the sclerotic coat. Hence, in chronic iritis, the zone is more interrupted and incomplete than in the acute form of the disease; and when only one portion of the pupillary border of the iris is inflamed, I have repeatedly seen only one bundle of pink vessels in the sclerotic, converging towards the seat of the disease in the iris, and presenting only a small segment of the interrupted circle, which is destined, as the disease advances, to form the imperfect zone. The patient makes but little complaint of pain, and we rarely find any lymph deposited on the surface of the iris, which preserves its natural colour, unless the disease is neglected and permitted to proceed to a more acute form. I have noticed this disease principally in children employed in manufactories, where they are exposed to currents of cold air, or to sudden change from heated rooms to a cold atmosphere. When it has appeared in adults I have traced it generally to the employment of the sight too long together on minute objects.

Treatment.—General bleeding is quite unnecessary. Leeches may be found useful; but the principal reliance must be placed

on a gentle course of mercury. Three or four grains of pilula hydrargyri, or five or six of hydrargyrum cum cretâ, should be given twice a day, until the pupillary edge and aperture are restored to their natural form and condition. In the advanced stage of the disease, a more active treatment must be adopted, and the application of belladonna will be required, as in acute iritis. To prevent relapse counter-irritation may be had recourse to, as a seton in the temple, or repeated blistering.

SCROPHULOUS IRITIS.

This is distinguished from simple acute iritis, by the same partial zone, which is found in chronic inflammation of the iris; by an occasional spot or redness on the cornea, produced by red vessels passing along the deep-seated laminæ; by the absence, except in protracted cases, of lymph on the anterior surface of the iris; by the same irregularity in the pupillary margin as occur in the chronic form just described; by a remarkable cloudiness in the aqueous humour; and by a greater intolerance of light than is met with in acute, idiopathic iritis. The results, from long-continued strumous inflammation, are deposit of lymph on the iris and consequent change, closure of the pupil, adhesion of the iris, &c.

Treatment.—Active treatment is here required. Leeches should be applied to the lower lid, and a grain of chloride of mercury, and two of antimonial powder, should be given twice a day. Should the disease remain stationary, after ptyalism has been established, Mr. Middlemore extols the use of disulphate of quinine, which may be given in a proper dose, from half a grain to one or two grains, three times a day, in any form most agreeable to the child.* Blisters or a seton in the neck, or an issue in the arm may be beneficially employed during the cure, and sometime after it.

MYDRIASIS, OR CONGENITAL DILATATION OF THE PUPIL.

I merely mention this as one of the congenital defects, which, when they are observed during infancy, may excite serious apprehension. In this singular affection, the pupil of one or both eyes is found preternaturally and immovably dilated. It does not interfere with vision, and requires neither medicine nor surgical treatment.

* "Treatise on Diseases of the Eyes," v. i., p. 707.

PERMANENT PUPILLARY MEMBRANE.

A whitish membrane occupies the pupil of the fœtus in utero until about the seventh month, when it is absorbed. Infants are sometimes born with this membrane entire. Such rare instances have been observed by several eminent surgeons.

"*Treatment.*—If the membrana pupillaris remain only in one eye, and if it be firm and vascular, you had better not interfere; but if it be merely reticulated, you may pass a fine needle carefully through the cornea, near to its margin, and most cautiously divide one or more of the frenulæ, as may be deemed necessary. I do not think it would be justifiable to produce a cataract in the attempt to remove this pupillary membrane which only existed in one eye.

"If the defect exist in both eyes, you may then use the needle, as for the posterior operation of solution; and if the membrane be very tough, you may employ the small knife suggested by Sir W. Adams, for the formation of artificial pupil. It may be necessary to perform several operations before the disease is cured.

"*After Treatment.*—In addition to the employment of the usual measures for the removal of any inflammation the operation may have excited, it would be advisable to apply the extract of belladonna to the eyebrow and forehead, once in twenty-four hours, during the progress of the cure.

"If the pupillary membrane were present in the eyes of an adult, the same operative proceedings would be necessary as for the cure of closed pupil with remaining capsule and lens, but the chances of success would not be considerable; first, because the retina has never been duly impressed by light; and, secondly, because the anterior chamber is small, and the development of the eye is rarely so perfect as it ought to be."*

CONGENITAL CATARACT.

This may be either capsulo-lenticular or lenticular, that is, either seated in the capsule only, or in the lens and capsule. The opaque lens gradually becomes absorbed, and is ultimately removed, the anterior and posterior capsules uniting and forming one thick, double membrane. When the lens is opaque only in the centre, it does not undergo absorption.† The congenital cataract has usually a streaked or dotted appearance, which arises from the partial opacity of the capsule. The disease appears to

* "Middlemore," vol. i., p. 760. † "Lawrence," p. 443.

be frequently hereditary. The central capsular cataract presents a star-like appearance. Mr. Middlemore says:—

"In these instances of congenital cataract, in which a *small* opacity only exists, either in the centre of the capsule, or (which is the more common of the two) of the lens (*cataracta centralis*), it is not advisable to have recourse to an operation. When it is large enough to give rise to any material impediment to vision, the question of operation may be entertained."*

Treatment.—The only remedy for congenital cataract is an operation. Much difference of opinion has existed as to the proper age of the patient for such a proceeding. If the operation is delayed too late, the eyes will be found to have acquired an unsteady, rolling motion, which may afterwards continue through life. If, on the other hand, it is performed at a very early age, there will be danger of convulsions being induced. Mr. Middlemore considers a period between the first and third year as preferable to any other. Mr. Lawrence recommends the operation to be performed in the first year, when he has his choice, thinking it of consequence that the education of the eye should be commenced at an early age.

Operation.—The only operation required for congenital cataract is that of solution, which is effected by dividing the capsule in several places, so as to admit access to the aqueous humour. Absorption, or, as some suppose, solution, then commences; and, on examining the eye operated upon, at the end of a few weeks, the lacerated capsule will be observed in a ragged or fleecy state, and diminished in extent. Should any part of the capsule remain adherent to or behind the iris, a second or third operation may be performed, with the view of gently dividing the adhesion, and pushing any fragments into the anterior chamber, where their absorption or solution will sooner or later take place. To effect these objects, I use a very small lancet-shaped needle, which, while it is penetrating the sclerotica, is scarcely felt, and is seldom followed by any inflammation. My needles are, I believe, much smaller than any in general use; and with them I have succeeded in effecting the absorption of the firmest cataracts in adults, by making gentle and repeated incisions, and exposing fresh surfaces to the action of the aqueous humour, until they have spontaneously escaped in a withered, ragged, and disorganised state through the iris, and, resting in the bottom of the anterior chamber, have ultimately disappeared after a longer or shorter period, by the action of the aqueous humour, whose influence appears to me to be limited

* "Middlemore," vol. ii., p. 184.

to such portions only of the lens or capsule as are deprived of vitality.

My mode of operating is the following:—The pupils having been dilated, and the child secured, and an assistant having drawn down the lower eyelid, the operator elevates the upper lid, and pierces the sclerotic coat with the needle, about a line from the cornea, and the same distance above or below the long ciliary artery, directing the point of the instrument towards the centre of the eye, until it has entered a few lines. He then passes it forwards, and having brought its point into the anterior chamber, makes two or three incisions through the capsule, after which he gently withdraws the instrument. The operation need not occupy more than a quarter of a minute. A pad of linen rag, moistened with cold water, is then bound over the eye, and the patient removed to a dark room.

I never use a speculum; and, when I operate on an adult, I generally separate the lids with my finger and thumb, unless I happen to have a medical assistant at hand; and I always operate on both eyes at one time, when cataract exists in both.

Mr. Lawrence's mode of operating is the following:—

The pupil should be first fully dilated with belladonna.

"A narrow table is the most convenient for the operation. The child must be laid on its back, with the head on a small pillow, which should be so placed that the head may fall rather over it, in order that we may have a good light on the eye. One assistant must hold the legs and lower part of the trunk; another the arms and chest; while a third, placed behind, fixes the head between his two hands, applied one on each side. A fourth assistant, who depresses the lower lid with the forefinger of one hand, may also, if necessary, use the other under the chin, to prevent any forward movement of the head. The operator, who is placed behind the head, raises the upper lid by the elevator of Pillier, with which he holds it securely against the margin of the orbit: it cannot be so perfectly and securely fixed by the fingers. With the other hand he pierces the tunics with the needle, in the same situation as in the operation of depression. A small, straight, sharp-pointed needle, cutting on its edges for about a quarter or three-eighths of an inch, should be employed.

"After the coats have been penetrated, the instrument must be passed through the thin edge of the cataract into the anterior chamber, and carried on till its point reaches the opposite edge of the pupil. The lens and capsule may now be divided transversely by a backward movement of the instrument, with which we may farther break up the lens, and push the fragments into the anterior

chamber, where, on account of their softness, they excite little or no irritation, and are speedily absorbed.

"When the lens has been removed by absorption, an opaque capsule usually remains, occupying more or less of the pupil, proportionally impeding vision, and requiring another operation. In the cure of this secondary membranous cataract, or where we have to operate in the first instance on an opaque capsule, we must proceed in the infant as we should do in the adult. We introduce the needle with cutting edges behind the iris; detach the opaque membrane at its circumference on the upper part and sides, for about three-fourths or four-fifths of its whole extent, separating it as completely as we can from the ciliary body, and depressing it. When thus detached and depressed, it often rises up after the needle is removed, and seems to fill the pupil as before; but it shrinks when no longer connected at the circumference, and is gradually withdrawn behind the lower edge of the pupil."*

Mr. Middlemore prefers the anterior operation when the child is one year old and not more than six; and when the operation has been deferred till the lens has undergone absorption, and the two capsules have united, he adopts another proceeding, whether this tough capsule have acquired adhesions to the iris or not.

"A small section of the cornea should be made with Beer's knife, very nearly at its junction with the sclerotica—a section sufficiently large, however, to permit the pretty easy introduction of the requisite instruments—a firm hook passed within the opening and the capsule transfixed and withdrawn through the corneal aperture. Sometimes the capsule we are desirous of removing has acquired such firmly organised adhesions to surrounding parts, that, if we persevere with our attempts to hook and withdraw the thickened capsule, we shall infallibly tear the iris from its ciliary connection. In such instances, I am in the habit of passing a small pair of scissors (the extremity of one blade is sharp, that of the other a little rounded,) within the opening, and, as soon as they have passed a little beyond the temporal side of the pupillary edge of the iris, I raise the handle, and separate the blades slightly; then having urged forward the sharp blade for a short distance, I again close them, and completely sever the capsule; and, by repeating this manœuvre once or twice, I am enabled either to have a good pupil without further trouble, or to remove those which prevent the foundation of a good pupil, by the subsequent introduction of a fine pair of forceps. The application of belladonna to the eyebrow is of course necessary immediately after the operation;

* "Treatise on Diseases of the Eyes," p. 446.

and it should be applied daily for at least a week afterwards. The operation ought, under ordinary circumstances, to be performed upon each eye at the same time."*

The following are Mr. Middlemore's anterior and posterior operations of the solution. The patient being secured by means of a sheet folded round his arms and body, and being laid recumbent on a table with his head and shoulders raised, and his head being fixed by an assistant, firmly pressing his hand on each side of it,

"The needle should be held pretty much as a person would hold a common writing pen, and it should pierce the cornea very near to its junction with the sclerotica; its point should be directed obliquely backwards towards the centre of the pupil, and with one or two gentle movements the capsule of the lens should be freely scratched and torn."†

The pupil must of course be previously dilated by belladonna.

The needle used by Mr. Middlemore is very fine, small, and sharp, and he very properly condemns the use of a speculum.

"It may be necessary to repeat this operation two or three times, and this is far preferable to the infliction of any great degree of injury on any one occasion from an absurd and mischievous desire to insure the entire absorption of the lens by the influence of the first operation. In ordinary cases of congenital cataract I have never had occasion to repeat this operation more than once."‡

Mr. Middlemore's posterior operation is the following:—

"An assistant should secure the steadiness and due exposure of the globe by means of the index and middle fingers, which should be suffered to project beyond the tarsal margin, and pressed upon the eyeball with sufficient firmness to prevent its movement; and the operator should pretty rapidly puncture the sclerotica with a fine spear-shaped needle, precisely in the same situation as for depression or reclination. In puncturing the sclerotica the needle should be directed obliquely backwards, towards the opposite side of the eye, but when the punctuation of that tunic is completed, and the needle is advanced two or three lines within the eye, its point should be raised by depressing its handle, and the capsule of the lens half-way across the pupil; it should then be slightly depressed and moved in various directions, and, if the lens be soft, the fragments should be pushed (if they do not spontaneously flow there) into the anterior chamber; but if it be not very soft it

* "Treatise on Diseases of the Eyes," vol. ii., p. 183.
† "Middlemore," vol. ii., p. 155. ‡ Ibid., p. 156.

had better be divided *in situ*, as advised long ago by Banister, Barbette, and Pott, and more recently by Sir W. Adams. The needle should then be withdrawn from the eye just in the same direction as that in which it entered that organ."*

The after treatment must consist of low diet, exclusion from light, the use of purgative medicines, and the daily application of belladonna to the eyebrow. Should iritis commence, recourse must be had to leeches and chloride of mercury.

After all operations for cataract, as soon as the disease and all inflammation have been entirely removed, double convex lenses should be provided for the patient for occasional use, with foci varying from an inch and half to three inches. The former will be required for reading and viewing minute objects, and the latter for ordinary purposes. They should not be used too long at a time till the eyes have been accustomed to them; and Mr. Middlemore advises abstinence from the use of glasses as long as possible for the purpose of affording the eyes an opportunity of accommodating themselves to the view of objects at various distances; and he mentions the case of a little boy, on whom he operated, who, by abstaining from the use of glasses, is not much more far-sighted than many who have not had the lens unmoved.

MORBILLOUS CAPSULAR CATARACT.

I have seen capsular cataract in two patients, which formed after measles. In one, a young lady, about ten years of age, the disease formed on the centre of the capsule, and had a star-like appearance, resembling congenital cataract. As tolerably useful vision remained, I considered an operation not advisable, and Mr. Lawrence, who afterwards saw the patient, was of the same opinion. No alteration has taken place during the last ten years, the opacity remaining confined to the front of the capsule, and being sufficiently transparent at its circumference to admit light and useful vision.

The other case occurred in a girl six years of age. She had enjoyed excellent sight before the attack of measles, but was perfectly blind during four years before I was consulted. The capsule in each eye was opaque. I operated on both at one time, and the sight was completely restored.

FUNGUS HÆMATODES, OR BLEEDING CANCER IN THE EYE.

This malignant disease may be congenital, or unfold itself at any age up to five years in infancy or childhood. It is rarely met

* "Middlemore," vol. ii., p. 172.

with beyond this period of life. It begins with loss of sight, and with a white, yellow, or red shining appearance, visible on inspection at the fundus of the eye, dilated pupil, and more or less external vascularity. By degrees the shining metallic appearance approaches more towards the surface, and the central artery of the retina may be seen ramifying on it. The iris now becomes convex and the lens advances towards the cornea. Presently the fungous mass may be observed pressing behind the lens, and the eyeball is increased in bulk; the sclerotic becomes discoloured and knotty, and the patient evinces pain; the cornea becomes dull and perhaps ulcerated, and the morbid mass may burst through the cornea or sclerotica, and, the tunica conjunctiva giving way, the fungus presents itself alternately bleeding and scabbing, and rapidly increasing in bulk. Before the textures of the eye give way some cerebral disturbance or convulsions are apt to occur. The discharge from the fungus is highly offensive, and the disease diffuses itself and poisons the neighbouring glands, and sloughing of the disorganised parts takes place. At last the child dies exhausted with pain and irritation, the pain being of the most intolerant nature.

From the dissections of Saunders, Wardrop, and others, it appears that the encephaloid disease may be traced to a small pedicle in the retina, or where the optic nerve penetrates the sclerotic coat; and in the progress of the disease the brain, muscles, bones, and sometimes the arteries are involved in the morbid mass, while granules of the specific matter may be found interspersed in the vicinity, and either in an advanced or nascent state in other parts of the body. The glandular system also partakes of the disease; but Mr. Middlemore observes, that he has never found the lachrymal gland affected otherwise than by the presence of the adjacent tumour.

The cause of this malignant disease is at present unknown. Mr. Middlemore suggests that it may be owing to some altered condition of the blood, which is relieved by the deposit of encephaloid matter. Having myself seen tubercular matter in the blood, I am not disposed to reject Mr. Middlemore's theory, which deserves investigation.

Treatment.—This disease has been found so decidedly malignant and constitutional that few surgeons of the present day think of recommending any other than palliative treatment. It was formerly the practice to remove the entire eye, but although the patient may have enjoyed a temporary relief from such a proceeding, this disease was found to return with renovated and fatal violence. Mr. Middlemore, who has paid great attention to this

malady, has proposed an attempt to effect a cure "by making an opening in the cornea, and excising a portion of its texture, discharging the humours of the eye, and removing as much of the cephaloid mass as possible, and breaking down the structure of that small part of it which could not be removed in an entire state, expecting that the cavity which contained the fungus would then become obliterated, that the eyeball would afterwards collapse, and that a cure might possibly be produced by a method less terrible, painful, and disfiguring than that in ordinary use."*

It does not appear that this proposal has ever been carried into effect, although Mr. Middlemore has brought it forward, after much reflection, with a laudable desire to diminish or remove human suffering, and has discussed the objections made to it with fairness and candour.

With the view of affording some relief to the agonies of the patient, recourse must be had both externally and internally to the frequent use of opium.

INJURIES OF THE EYEBALL.

The most common of these injuries arise from blows or from shots fired from guns. In either case loss of sight is very apt to be the immediate or final result, although the eye may in external appearance seem to be uninjured. Two young gentlemen went out together to shoot. One of them, by accident, shot the other, who, although the shot only struck the upper lid sideways and produced ecchymosis, lost his sight, amaurosis having speedily supervened. Where the optic nerve is exposed to concussion, its functions are suspended, and when the stroke is severe the injury is generally irreparable.

Treatment.—The only remedies which appear calculated to obviate loss of sight are local bleeding with leeches and gentle ptyalism. Should these means fail, it may be advisable to try the effect of the application of strychnine on a small portion of blistered surface on the temple, as practised by Mr. Middlemore, for the cure of amaurosis from other causes.

STRABISMUS, OR SQUINTING.

Squinting may occur in infants from the habitual and careless exposure of one eye to strong light; or from the eyes being

* "Treatise on the Diseases of the Eyes," vol. ii., p. 428.

attracted by a mark on the nose; or the border of a cap projecting too far over the face; or from unequal sensibility of the eyes; from partial opacity of the cornea or lens; or obliquity of the pupil; by external injury; by intestinal or cerebral irritation or disease; and by excluding one or both eyes from light during inflammation.

Treatment.—When squinting arises from the unequal exposure of the eyes to the light, the one which has been most exposed should be covered for a time, which will have the effect of accustoming the idle eye exclusively to the influence of the rays of light, and generally rectify the mischief. Those cases which depend on centric or eccentric causes operating on the excito-motory system of nerves must be treated according to the nature of the disease. When the brain is the nervous centre originating the undue action of the muscles of the eye, our attention must be directed to the former organ. When the disease originates in inflammation in the dental capsules, or gums, or intestinal irritation, the former should be relieved by lancing and the latter removed by appropriate internal remedies.

No trouble should be spared to remedy this defect during infancy by the employment of different plans and contrivances, which may have the effect of educating the weaker muscles, and thus overcoming the inordinate action of their antagonists. When this cannot be effected, or has been too long neglected, the muscles which have remained in continual contraction become shortened, and can only be restrained at a proper age by a surgical operation, for the performance of which various modes have been lately adopted.

The plan practised by Mr. Liston is this:—The lower eyelid being averted, the upper one held by a speculum, and the eye pulled outwards by a double hook, the conjunctiva must be cut across, and the sclerotica exposed. When, after a little dissection, the internal rectus is seen, and its muscular part cut through with scissors close to its insertion in the sclerotica.* This operation is intended to remove the squinting, which proceeds from the traction of the cornea inwards towards the nose. For the cure of the opposite deformity, the external rectus must be divided by a similar operation.

A more simple proceeding is adopted by Velpeau, which will be found detailed in one of the numbers of the "Provincial Medical and Surgical Journal."

Slight cases are cured by Dieffenbach by excising a portion

* "British and Foreign Med. Review," No. 13, p. 288.

of the opposite part of the conjunctiva, or by cauterising it, and afterwards applying cold water.*

After the operation, Mr. Liston insists on the other eye being bound up so as to exclude light, during twenty-four or forty-eight hours, for the purpose of insuring success; and the eyes should be defended from the light by shades, when the patient walks out, for some time after the operation.†

For a further detail of the various operations which have been performed for the cure of squinting, the reader is referred to the "Medical Retrospect," by Mr. Braithwaite, vol. ii., p. 350, and vol. iii., p. 88; and the "Edinburgh Med. and Surg. Journal" for April 1841, p. 370.

TUMOURS OF THE EYELIDS.

TARSAL TUMOURS.

Small tumours are common in the eyelids of children, commencing in the tarsal cartilages. They are almost invariably found to commence their growth on the internal or mucous surface of the tarsus, which becomes absorbed during their progress. The tumour is first observed by a small, external, immovable elevation at the part, which imparts a solid feel to the touch. On examining the inner surface of the lid, a small, dark red mark is found, which, as the disease advances, increases in extent. At length the centre of this mark becomes pale, and if the tumour is not removed, the mucous membrane at that part is absorbed, and a troublesome ulcer is produced. Sometimes a partial suppuration occurs, which terminates in ulceration.

Treatment.—At the commencement of this disease, strong mercurial ointment applied externally every night by gentle friction with the finger, will frequently effect a cure, assisted by a few doses of purgative medicine. When the tumour does not subside from this treatment, an incision must be made through it on the inside of the lid, and the pus or other fluid contents allowed to escape. Should the tumour be found to be solid, Mr. Lawrence advises the surgeon to make another incision at an acute angle to the first, so as to form a little triangular flap, which must be removed with scissors. After this, the soft texture of the tumour must be broken down with the probe. The soft fungus, which

* "Med. Record," vol. i., p. 59.
† "Lancet," new series, vol. i., p. 433.

springs up in a few days should be cut off with scissors, after which the wound will heal.*

PAINFUL SUBCUTANEOUS TUMOUR.

Mr. Middlemore thus describes this tumour:—

"I have noticed a small tumour situated in the subcutaneous cellular membrane, which has produced an extreme degree of pain. The skin covering this enlargement has always been movable, and has produced a bluish appearance; the tumour itself has been small and round, and excessively hard, and has been perfectly movable upon the tarsal cartilage."†

I have met with such tumours under the skin on other parts of the body, but never under the eyelids. They are always exceedingly painful, and should be removed by excision wherever situated; as I am of opinion they are malignant in their nature.

STEATOMATOUS TUMOUR OF THE EYELIDS.

This tumour is also seated in the cellular membrane beneath the skin, but it has no connection with the tarsal cartilage. It is of firm consistence, and sometimes almost as solid as cartilage, and is covered by a cyst composed of the adjoining cellular membrane.

Treatment.—It is seldom that we can succeed in producing absorption of these or any other tumours contained in a cyst. An operation is therefore the principal measure on which we can rely. It is performed by stretching the lid over the ball of the eye, and making an incision externally in the course of the orbicular fibres through the integument, when the tumour will slip out with the aid of a tenaculum.

FOLLICULAR TUMOURS.

This is an enlargement of a cutaneous follicle, produced by the obstruction of its aperture. It is surrounded by a thin cyst, and is filled with thick, white matter, the product of the cutaneous secretion, condensed by long incarceration in the follicle.

Treatment.—Two small, elliptical incisions should be made into the external surface of the lid, including the small aperture of the tumour, which may now be removed by means of a pair of small forceps.

* "Treatise on Diseases of the Eyes," p. 362. † Ibid., vol. ii., p. 759.

ENCYSTED TUMOURS ON OR NEAR THE EYELIDS.

These tumours are found either beneath the skin, in the cellular membrane, on the tarsal cartilages, or the periosteum. They contain a fluid of various density and sometimes hairs.

Treatment.—An incision must be made through the cyst, which must afterwards be dissected out by means of forceps and a very small knife. When the base of the cyst adheres to the tarsal cartilage, it may be left, as no return of the disease will arise from so small a portion being left behind, and it would be bad practice to cut away the cartilage.

WARTS ON THE EYELIDS.

These, when broad, may be removed by nitrate of silver, and when narrow at their base, by a fine silk ligature.

VESICULAR TUMOURS ON THE EYELIDS.

Small swellings, resembling vesicles, and containing a transparent fluid, form on the lids, generally near the inner corner.

Treatment.—They may be cut off by scissors, and the wound touched with nitrate of silver.

HORDEOLUM, OR STYE.

This disease arises from obstruction, inflammation, and suppuration in one of the meibomean glands situated on the tarsal margin. Sometimes the inflammation does not proceed to suppuration, when the part continues hard and in a state of chronic inflammation.

Treatment.—In the commencement, before suppuration occurs, the inflamed part should be frequently bathed with a lotion composed of liquor plumbi diacetatis and distilled water; and when suppuration has commenced, the lotion should be substituted by warm water and a warm poultice in a muslin bag. As soon as the little abscess has become mature, it should be opened with a small lancet, and the poultice continued. Some children, especially those who are scrophulous, are liable to a constant recurrence of these small abscesses after exposure to a cold or moist atmosphere. These patients will require constitutional treatment. They should take a few grains of chloride of mercury every third night, and a draught of sulphate of magnesia and infusion of senna the next morning; and should apply a little ung. hydrargyri, or an ointment composed of five grains of nitric oxyde of mercury and one drachm of lard, to the inner margin of the lower

eyelid every night. In such cases Mr. Middlemore extols the use of disulphate of quinine.*

OPHTHALMIA TARSI, TINIA TARSI, OR INFLAMMATION OF THE MEIBOMEAN GLANDS.

This disease is known by inflammation and thickening of the margins of the tarsi extending along the inner surface of the lower lid, and accompanied by a glutinous secretion, which occasions the eyelids to adhere in a morning, so as often to require the application of warm water to separate them. The ducts of the meibomean glands are inflamed, as well as the neighbouring conjunctiva. As the morbid secretion increases it becomes thicker, and at length adheres to the cilia, crowding them with hard crusts, and often displacing them. When the capsules which secrete the hairs are thus destroyed, the lashes fall off and are never replaced, and the borders of the tarsi may become callous, fissured, or ulcerated. The meibomean follicles and glands may be injured or destroyed, so that the natural unctuous secretion of the parts may be impaired or annihilated; lippitudo entropium, or ectropium, may also follow.

Treatment.—This disease is most successfully treated by stimulants, leeches being rarely necessary. It is generally connected with, or protracted by, derangement in the stomach and bowels; but I believe it is always excited by some previous conjunctival inflammation, or exposure to a cold or moist atmosphere. The only constitutional remedies required, are a purgative dose of chloride of mercury and jalap every third morning, and half a drachm or a drachm of sulphate of magnesia twice on the intermediate days, in conjunction with the compound infusion of roses. The best applications are a lotion composed of two grains of sulphate of zinc to an ounce of water, and an ointment consisting of five grains of the nitric oxyde of mercury and a drachm of lard, which should be laid every night on the inner edges of the lower lids by means of a camel-hair pencil, the ointment having been previously rendered fluid by exposure to a gentle heat.

FISSURES AND ULCERATIONS OF THE EYELIDS.

These are the effects of neglected ophthalmia tarsi, and are apt to lead to other consequences; and therefore they should be healed as soon as possible.

* "Middlemore on Diseases of the Eyes," vol. ii., p. 772.

Treatment.—The ointment recommended before for ophthalmia tarsi should be applied every night, and the ulcers and fissures touched daily with nitrate of silver.

TYLOSIS AND LIPPITUDO.

Tylosis signifies an indurated and irregular or knotty state of the ciliary margins, and lippitudo a running of the eyes. They usually concur, especially when ectropium is present.

Treatment.—The lids should be bathed with warm water to remove any incrustations, which are frequently met with in tylosis. The nitric oxyde ointment, and the lotion mentioned in the treatment of ophthalmia tarsi must then be had recourse to; and should any ulcerations be present, they should be touched daily with lunar caustic. Some writers and practitioners recommend the extraction of the cilia in tylosis. I have, however, never found such a practice necessary.

ECTROPIUM.

One of the consequences of ophthalmia tarsi is an eversion of the lower eyelids, accompanied with a chronic inflammation of the adjoining mucous membrane, denoted by a scarlet colour resembling scarlet cloth. This disease is almost in every instance found in the lower lid. It is occasionally the consequence of burns in children. After the mucous membrane has been long everted and exposed, it becomes thickened, and acquires a granulary aspect.

Treatment.—In addition to the local remedies mentioned before for ophthalmia tarsi, the inflamed and thickened surface of the conjunctiva must be rubbed over daily, or every second day, with lunar caustic or sulphate of copper; but should the disease resist this treatment, a portion of the inflamed conjunctival membrane must be excised for the purpose of producing contraction in the lining of the lid, and a consequent replacement of the tarsus; and if this, on its reduction, should be found too much elongated for proper adaptation to the upper tarsus, a portion resembling the letter V should be cut away from it, and the sides of the wound united by suture.

ENTROPIUM.

This is one of the most distressing effects of ophthalmia tarsi. The disease is not always owing to this cause; as Scarpa once met with a case, in which the lower lid was inverted, and the hairs projected inwards, without any ulceration or cicatrix being found

on the tarsus. When the lid is inverted, the cilia come in contact with the ball of the eye, and, floating in the overflowing mucous secretion, keep up a constant irritation, which is painfully increased by the vicious practice of cutting off or removing the hairs, and is liable to end in opacity of the cornea.

Treatment.—When the disease is recent and not extreme, and when there are any ulcerations remaining on the margin of the lower lid, it may be cured by Mr. Guthrie's black ointment, which is composed of nitrate of silver, ten grains, lig. plumbi diacetatis, twelve drops, and lard, one drachm, which should be applied to the margin of the lid every night. An astringent lotion of sulphate of zinc or alum may be used during the day. In extreme cases, the entropium has been cured by excising a portion of the orbicularis muscle.* In some cases the removal of a portion of the skin near the tarsus will be found sufficient. This may be effected either by an escharotic or by the knife. The escharotic recommended by Hilling, and extolled by Beer, is the strong sulphuric acid, which should be applied by a piece of wood or a glass pen dipped into the acid, and drawn over the integument just below the tarsus. This forms an eschar, which, on its separation, is followed by contraction of the integuments. When excision is adopted, a fold of the skin should be taken up with a pair of forceps sufficient to insure the proper position of the tarsus and cilia, and this fold should be cut out, and the wound united by sutures of fine silk, which must be removed at the end of twenty-four hours. Should this operation not be found to answer the purpose, a few fibres of the orbicularis muscle must be removed by a pair of scissors. Mr. Crampton, of Dublin,† recommends another operation, which has been modified by Mr. Guthrie.‡ This consists of a perpendicular incision near to each angle, which divides the lid. The whole thickness of the lid being thus divided by the scissors, the mucous surface is exposed. The same operation as that just described must then be performed. A small notch must then be cut on each side of the tarsal cartilage, to enable the operator to turn it outwards into its natural position. The threads of the sutures, which unite the wound below, must then be elevated to the forehead, and confined by adhesive plaster, when the upper lid is the seat of the disease. The parts are to be left in this state until the ligatures cut their way to ulceration. Mr. Lawrence much prefers to this complicated operation, the

* "Lancet," vol. ix., p. 235; vol. x., p. 539; and vol. xii., p. 480.
† "Essay on the Entropion," London, 1806.
‡ "Lectures on the Operative Surgery of the Eye," 1825, p. 31, 41.

excision of the inverted cilia, together with the portion containing the bulbs, as proposed by Jaeger of Vienna.* By this proceeding, the lashes are eradicated, but all source of irritation is removed.

HYDROCELE, OR WATERY RUPTURE.

A collection of serous fluid within the tunica vaginalis, or the bag containing the testicle, in the male infant, is sometimes congenital; at other times it arises during childhood, from accident or other cause. It appears in the form of a transparent tumour, occupying one side of the scrotum. It is without pain or external discoloration. As the secretion of the watery fluid will increase, and the defect will excite some apprehension in the parents, it will be advisable to remove it.

Treatment.—In infants, counter irritation is the only treatment necessary. Either of the following formula will answer the purpose:—

℞—Linimenti Hydrargyri Comp. . ℥j.
vel
℞—Potassæ Iodidi . . . . . ℈ij.
Adepis . . . . . ℥j.—M. fiant linimentum.

A little of either the above may be rubbed about ten minutes on the swelling every night. Should excoriation be produced, the liniment must be suspended.

In children this disease is more obstinate, frequently requiring other means. In such cases the fluid should be evacuated by a small hydrocele-trochar, care being taken to avoid the testicle, by introducing the instrument in front, and directing its point obliquely upwards. Some writers recommend other operations. The late Dr. Darwell, advised the introduction of a needle, and Dr. Underwood that of a small lancet.† Both these are objectionable, on account of the risk of the serum being diffused into the cellular membrane, where it would produce inflammation and sloughing. One case only, within my own observation, has the hydrocele of children required the radical cure by injection. This occurred in a boy about six years old, on whom puncture had been had recourse to by a surgeon, who had completely evacuated the

* "Treatise on Diseases of the Eyes," p. 355.
† Underwood and Dr. Marshall Hall, on the "Diseases of Children," p. 462.

sac. The disease having returned, I injected the sac, and a radical cure was the result.

When injection is required, it should consist of two parts of port wine and one of water, and be injected through the canula of the trochar in a tepid state, and retained from five to seven minutes. The boy should be kept in the horizontal position a day or two, and the swollen or inflamed parts suspended by a T bandage, or small handkerchief, until the enlargement and inflammation of the testis, following the operation, has subsided.

It is of great importance to distinguish hydrocele from congenital hernia, and the effusion of fluid into the tunica vaginalis, which are sometimes met with at birth. The former may be reduced and cured by the use of a truss, and the latter may be distinguished from hydrocele by the ease, with which it may be returned into the abdomen by gentle pressure.

INDURATED, OR TUMID BREASTS.

THE breasts of infants are liable to become much swollen and indurated a few days after birth.

Treatment.—A plaster made with emplastrum plumbi, spread on leather and notched at the edges, is the only application required. It should be allowed to remain until the enlargement has subsided.

JAUNDICE OF INFANTS.

THE jaundice of infants is met with under two forms,—either general or local. The general jaundice, which is the one most frequently observed, is attended with languor, drowsiness, and debility, and is occasioned by some temporary obstruction in the biliary ducts. This obstruction is supposed to be owing to an inspissated state of the biliary secretion, or the lodgment of the meconium in the duodenum. Its occurrence generally happens within a few days after birth, and its duration seldom exceeds a week. It is known by an universal yellow colour of the skin, inclining at times towards a green hue, and accompanied with a yellow colour of the conjunctiva or outer coat of the eye. The urine imparts a yellow stain to linen. It is a very mild and harmless disease. The local jaundice attacks parts of the body,

while others escape; and it is believed to arise from the colour of the serum, and to have no connection with the biliary fluid. Hence, in the examination of the dead bodies of infants, the brain, spinal marrow, heart, pericardium, and thymus gland, have been found yellow, and the lungs infiltrated with serum of the same colour. The kidneys have been observed to be streaked with it, and the internal surface of the bladder is also sometimes of a yellow colour, more or less intense. The liver has often been seen intensely yellow, without the skin being in the least altered in colour. The muscles have been observed to be yellow, while the adjoining cellular membrane has been perfectly white; and at other times the adipose substance in general has been yellow, and neither the integuments, the muscles, nor the internal organs in the least discoloured; and a yellow line has on several occasions been noticed in the fat of the stump of the amputated thigh of a new born infant just under the skin, while the external surface of the integument and the deep-seated muscles have been quite free from the yellow colour. The bones and their periostea have also been found yellow without any general jaundice being present.* The yellow hue on the integuments of infants, which succeeds to the dark, red colour occasioned by the congestion of the cutaneous capillaries, and which denotes the transition to the natural, pink colour of the skin, must not be confounded with jaundice.

Treatment.—Half a tea-spoonful of castor oil should be given, and repeated in four or five hours if it does not operate. After the bowels have been well purged, a powder, composed of two grains of hydrargyrum cum cretâ, and the same quantity of rhubarb, must be administered every night. At the end of four or five days the discharges from the bowels will become of a bright yellow colour, when the discoloration of the skin will begin to decline, and the medicines should be discontinued.

DISEASES OF THE SKIN.

In treating of the diseases of the skin, I intend to follow the arrangement of Dr. Willan, published by Bateman, which is the most useful for practical purposes, and best understood by the medical profession in this country.

* Billard: "Traité des Maladies des Enfants," p. 669.

An attempt has lately been made to supersede this classification by substituting what is called a *natural system*, founded on anatomy and physiology.* The idea is an ingenious one, but it has not been carried out in accordance with anatomical structure more fortunately than Willan's, in compliance with what has been called an artificial arrangement. For instance, in the natural system alluded to, rubeola and scarlatina, which are mere exanthems, are grouped with variola, which in one form is pustular, and in another a cellular vesicle without any cellular subdivisions. In this collection anatomical structure appears to have been entirely overlooked. On the other hand, objections have been raised to Willan's nosology, particularly his fifth order, which comprehends scabies together with variola, a constitutional with a local disease. Here, however, independently of the contemporaneous appearance of the variolous eruptions, their characteristic anatomical structure, and preceding and accompanying fever, sufficiently distinguish them from the chronic and apyretic eruption of itch; and as the system of Willan was based on the external appearance of the diseases which it comprehended, it would have been a departure from that system to exclude from the order of pustules any cutaneous disease essentially pustular. An objection has been made to the association of purpura with the exanthemata, which a little reflection respecting the etymology of the latter term will, I think, appear to be perfectly groundless. The Greek word Ἐξανθέω, from which it is derived, signifies to effloresce, or emerge, or to appear at the surface; and the conventional application of the term exanthem, in medical science, implies an eruption on the skin, preceded by constitutional disorder. Now, every genus in the order Exanthemata of Willan corresponds with this character, both in a physiological and metaphorical sense, not even excluding purpura; for this disease is invariably connected with and forerun by an inflammatory or cachectic condition of the system, producing a morbid state of the blood and atony, or enervation in the capillary circulation. The arrangement of Willan might have been rendered more consistent with the rules of elegant classification, had his orders been all derived from the Greek, and his genera from the Latin language. According to this system, cuticular diseases are divided into Eight Orders—Papulæ, Squamæ, Exanthemata, Bullæ, Pustulæ, Vesiculæ, Tubercula, and Maculæ. I shall only notice such as usually appear during infancy and childhood.

* "A Practical and Theoretical Treatise on the Diagnosis, Pathology, and Treatment of the Diseases of the Skin." By Erasmus Wilson, 1842.

Order 1.—Papulæ, or Pimples.

These consist of enlargement, elevation, and induration of the papillæ of the skin, or cutis vera, and are divided into three genera—Strophulus, Lichen, and Prurigo.

Genus I.—Strophulus

This genus comprises the different species of eruption, generally supposed to be connected with dentition, as red gum, &c. I am at a loss to know how this term can be understood to signify a tooth-rash, as it is derived from a Greek word, Στροφος, which signifies a griping in the bowels, with which it has always appeared to me to be essentially connected. The S. intertinctus, too, appears often a few days after birth, when it evidently alternates with purging and griping, and irritation from dentition cannot possibly be present.

Strophulus intertinctus, or Red Gum.—This is the common red gum of infants, which is vulgarly supposed to be a tooth-rash. It consists of red points, or papulæ, seated on the cheeks, fore-arms, and the backs of the hands, and sometimes appearing all over the body. The vivid red spots are distinct; and sometimes large, red patches, having no elevation, accompany them.

This eruption sometimes appears, as I have said before, a few days after birth, and is connected with irritation in the bowels. In one infant the eruption invariably returned on the spontaneous subsidence of a diarrhœa, and receded when the diarrhœa returned; and this alternation continued during the first three months of infancy. This child afterwards suffered severely with Strophulus confertus during several years, and was very much disfigured during its continuance.

Treatment.—This eruption, especially when obviously connected with a purging, should be left to nature. The purging should not be interfered with, especially by astringents, for fear of exciting cerebral disease, which may prove fatal. In case the eruption should be from any cause suddenly repelled, the infant should be placed in a warm bath, and take a few grains of carbonate of magnesia.

Strophulus albidus: White Gum.—This is merely a white variety of the former, and requires no separate notice.

Strophulus confertus, or Rank Red Gum.—This is sometimes a most severe and troublesome eruption, covering the face, arms, and legs, and tormenting the child, particularly in the night, so that he can obtain little or no sleep. It commences with numerous papillæ, or red elevated points closely crowded together,

which at uncertain periods become greatly aggravated, when a viscid discharge oozes out from them, which forms a crust extending over a considerable space, in large patches. The itching is intolerable to the child, who, rubbing the incrusted parts from time to time, produces numerous raw surfaces, and occasionally a discharge of blood. The disease commonly commences about the sixth or seventh month, and continues more or less till the second, third, or fourth year. After the eruption has entirely subsided, no vestige of it is left upon the face or any other part; although while it is most active, the parts affected with it appear to be so deeply excoriated as to threaten great disfigurement.

Treatment.—The bowels must be kept in an open state by a small dose of sulphate of magnesia, when required. The only local remedy will be very thin warm starch, or gruel strained, which should be sponged over the parts affected, as often as the itching is troublesome. Some fashionable mothers are so anxious to have this disagreeable eruption removed, that they are induced to use various applications for the purpose of suppressing it, without reflecting on the danger of such a practice. An inexperienced practitioner, having been applied to by a lady for this purpose, recommended her to apply externally to the child diluted sulphuric acid, which had the effect of suddenly repelling the eruption, and inducing bronchial inflammation, which terminated in incurable asthma.

Willan mentions two other species, the *S. volaticus* and *S. candidus*. The former is distinguished by circular clusters of papulæ of a red colour at first, and afterwards brown, which in a few days exfoliate. The latter is known by the papulæ being larger, shining, and of a lighter colour than the adjoining skin. They are neither of them of any importance, and require no treatment.

GENUS II.—LICHEN.

The name of this eruption is derived from a Greek word (Λειχὴν), signifying a tetter, or eruption on the chin. Pliny says the term lichen was given to the cryptogamous plant bearing that name on account of its utility in the treatment of the disease.* The disease to which Pliny alludes was most probably acne, which is apt to appear on the chin in the form of scarlet tubercles, resembling cup-moss.

It appears to me questionable whether lichen ought not to have been included in the order exanthemata. It is a papulous eruption of a scarlet colour, and elevated above the adjoining skin,

* Pliny, "H. N." xxvi.—4, post med., S. 10.

and may be said to have some resemblance to the lichen or cup-moss in the vegetable world. It is generally attended with a little itching.

The only species of lichen which I have seen in children are the L. simplex, L. lividus, and L. urticatus.

L. simplex is of frequent occurrence, generally proceeding from sudden exposure to cold after the surface of the body has been over-heated by violent exercise. This eruption has some resemblance to measles, and is common among boys at school. It may be distinguished from measles by its being found, on examination, more elevated, always of a bright scarlet colour, and in more distinct patches. It is also accompanied with conjunctival inflammation and cough. It generally subsides in ten days.

Treatment.—A gentle aperient every second or third morning is all the treatment required.

L. lividus is discoverable by its livid appearance, and by its being intermixed with petechiæ. It is usually confined to the legs and feet. The lividity of this species, and the presence of petechiæ indicate a depraved condition of the constitution. Hence the disease is confined to those whose blood is deficient with respect to one of its elements, namely fibrine.

Treatment.—Diluted sulphuric acid with disulphate of quina, and every third night a grain or two of chloride of mercury, followed the next morning by a gentle dose of sulphate of magnesia and infusion of senna. The diet should consist of fresh meat and green vegetables.

L. urticatus appears chiefly on children of fair complexion. I have observed it most frequently on those who have red hair. It shows itself in red wheals resembling the bites of gnats, which subside in a few days, and are succeeded by others. It is met with in all parts of the body, but most frequently in the fore-arms.

Treatment.—The only attention this disease requires is frequent tepid bathing and light clothing.

LEPRA.

Order 2.—Squamæ, or Scaly Eruptions.

Genus I.—Lepra, or Leprosy.

This disease consists of scaly patches of different sizes, having always nearly a circular form. When the scales exfoliate, they have a tender, shining, red surface, on which, by degrees, fresh scales re-appear.

The only species of leprosy which I have met with in children is the L. alphoides, which differs principally from common leprosy by the small size of the patches, the greater whiteness of the scales, and its being confined to the extremities.

Treatment.—Warm bath, followed by moderate friction. The external and internal use of Harrowgate water. Abstinence from fermented liquors and salted meat and spices. A variety of medicines has been recommended by different writers; some of which require great care in their exhibition, particularly the arsenite of potash, from which, I must confess, I never witnessed any benefit. I cured one case, which resisted all the remedies in common use, by iodide of potash: and another, by digitalis. This last medicine demands great care in its administration, and should always be watched by the medical attendant. Bateman extols the decoction of solanum dulcamara, or woody nightshade.

Dr. A. T. Thompson recommends beniodide of mercury in minute doses—the sixth or fourth of a grain for an adult; a much smaller dose must be given to a child, as it is an active medicine, and very liable to excite salivation. Several Dublin practitioners extol the liquor hydriodatis arsenici et hydrargyri, which they exhibit in the dose of half a drachm to an adult three times a-day. This compound is prepared by Mr. Donovan, and the formula will be found in the "Dublin Journal" for Nov. 1839.

GENUS II.—PSORIASIS, OR SCALY TETTER.

The distinctive character of psoriasis are roughness and redness of the skin, accompanied with fissures or cracks. It is not contagious, except the P. guttata, which Willan supposed to be sofrom its appearing to spread amongst the children in the same family or school. Psoriasis is, however, believed to be hereditary.

Excepting the varieties of Psoriasis, affecting different parts, as the lips, &c., the only species to which children are liable is,

P. guttata.—This appears in little distinct patches not exceeding two or three lines in diameter, and having an irregular circumference. This species is found in the face as well as every part of the body; it is generally preceded by a slight fever. The centre of the patches is always more elevated than their borders. When it is met with at the bend of the arm—a very common situation—it will sometimes be found as large as a sixpenny-piece. It is attended with itching, and although often tedious, it disappears during the summer months, and after an attack of dysen-

tery and diarrhœa. It is much aggravated by salt meat and pastry.

Treatment.—When the disease appears suddenly, and is accompanied with increased heat and fever, a mild antiphlogistic treatment is necessary, both with respect to diet and medicine. Hence the child should not be allowed to take salted meat, spices, vinegar, nor any kind of fermented liquor. A weak solution of supertartrate of potash may be taken every morning, which will relieve thirst and relax the bowels; and during the day the patient may also take a few doses of citrate of potash. After febrile excitement has subsided, liquor potassæ in moderate doses, diluted in water, may be tried, or two grains of pilula hydr. chloridi comp. every night and morning. We have unfortunately no specific for this tedious and disagreeable disease. One of the best local remedies is a lotion composed of ten grains of alum to an ounce of water, which may be applied to the parts affected twice a-day. The itching is best relieved by warm decoction of linseed bran or oatmeal.

Children are liable to several local varieties of this eruption, especially those whose skin is thin. The principal variety is P. labialis: this is met with on the lips, which are rendered exceedingly uncomfortable by the smarting produced by their frequent exposure to moisture in washing, and taking food, and the vicissitudes of temperature to which children are exposed. The most useful and efficient remedy is ung. cetacei applied every night at bed time. Even in this local form of the disease a proper diet is of essential importance. One of my patients could only be secured from relapses by avoiding butter, salted meat, and pastry, and practising considerable abstinence from animal food.

GENUS III.—PITYRIASIS.

There are only two species to which children are liable—the P. capitis and the P. nigra.

P. capitis, or dandriff, appears on the top of the forehead and temples of infants in the form of minute bran-like scales, which are semitransparent. It is attended with itching.

Treatment.—Regular washing and sponging with soap and water.

P. nigra.—This rare form of the disease is noticed by Bateman, who says that Dr. Willan, after the publication of his work, had observed it in children born in India and brought to this country. It commences, he says, in a partially papulated state of the skin, and terminates in a black discoloration, with slight

branny exfoliations. It sometimes extends to half a limb, and sometimes to the fingers and toes.*

Order 3.—Exanthemata.

The term exanthemata is confined in Willan's arrangement to efflorescences, or rashes, which he has divided into six genera, of which the two first, namely, measles and scarlet-fever, are contagious. Children are subject to all the genera.

Genus I.—Rubeola, or Measles.

Willan subdivided this genus into three species: R. vulgaris, R. sine catarrho, and R. nigra; viz., common measles, measles without catarrh, and black measles.

R. vulgaris, or common measles, commences with fever, which is succeeded on the third or fourth day by inflammation of the eyes, slight swelling of the eyelids, and thin serous discharge from the nostrils, which produces sneezing. In some children one of the first symptoms is ecchymosis, or a blood-shot appearance in the mucous membrane of one or both of the eyes. The rash commences about the face and chest, and afterwards extends all over the body. About the seventh or eighth day the rash fades, and on the ninth or tenth it disappears, leaving only slight marks or discolorations on the skin. The eruption is of a light scarlet colour, and resembles the bites of fleas. It may be distinguished from scarlet fever by the eruptions being larger and more distinct. As the eruptions increase in number, they unite and form irregular patches of a semicircular or crescentic shape. In some parts the eruption is raised so as to afford a sense of roughness on passing the finger over it; and when the rash is at its height, the skin, especially on the face, is swollen, the eyelids hanging over and concealing the eyes as in small-pox. Purging is a common symptom at the commencement of the eruptive stage. This is occasioned by the morbillous rash extending to the intestines, and producing a kind of muco-enteritis, or subacute inflammation in the mucous coat of the bowels. It is always a safe and favourable accompaniment of the disease. As the rash recedes, the cough increases, so that on the decline of the disease it is not uncommon for the cough to become annoying, and almost constant. In robust children the catarrhal fever is sometimes preceded by epilepsy, which is popularly called convulsions; a com-

* "Bateman on Dis. of the Skin," p. 48.

mon result of sudden febrile excitement in other diseases in such patients.

The measles which occur without ophthalmia, cough, or sneezing, when the only character of the disease is the rash, is supposed not to exempt the patient from a second attack. In the generality of cases the disease occurs but once in the same individuals.

In some cases the measles are preceded during three or four days by lichen simplex, and in others by pains in the back resembling lumbago, accompanied with great oppression, faintings, and other symytoms indicating congestion in the vital organs. In these cases, as soon as the circulation and excitability have been restored, a violent re-action commences, involving the lungs in dangerous inflammation, which interrupts the appearance of the rash on the skin, and, unless relieved, speedily terminates in fatal pulmonary hepatization. In this congestive and alarming form of measles the physician must be careful to avoid the error of supposing his patient to be merely low-spirited and nervous; or if a girl, hysterical, when the collapse of the countenance, the cold state of the skin, the languid pulse, and the attacks of syncope and oppressed breathing, which keep up constant fear of death, are present and urgent. It must be observed, that in proportion to the continuance and severity of this state, which is peculiar to children of feeble constitution and predisposed to pulmonary disease, will be the violence of the inflammatory stage; and that the transition from the one to the other is often so insidious as to require the constant vigilance of the medical attendant. In such cases, while the pulmonary vessels are struggling to propel the stagnant blood through the remote ramifications, the delicate, cutaneous capillaries, which are destined to distribute the aortal circulation and to accomplish the specific rubeolous efflorescence on the surface, are deprived of the necessary supply of excitability and vital fluid. Hence, at the expected time, the rash is either entirely absent, or partially and imperfectly developed. When little or no evident re-action occurs in these cases, or when the oppressed state of the pulmonary circulation increases, and the rash becomes of a dark colour or suddenly retires, symptoms of typhus are apt to follow, accompanied with petechiæ. This variety of the disease has received the name of R. nigra, or black measles, and has been found exceedingly fatal. On examining the bodies of those who have died, decided inflammation has been found within the chest.

The progress, as well as the result of measles, are greatly influenced by the season of the year and the state of the atmosphere, which is most unfavourable when humid.

The consequences of measles are various; some of them of a very serious nature. When latent tubercles have existed in the lungs, consumption follows; but the most common results of the catarrhal affection are, chronic inflammation in the pleuræ, the lungs, or bronchial tubes; or inflammation in different parts of the eye, the meatus auditorius, inside the cheeks, or the vagina.

The period during which the infection of measles has almost uniformly been latent in my practice, has been fourteen days.

Treatment.—The patient should be confined to bed during the first two or three days, or until the rash has made its appearance, and should be kept on some low diet, drinking frequently warm tea or barley water. The temperature of the room should be preserved at 60 degrees, and all currents of external air should be excluded. When purging is present, it need not be interfered with, unless the child happen to be very feeble and exhausted by the discharge, in which case a few drops of tincture of opium will be required. In the common form of measles these attentions to diet and temperature will be all the disease will require. When the fever runs high, slight delirium is present, and the cough is constant and tickling. Citrate of potash, with five minims of tincture of squill in each dose, may be given. Should purging not appear, the bowels should be relaxed by some gentle saline aperient, as a tea-spoonful of sulphate, with five grains of carbonate of magnesia; and after the rash has subsided, the patient should take a purging dose of sulphate of magnesia and infusion of senna every third morning during the following week. After the disease has entirely subsided, excepting the cough, should that be incessant and harassing, and the lungs, on proper examination, be found free from tubercles, exercise in the open air in warm, fine weather, will generally remove it. When the symptoms of inflammation are decided, especially when severe pain is felt in any part of the chest, bleeding must be had recourse to, otherwise some fatal disorganisation of the lungs may follow.

The congestive variety will require peculiar attention and management. The patient should be placed in a warm bath during ten or fifteen minutes, and take a few grains of sesquicarbonate of ammonia frequently. He should also take warm wine and water occasionally; and, if the pain in the back and symptoms of oppression should continue, a proper dose of pulv. ipecac. comp. should be given at bed time. As soon as re-action takes place, and the inflammation in the lungs unfolds itself, bleeding must be practised according to the severity of the symptoms. When the eruption becomes purple, and petechiæ make their ap-

pearance, disulphate of quina and diluted sulphuric acid must be prescribed. In these cases great prudence will be necessary with respect to the administration of purgative medicines, to prevent any unnecessary exhaustion.

In the treatment of the various inflammatory affections of the eyes following measles, I must refer the reader to the article morbillous ophthalmy, and other diseases of the eyes, treated of in a former part of this treatise. I may observe that ophthalmia tarsi is one of the most frequent effects of measles, and capsular cataract an occasional result of the disease.

In scrophulous subjects glandular swellings are common sequels of measles. These may be treated by repeated doses of purgative medicines, and the external application of iodide of potash, in the proportion of two scruples to an ounce of lard.

The discharge of purulent matter from the external opening into the ear, which sometimes follows measles, may be removed by an injection composed of one drachm of tincture of myrrh, and five drachms of lime-water, or five grains of sulphate of zinc, and an ounce of water. When the ossicula auditus are implicated in the disease, it will be useless to expect a discontinuance of the discharge until the carious bones have exfoliated. In this case, the daily injection of warm water will be the only remedy required.

SCARLATINA.

GENUS II.—SCARLATINA, OR SCARLET FEVER.

This is denoted by a bright scarlet rash, consisting of minute red points, which, coalescing, form a diffuse efflorescence. This rash is acccompanied with fever, which continues till the rash subsides; and the papillæ of the tongue are elongated, presenting scarlet points, which, projecting through the white fur on its upper surface, constitute one of the characteristics of the disease. The disease is both epidemical and contagious; arising sometimes from atmospherical malaria, at others from animal scarlatinous miasm.

The *Scarlatina simplex* is unaccompanied with ulceration in the throat. The rash appears on the second day of the attack on the neck and face, and afterwards all over the body. The rash is sometimes found in patches. On the fourth day the eruption is at its height, and in the fifth begins to decline. About the seventh day it becomes quite indistinct, and on the ninth or tenth dis-

quamation of the epidermis or outer cuticle takes place. The rash may be seen on the surface of the mouth and fauces, and sometimes the mucous coat of the eyes is as much inflamed as in measles. It seldom happens that this disease attacks the patient more than once. I remember a boy at school who had simple scarlatina every time it appeared in the establishment—three times at least in succession. The late Dr. W. Macmichael, sometime ago, wrote a pamphlet for the purpose of recommending parents to expose their children to the infection of scarlet fever, when the disease happens to be unusually mild; remarking, that the disease during some seasons is very slight, and at others very malignant, and that a mild attack affords as much security as a severe one. This proposal was not only ingenious, but humane, and highly deserving of general adoption. I have myself witnessed the safety of the practice, and can recommend its adoption.

When the eruption on the skin is so inconsiderable as to create a doubt respecting the presence of scarlatina, the rash may be discovered on the mucous membrane lining the mouth, particularly on the soft palate and uvula.

Treatment.—The principal objects to be had in view, are to modify the excessive heat of the surface; to confine the patient to low diet; and to keep the bowels in an open state. The apartment should be kept cool, and the hands and face should be often spunged with cold or tepid water. After the rash has disappeared, the patient should be well purged with sulphate of magnesia and infusion of senna.

S. anginosa is distinguished from the more common form of the disease, by the presence of ulcerations on the tonsils, which commence with small sloughs, accompanied with a sensation of stiffness and tightness in the throat. The rash is rather more tardy in its appearance than in S. simplex; but, after it has established itself, the heat on the surface is greater than in any other fever in temperate climates, rising at times as high as 112° of Fahrenheit's thermometer. When the sloughs in the throat exfoliate, deep, ragged ulcers follow, which are attended with much viscid mucus, and sometimes destroy a great portion of each tonsil. The fever at the commencement is frequently attended with delirium during one or two days and nights, and it always continues until the rash declines. The desquamation is proportionate to the intensity of the preceding heat, and sometimes the whole of the epidermis of the hands and feet separates in large patches.

This form of the disease is liable to be followed by inflammation in the eyes, abscesses, anasarca, ascites, and serous effusions into the brain, thorax, and pericardium.

Mr. Rees states, that, when anasarca occurs, its appearance takes place exactly three weeks after the eruption, almost to a day.* I have known it occur at a much later period, even after the simple form of the disease, and terminate in ascites. During the continuance of scarlatinous anasarca the urine is high coloured, and found to contain albumen; and the bowels are confined, the stools being dark coloured and offensive. When the pericardium is invaded by this inflammatory condition of the system, imminent danger is at hand, and unless it is speedily discovered and actively treated, a rapid and fatal effusion may be expected. Mr. Rees has so well described the symptoms of this attack, that I am induced to transcribe what he states respecting pericarditis:—

"In the latter disease especially, which I have met with in the child several times, as a sequel of scarlatina, before any active symptoms have developed themselves, if the stethoscope be applied over the heart, an alteration will be perceived in the sound, very distinct and characteristic, though not easily described; perhaps a ringing sound defines its character most accurately. After this is once heard, it will be easily recognised in another case, and may be put down as a sure symptom of incipient pericarditis. If this be neglected, in a few hours active symptoms come on; pyrenia, hurried breathing, palpitation, great irritability of temper, and restlessness, perhaps chorea; the pulse is full, thrilling, and irregular; on listening to the heart, the ringing sound is found superseded by bruit de soufflet. This state continues for a day or two, and the symptoms again alter; the countenance becomes livid, the dyspnœa is excessive, accompanied with a short, convulsive cough, sometimes with hiccough; the pulse is weak, fluttering, and irregular; on listening to the chest, the heart's action is scarcely perceptible, the sound lost, and the impulse slight; on percussion, dulness over the left side will be perceived to a larger extent than natural;—all showing effusion has taken place; and in a few hours the patient expires,—often suddenly, and without a struggle." †

Treatment.—This must be conducted on the same principle as that for simple scarlatina. Sponging with cold water must be sedulously attended to; and when the practice can be carried into effect, cold effusion, so much recommended by Dr. Currie, should be practised as often as the intense heat on the skin should return. No remedy is so useful or indispensable as the application of cold water during the febrile paroxyms. The bowels must be kept in

* "Treatise on the Diseases of Children," by G. A. Rees, M.B., p. 214.

† "Treatise on the Diseases of Children," by G. A. Rees, M.B., p. 216, 217.

an open state, but severe purging must be avoided on account of the alarming exhaustion which generally follows it. The best local treatment consists in the application of a lotion twice a day to the ulcers on the tonsils by means of a little lint, or linen, or sponge tied to a stick. This lotion is composed of two grains of bichloride of mercury dissolved in an ounce and a half of water. It should be rubbed on the ulcers until their surface is abraded and bleeds. The stimulus of this lotion puts a stop to the sloughing process, and renders the surface florid; and the deep, hollow, and ragged cavities afterwards rapidly granulate and heal. Bleeding is rarely admissible in children, except locally by means of leeches applied to the throat, when the inflammation and swelling in the tonsils are inordinate.

As soon as the fever and rash have disappeared, the patient must be well purged with sulphate of magnesia and senna every third day, which is the best precaution that can be used to prevent the occurrence of dropsical effusions. When these do occur they must be treated with diuretics and purgative medicines; and when albuminous urine is present small repeated bleedings must also be prescribed. The anasarcous swellings are unattended with danger, but the effusions into the internal cavities, especially into the brain and pericardium, are alarming and often fatal. The effusion of serum from the peritoneal surface has always given way to a careful employment of digitalis and bicarbonate of potash, with occasional bleeding and a few doses of elaterium.

S. maligna differs from the other species by the imperfect efflorescence, which soon presents a dark or purple colour, or recedes during several days and afterwards returns. The heat of the surface is moderate, and the pulse is feeble and running. There is present either coma or delirium, and sometimes peevishness. The eyes are dull, the face has a dark purple colour, the tongue and teeth are coated with a dark brown fur, and an offensive discharge of thin and acrid serum flows from the nostrils and the ears. The ulcers in the tonsils are covered with dark sloughs, and the surrounding parts have a livid appearance. A rattling noise is observable in respiration both through the nose and fauces, from the ulceration of the offensive viscid mucus which accumulates in the passages. The state of the tonsils renders deglutition difficult. Diarrhœa, petechiæ, vibices, hemorrhage from the mouth, throat, or bowels, sometimes hurry the disease to a fatal termination. The cervical lymphatic glands sometimes undergo a rapid enlargement, and, pressing on the pharynx, threaten suffocation, or suppurate. Sometimes this malignant disease proves fatal in a few hours after its invasion, the patient being suddenly

seized with symptoms of internal congestion, followed by a state of rapid and irrecoverable collapse, attended with cold skin and muttering delirium. These occurrences happen chiefly when the disease appears in an epidemic form among the poor in crowded and ill-ventilated habitations. When the discharge from the ears is profuse and highly offensive, the ossicula auditus become carious, and pass away through the meatus auditorius externus, the patient remaining permanently deaf. The purulent discharge, especially in scrophulous children, sometimes continues to flow from the ears many years afterwards, and to be accompanied with one or more fungous tumours or polypi. The usual sequelæ of scarlatina are not so commonly met with after this malignant as after the milder species.

Treatment.—At the commencement of the attack the bowels should be freely opened, and afterwards a few grains of sesquicarbonate of ammonia should be given every two or three hours. In this malignant species bleeding will rarely be admissible, and after the first day or two, great circumspection will be required with respect to purgative medicines. After the stage of oppression has been removed, and the skin has become moist, the disulphate of quina with diluted sulphuric acid, may be prescribed with benefit. Dr. Watson recommends the exhibition of a chlorine mixture in bad cases of sloughing sore throat. The mixture is prepared as follows:—

℞—Potassæ Chloridi . . . . . ℥ ij.—Solve in
Acidi Hydrochloridi . . . . . ℥ ij.

This solution must be preserved in a stopper bottle, and two drachms of it are to be mixed with a pint of water. Of this mixture one or two large spoonfuls must be taken frequently.*

The lotion of bichloride of mercury, recommended for the last species, will be found an useful remedy for the ulcers in the throat. Mr. G. A. Rees is in the habit of applying solid nitrate of silver or muriatic acid to the ulcerated throat, the tongue being depressed with a spatula.† When the fauces are obstructed with a large collection of mucus and the respiration impeded, at the commencement, while the strength is not much impaired, an emetic may be of use. Gargles can seldom be used on account of the difficulty generally found in their employment by children, especially when rendered helpless by the low fever and cerebral disturbance accompanying this disease. The application of cold water will rarely be admis-

* "Medical Gazette," for Sept. 9, 1842, p. 902.
† "The Diseases of Children." By G. A. Rees, M.B., p. 209, 211.

sible. On the contrary, it will generally be found necessary to maintain proper warmth by artificial means, and to give wine and water, broth, milk, and other nutritious liquid food to support the feeble circulation; taking care at the same time to secure regular ventilation for the purpose of diluting the poisonous atmosphere of the apartment, and rendering it as innocuous as possible. When the integuments on the back are inflamed, the affected parts should be bathed with undiluted liquor plumbi diacetatis, to prevent ulceration. The profuse and offensive discharge from the ears, which follows caries and ulceration in the labyrinth, unaccompanied with destruction of the tympanum and ossicula auditus, may be modified by an injection composed of tincture of myrrh one part and lime water five parts. The polypi may be pulled away occasionally by means of a small pair of forceps, and the fungi reduced by solid nitrate of silver conveyed by a quill. These will almost invariably return, and when the discharge appears only after distant intervals and the adventitious productions are small, interference will be unnecessary.

It is impossible to speak with certainty as to the length of time during which the infection of scarlet fever may remain dormant. I have known several instances of its having been conveyed by those who have had the disease at a distance of three months after their recovery. The latent period has within my own observation been as nearly as possible about fourteen days, according to records I have kept for the purpose.

GENUS III.—URTICARIA, OR NETTLE RASH.

This eruption is known by large wheals, or white elevated ridges, surrounded by a pale pink-coloured base, diffused to some distance. I have only observed the two following species in children.

1. *U. febrilis,* or Febrile Nettle Rash, is preceded by a remittent fever during two or three days, attended with headache, sickness, sleepiness, and oppression. As soon as the rash appears these symptoms subside. Much itching is felt in the eruptions, which is increased on exposure to heat; and the local disease, accompanied with the fever, alternately appears and disappears several times during the day for the space of a week.

The disease is mostly produced by suppressed perspiration from exposure to cold, as by lying on wet grass, sitting at an open window, &c., while the body has been previously heated by exercise.

Treatment.—A dose of some simple purgative and afterwards

a saline mixture, which, by restoring the suppressed perspiration, speedily cures the disease.

The following will answer the purpose:—

℞—Potassæ Bicarbonatis . . . . . ℈iv.
Acidi Citrici cryst. . . . . ʒj.
Vini Antim. Pot. Tart. . . . . ʒij.
Aquæ Distillatæ q. s. ut fiant f. . ʒ viij.
Capiat cochlearea duo larga 4is. horis.

2. *U. evanida,* Evanescent Nettle Rash. This is a chronic non-febrile form of the disease, which is liable to manifest itself when the patient is exposed to heat, great exercise, friction, and other exciting causes. The wheals assume various shapes, and are attended with itching. The duration of the complaint is uncertain. It is frequently connected with irritation in the stomach, excited by some article of food which is unacceptable to it, as onions, salt fish, pepper, vinegar, &c. I have one patient who had a sudden eruption, accompanied with great swelling, in the upper lip and fore arm every time he took onion or shalot in his food. It is a disease much more frequently met with in adults than children.

Treatment.—The only effectual relief for this troublesome disease is to be found in discovering and avoiding the exciting causes. Dr. Bateman recommends the warm bath, and says sea bathing has generally been found an effectual remedy.

GENUS IV.—ROSEOLA, OR ROSE RASH.

This rash is of no importance except to the nosologist, as it is merely symptomatic, and requires no medical treatment, except the vaccine species. Willan has enumerated seven species: R. Æstiva, or Summer Rose Rash; R. Autumnalis, or the Autumnal Rash; R. Annulata, or Ring Rash; R. Infantilis, or Infantile Rash; R. Variolosa, or Variolous Rash; R. Vaccina, or Vaccine Rash; and R. Miliaris, or Miliary Rash. Willan describes this genus as "a rose-coloured efflorescence, variously figured, without wheals or papulæ, and not contagious."

The *Autumnal* species appears on the arms of children in distinct patches of various figure, which gradually increase to the size of a shilling, and assume a very dark rose colour.

The *Infantile* Rash is met with during dentition, disorder in the bowels, and in fevers. It is irregular in its appearance and recurrence.

The *Variolus roseola* is found to precede both the natural and inoculated small-pox, first on the arms, breast and face, and afterwards over the rest of the body. This appearance is various, being either in patches or diffused all over the body. Its duration is three days. On the third day of the rash, the hard white pustules of small-pox are distinguishable on the skin, both by the sight and touch.

The *Vaccine* Rash is a dark red rash, accompanied with considerable induration and swelling of the integument surrounding the vaccine vesicle about the tenth day, and in some rare instances extending all over the body.

Treatment.—The only species ever requiring any treatment is that which accompanies the decline of cow-pox. In some cases the inflammation and hardness of the skin are intense, the colour almost approaching to purple. The best remedy for this is unguentum hydrargyri, which, spread on linen rag, and applied to the inflamed part, very speedily effects a cure.

GENUS V.—PURPURA, OR PURPLES.

Under this term Dr. Willan included Petechiæ, Ecchymomata, and Vibices, all of which are supposed to be occasioned by extravasation of degenerate blood, with or without fever. The P. simplex, hæmorrhagica, and urticans, are the species to which children are most subject.

P. simplex, or Simple Purpura, appears in children, who have a sallow complexion at the time, on different parts of the body. It is sometimes confined to the legs and feet. In these cases the bowels will be found confined, the stools unhealthy, and the appetite depraved.

Treatment.—Compound infusion of roses three times a-day, and a purging dose of chloride of mercury and jalap every third morning. Lemonade may be taken as a diet drink.

P. hæmorrhagica.—The petechiæ are of a larger size than in the preceding species, and are found in connection with vibices and ecchymoses, or dark-coloured stripes and patches. They are found on the legs, and afterwards on the thighs, arms, trunk of the body, and sometimes on the backs of the hands. They are at first of a scarlet colour, but ultimately purple or livid, and on subsiding, they leave a brown, greenish, or yellowish hue, which gradually disappears. Thus, the same changes of colour occur from the extravasation of the blood, as those which we observe after ecchymosis, or effusion of blood from external injury. In some instances, the epidermis is raised into vesicles containing black

blood, especially on the mucous membrane of the tongue or mouth. Such is the depraved condition of the blood in these cases, that the least pressure is sufficient to excite a black or purple mark, and copious discharges of blood take place from the mucous coat of the intestines, kidneys, or nose, which sometimes prove fatal. Blood also oozes from the gums, throat, mouth, and lips, eyelids, urethra, the auditory passage, and other mucous surfaces. The disease is, for the most part, preceded by debility, lassitude, faintness, and muscular pains. The pulse is frequent and feeble, especially after the least exertion. As the disease advances, the patient becomes more feeble, and his complexion more sallow; and emaciation, softness, and want of tone in the muscles and œdema follow. When death occurs from hemorrhage, it is so profuse as to destroy life sometimes in an instant.

The pathology of this disease is still left in uncertainty, which is considerably increased by the circumstance of its being met with under two very opposite conditions; the one inflammatory, and cured by bleeding or accidental hemorrhage, and the other connected with debility, and increased by the repeated bleedings, which spontaneously occur. My own experience satisfies me that the latter cases, which constitute the ordinary examples of the disease, are produced by imperfect assimilation of the food. This was the opinion of Sir Francis Milman,* who, with Lind, considered that scurvy, an analogous disease, arises from defective nutrition, which lowers the vital principle, and is productive of the languor pervading all the animal functions.† Broussais was also of the same opinion.‡ Mr. Dubois states that purpura hæmorrhagica is sometimes hereditary, and asserts, that there are some families in Germany, in which it has been transmitted through several successive generations, the mothers escaping, and the sons rarely arriving at maturity being carried off by the disease. According to Dubois, the blood effused in this disease coagulates as healthy blood does, notwithstanding it is thinner, and has been found, by the experiments of Monneret and Fleury, to be deficient in the natural quantity of fibrine. The success which follows the practice of treating the adynamic forms of the disease by medicines calculated to remove vicious deposits from the intestinal canal, and to excite its mucous and tributary secretions, and thereby to improve the process on which depends the supply of the globules and fibrine of the blood, induces me to believe that the origin of the malady exists, in the first instance,

* "Milman on Scurvy," chap. vi. † "Lind on Scurvy," p. 234.
‡ "Treatise on Physiology, applied to Pathology."

in defective assimilation. This alone, however, will not explain the cause of the atonic and fragile state of the capillary vessels, from the rupture of which the hemorrhage proceeds. This condition of the vessels can, I think, only be accounted for, by admitting that there also co-exists a defect in the nervous supply from the abdominal ganglionic system, on which the vitality of the circulation and its vessels depend. I am inclined to believe the same condition of the blood exists in the inflammatory variety of purpura, and that the furred state of the tongue, and the quickness and hardness of the pulse are superinduced by cold, or by the congestion of some internal organ, which we know, in the ordinary state of the blood, is apt to be followed by inflammation.

Treatment.—The most successsful treatment of the P. hæmorrhagica, as well as the common form of this disease, consists in the administration of chloride of mercury and jalap, in the proportion of one part of the former to three of the latter every third morning. On the intermediate days, compound infusion of roses or disulphate of quina, with diluted sulphuric acid, may be given three times a-day. The diet should consist of fresh meat and green vegetables, and lemonade may be taken as often as the patient may desire it. The purging powder must be repeated regularly, as long as the intestinal discharges are unhealthy. These will at first be either bloody, or of a deep damson colour, but as the cure proceeds, they will acquire gradually a more healthy colour, and their smell, which at first will be found offensive, will progressively improve, as well as their appearance. In proportion as these improvements proceed, the general health and complexion will be restored, together with the strength and animal spirits; and ultimately the hemorrhages from the mucous surfaces, as well as the effusions of blood in the cellular membrane, will disappear. The inflammatory variety of P. hæmorrhagica, which will discover itself by a white, furred tongue, and quick and hard pulse, must be treated by bleeding; and after the inflammatory state has been subdued, the same treatment as that recommended for the uncomplicated species must be adopted. Exercise in the open air, well ventilated and airy apartments, will be found much to contribute to the comfort and recovery of the patient; and in obstinate cases, I think galvanic or electric shocks may be advantageously passed through the abdomen, with the intention of exciting the nervous ganglionic centres.

P. urticans, or Nettle Rash Purples.—This disease appears in children, mixed with petechiæ, on the arms, legs, and breasts, and sometimes on the hands, in the form of round red elevations of

the skin, resembling wheals, unattended with itching. After dilating two or three days, they gradually subside, and changing colour, become at length quite livid. These eruptions appear in succession, and thus produce the various hues observable on the part affected. The disease continues three or four weeks, or longer, and attacks those principally who live on salted meat and other innutritious diet, or have been labouring under the disordered state of the bowels, which has been before described as the cause of purpura.

Treatment.—This must be the same as that advised for the other forms of the disease. The purging treatment will require to be continued until every vestige of the disease has been removed.

GENUS VI.—ERYTHEMA.

Erythema, a word derived from Ἐρύθημα, which signifies redness or blushing, is described by Dr. Willan as consisting of "a nearly continuous redness of some portion of the skin, attended with disorder of the constitution, but not contagious."

1. *E. fugax*, or Fugitive Erythema.—This is a red patch of irregular form, resembling that occasioned by pressure, and generally appearing on the wrists, arms, neck, head, or face, during severe bowel complaints, and some fevers. This rash also appears in young women from dyspepsia, hysteria, hemicrania, &c. When it appears on the front of the neck, which it is apt to do suddenly on some girls, it exactly resembles deep blushing on the cheeks. It may be distinguished from roseola when it arises from this cause, by its diffusion and pale colour, and by its volatile character.

Treatment.—Gentle laxative medicine, as twenty grains of tartrate of soda, every second morning, in half a wineglassful of water; and a lotion, composed of one part rectified spirit and three parts water.

2. *E. læve*, or Slight Erythema, appears in patches or streaks on the lower extremities, when affected with œdema. The rash is of a bright red colour, and shining.

Treatment.—Rest in the horizontal posture, and the same lotion as that recommended for E. fugax during the day, and at night an evaporating poultice, composed of bread and water, applied almost cold.

2. *E. nodosum*, or *nodous erythema*, is described by Willan as only appearing on females. It attacks children of both sexes, as far as my own experience extends, appearing at first in the form of hard, red lumps, on the front of the leg, resembling incipient

boils, which are of stony hardness, sore and painful, and gradually become of a darker red colour, and afterwards green and yellow. Children whose legs are loaded with fat, and consequently disposed to swell after much walking exercise, are most liable to this disease. It also frequently proceeds from exposure to cold and moisture. Hence children ill clothed, and employed in manufactories, are very subject to it. The disease consists of inflammation in the cellular and adipose membrane, which sometimes terminates in vesication and superficial ulceration. The tumours sometimes, when not attended to, or when improperly treated, continue during several months to rise in succession, and to terminate with the discoloration before mentioned, resembling that from a bruise, and extending to some distance beyond their base.

Treatment.—The best local remedy is tepid or cold water, according to the season, applied by means of linen rag, which should be folded and confined by a loose roller. When ulceration is permitted to occur, strips of emplastrum plumbi, and a roller, should be applied every night. When the disease is discovered before ulceration takes place, it will be rapidly cured by the following pills:—

R—Hydr. Bichloridi . . . . . gr. j.
Pulv. Lini . . . . . gr. xlviij.
Muc. Acaciæ, q. s. ut pr. pil. xxiv.

Two of these pills may be given to a child from six to ten years old, and three to a boy or girl fourteen years old, twice a day. By this treatment, the tumours entirely disappear in the course of ten or fourteen days. Should the disease remain stationary, the dose of the bichloride may be cautiously increased.

The manner in which this medicine operates, is by exciting the capillary arteries, and removing that remora, which, unrelieved, is liable to terminate in the total cessation of the circulation, and the consequent disorganisation of the affected part, as occurs in the more aggravated form of the disease, called phyma or boils, to which the reader is referred.

Order 4.—Bullæ.

In this order are comprehended Erysipelas, Pemphigus, and Pompholyx, which consist of vesications of various sizes, discharging, after they burst, a serous fluid, and followed by incrustations, covering the excoriated surface. These incrustations form flat, yellow or dark coloured scabs, which exfoliate after a new cuticle has been produced, or terminate in obstinate ulcerations.

GENUS I.—ERYSIPELAS.

This is a febrile disease, accompanied with external swelling, heat, redness, and vesications. It is divided into four species:—Phlegmonous, Œdematous, Gangrenous, and Erratic.

1. *E. phlegmonodes*, or Phlegmonous Erysipelas,. There are two varieties of this disease; one of which is seated in the skin alone, and the other in the adipose and cellular membrane as well as the skin. The latter is described by Dr. Willan under the title of E. gangrænosum. His description of the former variety is the following:—

Var. 1. "This form most frequently occurs in the face, affecting usually one side of it only: sometimes it attacks one of the extremities; and in both cases it is ushered in by a smart feverish attack. The colour is higher than in the other species, and the burning heat and tingling in the part are exceedingly distressing. The swelling generally appears on the second night, or third day of the fever; the vesications rise on the fourth and fifth, and break or subside on the fifth or sixth, when the redness changes to a yellowish hue, and the swelling and fever begin to diminish; and on the eighth day both disappear. On the tenth, the new cuticle is commonly left exposed, the old one having separated, and the brownish or dark scab, which had formed where the fluid of the vesications had been discharged, having fallen off."*

In children, the progress of the disease is more rapid, seldom continuing longer than the sixth or seventh day. This acute form of erysipelas appears generally on one ear, and spreads across the face, until it has nearly or quite extended to the opposite ear; or it may proceed across the occiput, until it reaches the opposite side.

This disease is produced by exposure to a current of cold air, especially when the wind is in the east.

Treatment.—The bowels must be freely opened with a saline purgative, and if the fever is considerable, and accompanied with delirium, the patient should be bled at the arm, or with leeches, at a distance from the seat of the erysipelas, and should take once in four hours citrate of potash with the potassio-tartrate of antimony. While the wind is easterly, particular care must be taken to prevent the exposure of the patient, as a retrocession of the cutaneous inflammation is generally followed by serous apoplexy or phrenitis, which will require most active treatment to obviate a fatal termination.

* "Bateman on Cutaneous Diseases," p. 125.

The local treatment need not consist of anything except warm decoction of barley or oatmeal, properly strained. Dr. Bright has practised, with great success, puncturing the skin with a small lancet. He says the punctures should be numerous—many hundreds; and they answer best towards the circumference.* Mr. Higginbotham,† and Dr. Elliotson,‡ extol the application of solid nitrate of silver, which they direct to be rubbed round the circumference of the inflamed parts. Dr. Thompson also speaks highly of this remedy. He applies a lotion, composed of three to twelve grains of the nitrate to an ounce of water, all round the circumference of the disease, to the distance of an inch, or an inch and a half.§ Velpeau treats it successfully by a lotion consisting of one ounce of sulphate of iron to a pint of water, or an ointment composed of two drachms of the sulphate to an ounce of lard.‖ He remarks that the inflammation under this treatment subsides in twenty-four hours, but when in the erratic form, it is liable to return.

Var. 2. The second variety is more commonly known by the name of *Phlegmonous erysipelas* than the other. It is liable to occur in all parts of the body, from cold, and occasionally from external injury. It is distinguished by its deep, red colour, and stony hardness, which are produced by obstruction in the small arterial tubes in the adipose and cellular membrane beneath the skin, and in the cutaneous capillaries. The most frequent cause is cold, as I have formerly stated in a short essay in the "Lancet," from which the following extract is taken:—

"The manner in which cold appears to operate in producing phlegmonous erysipelas, is by paralysing the capillary circulation, and inducing congestion, and ultimately coagulation of the blood; and the series of results which follow the loss of vitality in the capillary vessels, so accurately described by Gendrin¶ in his work on inflammation, are readily discoverable in the progress of this disease in the cellular membrane. When incisions are made into this structure soon after the attack commences, the gaping wounds present a dark crimson colour, and the coagulated condition of the blood, which is the cause of this appearance, is distinctly observable. As the inflammation advances, the sections afford a grey aspect, which is produced by the separation of albumen and coagulable lymph, and the partial disappearance of the colouring matter of the blood. Lastly, when openings are effected after the purulent stage is complete, a mixture of pus and serum may be

* "Medico. Chir. Rev.," vol. xvii., p. 300.
† "Lancet," vol. xii., p. 728.
‡ "Lancet," No. 480, p. 194.
§ "Lancet," vol. xxviii., p. 165.
‖ "Medical Times," April, 1842.
¶ "Histoire Anatomique des Inflammations," par A. N. Gendrin. Paris, 1827.

seen oozing from the disorganised cells, and all appearance of blood is lost, except that resulting from the division of the arteries, which have escaped the destructive process."*

The disease consists in a diffuse inflammation of the skin, terminating, when violent and unrelieved, in suppuration and destruction of the subjacent cellular, adipose, aponeurotic, or fibrous structures.

Another variety of phlegmonous erysipelas occurs in infants a few days after birth, particularly in lying-in hospitals. This form of the disease is supposed to be infectious. Its appearance may, however, be frequently traced to currents of cold air in the wards of hospitals, whereby the perspiration of the parts exposed to their influence is suddenly repelled.

"Sometimes, indeed, infants have been born with livid patches, vesications, and even gangrene already advanced. It most frequently commences about the umbilicus or the genitals, and extends upwards or downwards, affecting the parts which it reaches with moderate swelling, and slight hardness; the skin puts on a dark, red colour, and vesications, with livid bases, break out, terminating in sphacelus, which, if the child is not speedily cut off, nearly destroys some of the fingers or toes, or even the genitals. In the milder cases, when the extremities alone are affected, suppurations take place rapidly about the joints of the hands and feet. The complaint, however, often terminates favourably in ten or twelve days."†

This disease appears in a milder form sometimes in infants, about the umbilicus, nates, and the upper part of the thigh. It generally proceeds from acrid discharges, as from intertrigo, from ulceration at the navel, or from serum discharged from the inflamed mucous membrane of the intestines, as in aphtha. The same kind of erysipelas is also met with accompanying some cases of vaccination.

Treatment.—This variety of phlegmonous erysipelas can only be successfully combated by incisions, which must be made freely through the skin and cellular membrane, as soon as the hardness and dark, red appearance, characteristic of the disease, has commenced. If we wait till suppuration takes place, we shall expose the patient to imminent danger, and the parts to unnecessary distention. As soon as the incisions have been made, the induration, swelling, and redness begin to subside, and the accompanying fever and disturbance of the intellectual faculties speedily diminish. It will be proper afterwards to support the patient's strength by beer, porter,

* "Essay on Plegmon. Erysip.," by J. M. Coley. "Lancet," No. 787, p. 44.
† "Bateman on Cutan. Dis.," p. 129.

or wine and water, together with such nourishing diet as he can take; and disulphate of quina, with diluted sulphuric acid, may be found useful. The bleeding should be encouraged by warm water, and afterwards an evaporating poultice should be applied until the incisions have healed. This decided practice is attended with remarkable success in Russia, where, from the coldness of the climate, the disease is frequent in infants.*

In the mild forms of the attack a lotion composed of one part rectified spirit and three of water, together with a gentle aperient, will be sufficient, followed by the application of strong mercurial ointment spread on linen. In some of these cases it will be found good practice to rub the solid nitrate of silver moistened over the whole of the inflamed surface. After the inflammation has subsided, when the top of the thigh on the inner side has been its seat, a sloughy ulceration is sometimes left. The most proper application for this is the ung. hydrargyri nitrico oxydi spread on lint.

2 *Erraticum,* or Migratory Erysipelas, appears on various parts of the body in succession, and terminates at the end of a week or ten days.

Treatment.—This is a mild and inoffensive disease, and only requires an occasional aperient, and the frequent use of the spirit lotion before mentioned.

Erysipelas is occasioned sometimes by the sting of a wasp or the bite of a gnat. For this the best remedy is the aromatic spirit of ammonia, with which the affected parts should be freely bathed.

GENUS II.—PEMPHIGUS.

This disease appears to have been confounded with pompholix, or a bullous eruption, which is unconnected with fever. The words Πέμφιξ and Πομφόλυξ, in the Greek language, are synonymous, each signifying bulla, or large blister. Billard treats of both diseases as synonymous, and divides them into acute, chronic, and febrile;† and Bateman is of opinion that the two diseases ought to be included under the title, Pompholix. In Willan's arrangement, pemphigus is distinguished from pompholix by its being symptomatic of some fever, as typhus, the plague, &c., while the latter is a non-febrile disease; and he has given us one form of it as occurring in infants, namely,—

P. infantilis, or Infantile Pemphigus. This appears soon after birth in weak and emaciated infants, accompanied with fever,

* "Lancet," No. 706, p. 851.
† "Traité des Maladies des Enfans," p. 134.

pain, loss of sleep, and a dry skin. The vesications are at first small and pellucid, and afterwards become large, elongated, purple, and turbid, and encircled by a dark red margin. A painful ulceration succeeds the rupture of the blisters, and the disease is usually terminated in a few days by the death of the infant.

On examining the body of an infant who died in the Foundling Hospital at Paris, Billard found the cerebral pulp a little injected, the veil of the palate covered with muguet, the œsophagus of a violet colour, the stomach dotted with red, the small intestines sound, some of them streaked, some of the folds red, a perceptible tumefaction of the inner membrane of the colon, the liver healthy. The lungs were gorged with blood, the right choked to the summit, and the heart filled with blood.*

Treatment.—The only treatment which appears to be indicated, is that of supporting the patient by nourishing food and tonic medicine.

In the "Dublin Med. and Phys. Essays," vol. i., Dr. Stokes has described a species of pemphigus which he denominates *P. gangrenosus*. It occurs between the first and fifth year among the children of the poor, in damp, unwholesome localities; and he states that it is sometimes epidemic. The following is Dr. Stokes's description of this disease:—"The approach of this disorder is sometimes, though rarely, denoted by a livid effusion, like that of erysipelas, slightly elevated. It more frequently happens, however, that the complaint comes on in perfect health. One or more vesicles appear, mostly larger than the best distinct smallpox; these increase for two or three days, burst, and discharge a thin fluid, having a disagreeable smell, limpid in most cases, sometimes whitish and sometimes yellowish, the latter less dangerous; usually, the weaker the child's constitution is the thinner is the matter. Before or after breaking, the vesicles run together, the sore becomes painful, with loss of substance, and a thin, fetid, ichorous discharge; the edges of the ulcer are undermined, and it spreads quickly. The most usual seats of the disease are behind the ears, sometimes on the hands or feet, on the private parts (seldom on the armpits), the breasts, folds of the thighs, lower belly, on the inside of the mouth or lips. If the sores are behind the ears, they destroy the connection of the posterior cartilage with the cranium; they spread to the meatus auditorius, to the eyes, the sight of which seemed, in a few cases, to have been destroyed one or two days before death; and they sometimes extend to the vertex."

* "Billard," p. 156.

"The constitutional disturbance that accompanies this disease seems principally the effect of irritation. When the vesicles burst, the child begins to grow peevish and fretful, pale, loses its appetite, and the flesh becomes remarkably flabby. The periods of the disorder are not very regular; but it often happens about the eighth day that the pulse sinks, the lividity spreads over the whole sore, the fetor and discharge increase greatly. The smell is so strong as often to be perceivable at a distance from the bed. The discharge in one case, where the ulcers affected the armpits and breasts, was such that the linen was completely loaded several times a-day.

"Death takes place about the tenth or twelfth day, often preceded by convulsions, sometimes by extreme debility. Patients are apt to relapse soon after the sores are skinned over.

"The causes of this malady are rather obscure. It seems exclusively confined to children. Dr. M'Donnell saw twenty cases before the year 1795; all the patients were under four years old. Dr. Spear observed that it was confined to children from the age of three months to that of five years; but it has been observed near Dublin in children of nine years old. It attacks the finest children in preference; the children of the poor more frequently than those of the affluent: and those who live in damp situations seem more peculiarly subject to it than others. The disease is more prevalent in summer than in winter. It appears to be infectious, though obscurely so in general; but in the year 1800 Dr. Spear observed it to spread epidemically."

Treatment.—The treatment of the *P. gangrenosus* which was found most successful in Ireland consisted in the application of a carrot or porter and oatmeal poultice during the first eight hours, and afterwards an ointment composed of the leaves of *scrophularia nodosa*, or figwort, which grows plentifully on the banks of brooks and rivers, and damp places, in all parts of England, as well as Ireland. This ointment, first melted, is directed to be smeared over the diseased parts with a small feather. This dressing must be repeated once in four or six hours, the parts being covered with a plaster of the ointment, to which one eighth part of wax has been added. The bowels should be kept open during the cure. The formula for ung. scrophulariæ is inserted in the "Dublin Pharmacopœia."

GENUS III.—POMPHOLIX.

This is an eruption of large blisters, without surrounding in-

flammation, and without fever. Children are only subject to one species. *P. benignus.*

P. benignus.—This appears in the form of small blisters of the size of a pea, or small nut, on the face, neck, or extremities, which, bursting in a few days, soon heal. The disease is met with in children during hot weather, and in infants during dentition. Bateman says that it also proceeds from eating acrid vegetables, or from swallowing a few grains of mercury.

Barthez and Rilliet declare they have never yet met with a case of *P. diutinus* in children in the Hospital for Infants in Paris, although not uncommon among adults in the Hospital of St. Louis.

Treatment.—Hydrargyrum cum cretâ, with rhubarb and ipecacuanha, given every night, I have found the best remedies for this disease. Dr. Willan advises cinchona, with cordials and diuretics.

Order 5.—Pustulæ.

Pustules consist of a secretion of purulent matter on the external surface of the true skin under the epidermis, which is elevated into circumscribed tumours, surrounded with more or less inflammation at their base. Sometimes the pustules are solitary, at others confluent, and they terminate either in scabby incrustations or in ulceration. Bateman has divided pustular diseases into five genera, some of which are contagious and some not. These genera are Impetigo, Porrigo, Ecthyma, Variola, and Scabies.

Genus I.—Impetigo.

Impetigo, or running tetter, is denoted by small pustules, unaccompanied with fever, not contagious, and not communicable by inoculation. It is confined principally to the extremities. Bateman and Willan have divided this group of pustules into five species, which Rayer and Billard think may be confined to two, namely, I. figurata and sparsa.

1. *I. figurata* is the most common species.

"It appears in circumscribed patches, of various figure and magnitude, which are usually smaller and more circular on the upper, and larger, oval, and irregular, on the lower, extremities. The patches consist at first of clusters of the yellow psydraceous pustules, set close together, and surrounded by a slight inflammatory border; the whole being somewhat raised, but the pustules not very prominent or acuminated. In a few days the pustules

break, and discharge their fluid; the surface becomes red and excoriated, shining as if it were stretched, but exhibiting numerous minute pores, from which a considerable ichorous discharge is poured out, accompanied with much troublesome itching, heat, and smarting. The discharge soon concretes partially into thin yellowish or greenish scabs, but still continues to ooze from under the scab which it forms. In the course of three or four weeks, as the quantity of the discharge diminishes, the scabs dry and fall off, leaving the surface of the cuticle red, rough, and somewhat thickened, and at the same time extremely brittle, and liable to crack and to be excoriated, so that the ichorous discharge and scabbing are easily reproduced; and the disease is often thus much prolonged in its duration. Occasionally fresh crops of the psydraceous pustules re-appear, as at the commencement, and the whole course of the eruption is repeated.

"When the impetigo figurata is beginning to heal, the patches undergo a process somewhat similar to that which takes place in lepra vulgaris. The amendment commences at the centre of the patch, which first subsides, leaving the border elevated. At length this also disappears; but the cuticle, which was the seat of the patch, remains for some weeks red, shining, and tender." *

When the pustules are mingled with vesicles, the itching is so excessive, as to induce a belief that the disease is herpes. In this form it chiefly appears between the fingers and on the wrists; and at length the cuticle becomes red, thickened, and cracked, the rising eruptions being intermixed with humid ulcers and fissures. On account of the heat, smarting, and itching, accompanying these eruptions, they are some of the most tormenting to which children are subject. This disease may be readily distinguished from herpes, by its continued duration and by its pustular character; herpes being limited in its course, and always vesicular: and it may be discerned from itch by a considerable tumefaction, redness, and soreness always observable in the adjoining integuments, to some distance from the seat of the disease.

Treatment.—Hydrag. cum cretâ, or pil. hyd. chloridi, will sometimes be found useful alteratives; but the most effectual internal remedy is Harrogate water. The disease is connected, more or less, with the state of the digestive organs; and, therefore, it is of primary importance to attend to diet, care being taken to avoid salted meat, vinegar, pastry, and fermented liquors. Milk, or water, should be taken with dinner, and only one meal of animal food should be allowed every day. Sarsaparilla is often

* "Bateman's Synopsis," pp. 144, 145.

prescribed, but it is of no further use than by diluting the food, which might be as as well effected by barley-water. Great attention will be required by prescribing local remedies, as some of them in common use are apt to excite rather than allay the distressing sensations of heat and smarting. One even of seven years' duration was cured in St. Thomas's Hospital, by ointments composed of tar and oxyde of zinc, and by the use of nitric acid, diluted with decoction of sarsaparilla.* Dr. Elliotson treats the disease by zinc ointment,† also with bleeding and mercurials.‡ The best and most uniformly successful application is the following ointment:—

R—Cocculi Indici subtilissime pulv. . . ℥ ij.
Adepis . . . . . ℥ j.
M—Et fiant unguentum.

A little of this must be applied to the eruptions every night, and the diseased parts covered with oiled silk or calico.

The patient should not be allowed to wash the parts affected more than once or twice a-day, and particular care must be taken to dry them with a soft linen cloth. They should also be defended from the external air during the day by oiled silk or soft leather.

2. *I. sparsa.*—The lower extremities are most subject to this species, with which œdema is frequently present. Sometimes the neck and shoulders are the seats of the eruption. It appears in a more distinct form than the preceding species, and is apt to return in autumn, and continue through the winter. This species also is liable to be confounded with itch, but the pustular appearance of the latter from the first, together with the adjoining tegumentary plethora, are quite sufficient to distinguish it. Much useful information may be obtained in facilitating the diagnosis of cutaneous diseases which have been designated by the ancients, by attending with philological minuteness to the etymology of the terms they adopted. For instance, the words *igo* and *ago*, which are frequent Latin terminations, are abbreviations of the word *imago*, and always signify resemblance. Hence impetigo, which is a compound word derived from *impetus* and *imago*, is used by Celsus to denote the hot or burning paroxysm of a fever, and by Pliny the inflammation produced on the face by the discharge of acrid mucus:—

"Asclepiades etiam in recenti vehementique pracipueque *ardente* febre, ad discutiendam eam gestatione dixit utendum.

* "Lancet," vol. xvii, p. 63. † Ibid., vol. xix., p. 551.
‡ Ibid., vol. xviii, p. 539.

Sed id periculose sit; meliusque in quiete ejusmodi *impetus* sustinetur." A. C. Celsus de re medicâ. Lib. 2., cap. 15.

"Impetus pituitæ in facie butyro illito tolluntur." Plin. H. N. xxviii., 12 in. S. 50.

Impetigo, therefore, literally means an eruption, accompanied by great heat and inflammation; and the heat, swelling, and redness attending it are really the characteristics of the disease.

Treatment.—The same treatment recommended for I. figurata will be found applicable for this species.

3. *I. erysipilatodes.*—In the commencement this disease has some resemblance to erysipelas, its seat being generally on the face, which is much swollen, as well as the eyelids. As the disease proceeds numerous pustules appear, and, bursting, discharge an acrid matter, which concretes and forms yellowish scabs. The eruption continues two or three months, and leaves the skin in a red and acrid state. This is not likely to be confounded with itch, as the latter very rarely attacks the face.

Treatment.—At the commencement of the eruption Bateman recommends purgatives and the antiphlogistic regimen, and after the discharge and scabbing occur, bark in large doses, or in combination with sarsaparilla or mineral acids. The best external remedies in the early stage are tepid barley-water, or thin gruel, or linseed tea; and after the exudation has taken place, the ointment of cocculus Indicus prescribed for the former species.

The I. scabida and rodens are, I believe, never met with in children.

GENUS II.—PORRIGO.

Ringworm of the scalp, scald head, &c. In my remarks in the last genus *Impetigo*, I explained the derivation and proper meaning of the termination *igo* or *ago*, which signifies resemblance. Hence, it will be seen, that porrigo is a word composed of *porrum*, garlic, and *imago*, resemblance. Here, again, etymology will be found of great assistance; for several species, especially *P. scutulata*, exhale an odour exactly *resembling garlic*,—a peculiarity which belongs to this species.

Porrigo is a pustular and contagious disease, which Willan has separated into six species.

1. *P. larvalis*, or *crusta lactea.*—The eruption begins in the forehead and cheeks, with numerous whitish pustules on a red surface. The pustules soon burst, and their purulent contents concentrate and form scabs, which being extended by successive eruptions, ultimately cover nearly all the face, enveloping it as in a mask; whence the term larvalis, from larva, a mask. After

the scabs separate and fall off, the red cuticle remains entire, and not fissured as it is in impetigo. When the child rubs or scratches the diseased surface to relieve the itching, and afterwards conveys the matter to the breast or other part, inoculation takes place, and the same disease appears in the inoculated integument. Sometimes the ear and scalp are the seats of the eruption, and when the matter is introduced between the eyelids, it produces purulent ophthalmy.

Treatment.—In the early stage of the eruption the parts must be bathed with tepid water or thin gruel, strained; and as soon as the incrustation has formed, the following ointment should be applied twice a-day:—

R—Hydr. Præcip. Alb. . . . ℈ij.
Adepis . . . . . ʒj.—M. fiant ung.

The child must take, while using the ointment, a purging dose of chloride of mercury and jalap every third morning. By this treatment the disease will be cured in ten or fourteen days. Bateman speaks of this eruption continuing in some instances a year and a half. I never met with any case which was not cured in a few weeks by the treatment I have advised; provided the purgative operation of the powder has been obtained. I fear the name of milk-crust has misled the profession as to the cause of the disease, which has seldom any connection with suckling, and attacks children who are dry-nursed as well as those who have been a long time weaned.

2. *P. furfurans.*—In this species, which is confined to the head, the eruptions are minute, and the discharge small; so that when it concretes, it forms small scales, which exfoliate like bran. Repeated eruptions occasion the hair to become thin, and in part to fall off, and sometimes the cervical glands become enlarged.

Treatment.—The scales should be first removed by washing with warm water, and after the hair has been made dry by a soft cloth, the following ointment should be applied all over the head:—

R—Alumenis,
Zinc Sulphatis . . . . . ā ℈ij.
Adepis . . . . . ʒj.—M. fiant ung.

Sometimes olive oil will be sufficient to effect a cure. Bateman recommends the hair to be shaved from the head, and cocculus Indicus ointment, or ung. hyd. nitratis, ung. hyd. nitrico-oxydi, tar and sulphur ointment, or the ung. acidi nitrosi Edinb., to be applied.

3. *P. lupinosa.*—"The porrigo *lupinosa* is characterised by the formation of dry, circular scabs, of a yellowish white colour,

set deeply in the skin, with elevated edges and a central indentation or depression, and resembling, on the whole, the seeds of lupines."*

The eruptions of P. lupinosa, which have come under my notice, have been chiefly longitudinal, and not circular. They may be distinguished from the other species by their extreme dryness and abrupt prominence, which make them resemble some dry composition, like plaster of Paris, cemented to the skin. The disease appears chiefly on the head. It occasionally presents itself on the forehead, temples, and on the other parts of the body.

Treatment.—Bateman advises the hair to be removed. This is quite superfluous. All that is necessary is to apply, twice a-day, the ung. hydr. præcip. albi., and to administer every third morning hydr. chlorid. with pulv. jalapæ, so as to insure a full action on the bowels. A poultice may be applied to soften the scabs previously to the use of the ointment.

4. *P. scutulata.*—This is one of the most disagreeable and obstinate species of porrigo. It is commonly called *ringworm of the scalp.* It begins with clusters of small, yellow pustules, which bursting, form scabs at first thin and afterwards thick, the matter accumulating and forming an extended mass, under which fresh secretion takes place, elevating the scab, and presenting a puffy appearance and fluctuation when examined with the finger. By degrees the whole head is more or less affected, and the odour from the matter is highly offensive, resembling that of garlic. As the disease advances, the hairs become brittle and break off, and their secreting bulbs ulcerate and are destroyed, leaving sometimes only a margin of hair surrounding the scalp. The disease is at one time most violent on one part, and at another on a distant part of the head, and after appearing to subside, it breaks out again with aggravated force; and its duration is thus rendered tiresome, both to the child and the medical practitioner. It is a highly contagious disease, especially in schools.

Treatment.—The astonishing number of specifics recommended for this eruption, prove the intractable nature of the disease. Very few of the acrid applications mentioned in books are advisable or useful. The hair should be cut off, not shaved; and during the day time folds of linen rag, moistened in cold water, should be applied all over the head, and moistened again with cold water as often as they become dry. At bed time the the head should be covered with the leaves of ivy (hedera helix). The Irish or giant ivy, from the Canaries, is the best. The patient should take in-

* "Bateman's Synopsis," p. 165.

ternally a grain or two of iodide of potash, twice a-day, and be well purged with salts and senna every second or third morning. I have never found this treatment to fail, except in one case, which was afterwards cured by an ointment composed of one drachm of sulphate of iron, and one ounce of lard; the cold water being used at the same time. The manner in which the water dressing acts, is by promoting evaporation, which removes the excessively redundant heat from the surface; and I suppose the ivy-leaves, possessing a kind of natural varnish, operate by exciting cutaneous perspiration, which of itself is a cooling process. This is the only mode of treatment from which I have found success in a reasonable time.

5. *P. decalvans.*—"This singular variety of the disease presents no appearance whatever, except patches of simple baldness, of a more or less circular form, on which not a single hair remains, while that which surrounds the patches is as thick as usual. The surface of the scalp, within these areæ, is smooth, shining, and remarkably white. It is probable, though not ascertained, that there may be an eruption of minute achores about the roots of the hair, in the first instance, which are not permanent, and do not discharge any fluid."*

In some cases the patches of baldness extend until all the hairs fall off, the head remaining during several years, and sometimes permanently bald. The hairs on the eyebrows also are often destroyed by the disease. When any attempt is made by Nature to reproduce the hairs, they are softer and of lighter colour than the original hairs.

It appears to me questionable whether this disease should be grouped with the porrigines, as no pustule has ever been observed during its progress. We have, however, the authority of Celsus for the use of the term porrigo, as applicable to this as well as the distinctly pustular diseases affecting the hairy scalp:—

"Porrigo autem est, ubi inter pilos quædam quasi squamulæ surgunt, eaque a cute resolvuntur; et interdum madent, *multo sæpius* siccæ sunt. Huic quoque modo malo odore, modo nullo accedente. Fereque id in capillo fit, rarius in barba, aliquando etiam in supercilio."—Celsus de re medicâ, lib. vi., cap. 2.

By means of a microscope I have discovered minute elevations, having a papulous appearance, on the margin of the circle, which are probably the destructive agents in the process of depilation; and sometimes I have observed slight redness and tenderness at the margin of the area, while the disease has been making un-

* "Bateman's Synopsis," p. 173.

usually hasty progress. It is a contagious disease, and generally breaks out in schools, where young children are crowded together, and allowed to use the same combs and brushes.

Treatment.—It has been recommended by most writers on cutaneous diseases to pursue the plan described by Celsus, namely, that of repeatedly shaving the head, with the view of encouraging the tender hairs to grow, and afterwards to anoint the head with some stimulating liniment, as oil of mace, dissolved in spirit, or camphor, petroleum, turpentine, &c. I have never been able to depend on any of these remedies, and therefore, when the disease first appears, never advise the hair to be shaved or cut. All I find necessary is the following lotion, which must be *rubbed* on the diseased or bald patches three times a-day, by means of linen rag moistened with it. When the lotion occasions much smarting, the rubbing must be discontinued.

R—Cupri Sulphatis . . . . . ℥j.
Aquæ Distillatæ . . . . . ℥iv.—M. fiant lotio.

By means of this lotion the extension of the disease will soon be entirely stopped, and in the course of a few weeks hairs will be perceptible in the circular patches, which gradually increase in length and firmness, and shortly afterwards completely cover the part, and assume the same colour and appearance as the adjoining hairs. When the whole head is permitted to become bald, by neglect or inefficient treatment, I know no remedy on which we can depend for its restoration. I have not tried creosote; but, from the extraordinary cures I have seen effected for a similar disease in dogs and horses, I am inclined to think the following ointment may be tried with some chance of success: —

R—Creosoti . . . . . ℥j.
Adepis . . . . . ℥iss.—M.

A little of this application may be gently rubbed over the scalp every night.

I can confidently recommend the treatment I have mentioned before complete depilation occurs, having found it invariably successful, even in schools where it has appeared in its most contagious and troublesome form.

6. *P. favosa,* scald head.—Children from six months to four years of age, are most subject to this eruption. It consists of large, soft, yellow pustules, which soon burst and discharge their contents in such profusion, that the hair is matted together with it into a hard mass; which sometimes covers the whole head, presenting a most offensive sight, especially when pediculi, which are

generated in the ulcers beneath the scabs, are seen crawling in all directions. The disease is not confined to the head, being often found on the face, hands, feet, and other parts of the body. The principal character of this disease consists in the profuse discharge of thick, yellowish, purulent matter, and the complete matting together of the hair. After the disease in the head is established, the cervical glands almost invariably become enlarged and inflamed, forming a chain of small tumours, and the general health is more or less disordered. At length, unless the irritation is removed, suppuration in the glands takes place, accompanied with great pain. Ulceration behind the ears, and chronic inflammation in the eyelids, also succeed, and render the situation of the patient miserable; while the intolerable garlic-like odour from the accumulated secretions, render the patient offensive to all who approach him. The matter is so contagious, that any part of the patient, or of his attendants, may be inoculated with it, and thus produce the disease.

Treatment.—This loathsome disease may be cured with great rapidity by proper remedies. The same application which cures the eruption, almost immediately destroys the lice accompanying it. The patient must take a purging dose of chloride of mercury and jalap every third morning, and his head should be rubbed all over with ung. hydrarg. præcipitati albi every night and morning; and every day, or every second day, it should be well washed with soap and warm water, and dried with an old napkin, before the ointment is applied. By this treatment the most formidable case may be completely cured in a fortnight; and the cervical glands, as soon as the irritation from the disease on the head has been removed, will spontaneously subside. Should ulceration follow the suppuration of these glands, the application of a pad of linen, moistened with water, and a continuance of the purging medicine, will speedily effect their cure. The diet should consist of milk, rice-pudding, tea, coffee, and fresh animal food.

GENUS III.—ECTHYMA.

An eruption of inflamed pustules, distant from each other, few in number, and unaccompanied with fever, are the symptoms denoting this disease. It is symptomatic of degeneracy in the health of the patient, occasioned by some previous exhausting disease, as small-pox, scarlet fever, measles, &c., or by cold or fatigue. Ecthyma is derived from Ἐκθύω, which is synonymous with the English expression "to break out." It is probable that it is occasioned by some corresponding inflammation in the gastric

or intestinal mucous membrane, the sequel of cold, or the diseases just mentioned; as herpes zoster is produced by inflammation in the subjacent muscles translated to the skin. A medical practitioner may readily recognise ecthyma if he has ever noticed the eruption produced by the friction of an ointment containing the potassio-tartrate of antimony.

1. *E. vulgare*, or Common Ecthyma, appears in the form of small inflamed pustules on the neck and shoulders, or the extremities. While the pus is forming, the inflammation at the base of the eruption extends, and at the end of a week it disappears, and soon afterwards the scabs which succeed, fall off. Children are most liable to this disease in spring and summer, from the vicissitudes in the temperature of the atmosphere.

Treatment.—The only medical treatment requisite, is the exhibition of salts and senna, or some other purgative, every third morning.

2. *E. infantile.*—Infants who are ill-fed and feeble are most obnoxious to this eruption, which may appear on the head and face, as well as on other parts of the body, and successive crops may protract the disease during several months. Ulceration sometimes follows, which, destroying the true skin, leaves a permanent cicatrix.

Treatment.—Attention to the general health will be found the best remedy. Change of nurse or of food will therefore be necessary; and some benefit may be derived by the exhibition of tincture of bark, or disulphate of quina, with diluted sulphuric acid.

GENUS IV.—VARIOLA, OR SMALL-POX.

This disease has been divided into two species,—the distinct and confluent; and since vaccination has been introduced, another species or variety of the distinct variola has appeared. The latent period, during which the infection lies dormant, is generally fourteen days; but from idiosyncrasy, or from a peculiar impression made on the system, the disease sometimes occurs a day or two after exposure.

1. *Distinct Small-pox.*—The premonitory symptoms are rigors, accompanied with pains in the limbs, and followed by great heat, headache, and sometimes by delirium or convulsions. It rarely happens that convulsions are fatal at the commencement of any febrile disease. Hence such an attack is found a favourable incident, when the variolus eruption is approaching; and, as it occurs chiefly, if not exclusively, to plethoric children, it is not essentially connected with small-pox, but is the effect of the sud-

denly excited state of the cerebral circulation during the re-action which follows the previous cold stage of the symptomatic fever. On the fourth day* from the commencement of the indisposition, the eruption or second stage of the disease begins.

" The first indication of that change in the cutis, which is followed by a distinct variolus pock, is the appearance of a small, red spot, in the centre of which a firm knot is perceptible to the touch, although not so soon visible to the eye. In twenty-four hours a pimple is observed in the centre, which increases so as to present an accumulated vesicle. This gradually changes its form during its growth, so as to present on the fourth day a vesicle perfectly circular, somewhat flattened upon the top, and indented remarkably in the centre, as if the point of a pin had been pressed upon it, and the impression remained. At this time the vesicle is about one-eighth of an inch in diameter, and has often a reddish or bluish appearance (from the inflamed and very vascular portion of the subjacent skin being seen through it), being filled with a limpid fluid contained in different cells.

" To a cellular structure of this sort, the term *pock* should be strictly confined. The walls of the cells being perfectly transparent, the disposition of them during life is not easily ascertained; but they are more readily examined in the dead subject, and the arrangement of the partitions, first described to me by Professor Macartney, of Dublin (whose researches in minute and comparative anatomy have been so justly appreciated), I have found to answer to the axis, spokes, and circumference of a wheel. Besides the cutis, which is external, and the very vascular surface of the skin forming the basis of the pock, there is the cellular structure formed by the *rete mucosum*, or by a freshly organised substance thrown out by the cutis itself, and excavated into cells for holding the fluid of the pock. The walls of these cells secrete the contained fluid, and if this be partly let out by a puncture, the drying of the lymph closes the point opened, and the fluid is again secreted, distending the pock to its former shape.

" The pock grows more in its circumference than its elevation subsequent to the third or fourth day, and by the fifth or sixth its size is a quarter of an inch, the induration is less observable, and the contents cease to be transparent. A red circle shows itself at the circumference, and becomes wider as the pock increases,—the circular shape of the latter being still retained. After this period the surface becomes convex, the point which was indented being now the highest part; the circular shape is lost, the pock changing to

* " Sydenham."

oval oblong, or irregular; the contained fluid, at first turbid, is afterwards purulent; and the cellular structure is altered, the walls or partitions being thinner, broken up, or partly absorbed, so that a great proportion of the fluid will escape by a single puncture. These changes are effected by the eighth day, when the incrustation commences, and proceeds in one of two different ways,—either the pock bursts at its apex, allowing part of the fluid to dry as it exudes; or the thinner parts evaporate without the pock bursting, while the denser parts form, with the cuticle, cells, and slough of the pock, a thick, convex, and nearly circular scab, one fourth of an inch in diameter."*

This eruption commences first on the face and neck, and afterwards on other parts of the body; and it penetrates into the mouth, producing pustules in the mucous membrane of that part, and of the larynx, trachea, and pharynx. Ulcerations have been discovered in the mucous lining of the bowels after death, but no variolous pustules have been met with in the alimentary canal, below the bag of the pharynx. The small-pox pustule may be distinguished from chicken-pox by the granular sensation it communicates to the touch, resembling the feel of shots under the skin; by the dimple or depression in the centre before pus is deposited; and by the slough, which is generally found in the true skin.

As the disease proceeds, the mucous membrane of the eyes participates in the eruption, and the lids are closed, and the face becomes swollen. About the fifteenth day the scabs formed by the desication of the pustules fall off, leaving the pits or marks, characteristic of the disease, occasioned by the sloughs in the cutis vera. As this slough does not exist in every pustule, this mark will not always be discernible.

Treatment.—One of the principal objects of the medical attendant must be, to keep the patient and the apartment cool. The more the febrile excitement is modified, the less severe and extensive will be the subsequent eruption. All fermented liquors must be avoided, and the diet must be of the most unstimulating nature. Strong light must also be excluded, and the bowels must be relaxed with some gentle aperient. It seldom happens that the patient is annoyed with loss of sleep in distinct small-pox. Should the pain arising from the development of the eruption be so great as to prevent sleep, a dose of syrupus papaveris, compound powder of ipecacuanha, or of tincture of opium, adapted to the age of the child, must be given every night at bed-time. This treatment will be found to produce ease and tranquillity, which will be succeeded

* "Cross on the Variolous Epidemic," 1820, p. 135, &c.

by sleep, and by a corresponding diminution of fever. When epilepsy occurs before the eruption makes it appearance, leeches may be applied to the temples with advantage, and general bleeding will be found decidedly beneficial in plethoric children. In such cases, when the brain has been suffering undue oppression or excitement, from the sudden disturbance of the circulation and excitability, I have repeatedly seen the best effects result from a timely and judicious abstraction of blood, notwithstanding the popular prejudice against bleeding in eruptive diseases; the efforts of nature to establish the specific cutaneous eruption being thereby assisted, and the erratic cerebral inflammation diverted. With the same intention, cold applications should be used to the head, and the bowels should be stimulated by active purges.

It is of great importance in some children to adopt any rational measures which are designed to prevent the usual marks left by small-pox. For this purpose various plans have been proposed. Serres and Biquet recommend a mercurial plaster, spread on thin leather, to be applied on the second day of the eruption all over the face during three days, and mercurial ointment to be introduced between the eyelids. By this practice the process of pustulation is said to be prevented; the eruptions only proceeding through the stage of vesication, and then scabbing and exfoliating, without leaving behind them any marks or destruction of the true skin; no suppuration nor slough in the cutis vera ever taking place.* Bretonneau pierced the summit of each pustule with a gold or silver needle, charged with a small portion of lunar caustic, in powder. Serres applied a strong solution of nitrate of silver—15 to 45 grains to the ounce—to the whole surface of the eruption. Dr. Picton, of New Orleans, treated his patients by keeping them in total darkness, and, as he states, with success.† Dr. Midaveine employs sulphur ointment with the same intention, but twelve of his sixteen cases were modified small-pox. Larrey recommended to the French Academy the practice of covering the exposed parts of the body with gold leaf, prevalent among the Arabs and Egyptians; and Legrand tried this process with success on an English girl, who laboured under confluent small-pox. Larrey has, however, found the same effect from the anointment of oil of almonds.‡ I have had no experience with any of these proceedings, but should feel inclined to try the mercurial plaster, on account of its property of modifying inflammation in the capillary

* "Lancet," Feb. 6, 1841, p. 676. † "Med. Retrospect," vol. iii. p. 48.
‡ "American Journal of Med. Science," Feb., 1840, p. 453.

circulation, as in iritis, erythema, nodosum, and, I may add, some forms of erysipelas.

Early attention should be paid to the state of the eyes, to obviate the supervention of a species of chronic inflammation in the conjunctival membrane, called variolous ophthalmy, which, when neglected, is apt to terminate in ulceration and opacity of the cornea, &c. To reduce the swelling of the upper eyelids, and modify the purulent discharge, a few leeches, and afterwards the liquor plumbi diacetatis dilutus should be applied. Should the purulent discharge remain after the pustules on the skin have run their course, an injection of alum—ten grains to the ounce of water, or nitrate of silver five grains to the ounce—should be injected between the lids three times a-day. For further information respecting this disease, the reader is referred to the article, *Variolous ophthalmy*.

2. *Confluent Small-pox.*—This form of the disease is distinguishable from the distinct variola by several peculiarities. The attack often begins with sickness, the eruption appears on the third or fourth day, and the fever continues unabated after the eruption takes place. The pustules in a day or two, instead of being prominent, become flat, and communicating, form one continued bag, filled with a thin sanious fluid, while the swollen face presents a pale exanguine aspect. When the eruption extends to the larynx, hoarseness is present, and sometimes such a degree of dyspnœa, as prevents the decarbonization of the blood. The eyelids are always so swollen as to render their separation impossible, and severe purulent opthalmy supervenes, which endangers the integrity of the cornea, and leaves the disease I have before spoken of, called variolous ophthalmy. The mucous membrane of the mouth, tongue, and pharynx, is often the seat of the eruption, where difficult deglutition takes place. About the eighth day the confluent mass on the face acquires a dirty colour, and either bursts or forms dark offensive scabs. About the twentieth day scabs exfoliate in large masses and expose ulcerations, which result from the sloughing of the bases of the confluent pocks in the true skin. In proportion to the extent of the eruption is the concomitant fever and subsequent danger; and Sydenham says, the danger is commensurate with the number of the eruptions on the face only. In confluent small-pox, the red and inflamed margin, found surrounding the pustules in the distinct variety, is absent in consequence of the congregation of the eruptions in the former; but during the secondary fever, in most cases, an efflorescence, resembling scarlet fever, or a variety of erythema, or erysipelas, attacks various parts of the body. The internal organs are sometimes the

seat of concomitant disease, as the pleura, the lungs, the mucous membrane of the intestines, the brain, &c. Inflammation of the pleura is generally rapid in its course and often fatal. Pneumonia is a much more rare occurrence in small-pox than in measles, and is liable to terminate rapidly in serous effusion, generally bloody, into the parenchymatous structure constituting dropsy, or in congestion and hepatization or suppuration of the lungs. In these cases the quantity of serum found in the lungs, and capable of being forced out with the least pressure is astonishing. This disease may appear on the first day of the eruption or during convalescence. The symptoms are the same as under ordinary circumstances, but being uncommon in connection with small-pox, it may, without the presence of bronchial inflammation, escape observation; or may with difficulty be discovered, except by auscultation and percussion, on account of the tickling cough, which attends the constant secretion of mucus from the morbid surfaces of the larynx and pharynx. The mucous membrane of the small intestines after death, particularly when that event has been preceded by dysentery, presents appearances similar to those met with after typhus. Small hemispherical pointed or flattened projections may be noticed, having a little black central point, which is often depressed. By carefully removing the adjoining mucus, and applying a gentle pressure, we may force out a minute drop of serous fluid. The mucous membrane is also frequently the seat of vascular congestion, which had preceded the development of this follicular eruption.* In fatal cases, where violent delirium or aplopectic stupor has prevailed, we find a congestion of the vessels, or a copious effusion of serum, more or less coloured with blood, in the brain.

The confluent small-pox is occasionally complicated with other diseases besides those I have mentioned. Articular rheumatism is one of these. It is, however, a complication not peculiar to small-pox, as I have seen it unfolded and extended in succession to many articulations, particularly of the fingers and wrists and the joints of the metatarsus, during remittent fever in scrophulous children. In my own practice this kind of rheumatism has been confined to children of scrophulous constitutions; and, moreover, there is always more infiltration into the cellular membrane adjoining the articulations than is met with in ordinary rheumatism occurring from cold, and it generally terminates in abscess in the parts external to the joints, very tedious and difficult to cure.

* "Barthez" et "Rilliet."

A purging occurs in some children, and during the continuance of the confluent pustules on the face, especially in the scabbing, and most disagreeable stages of the eruption, the appearance of the patient is disgusting, and the odour of the apartment intolerably offensive. About this period, which is about the tenth or eleventh day, a secondary fever frequently occurs, denoted by heat and dryness of the skin, rapid pulse, a white fur on the tongue, and insatiable thirst. Either coma or delirium succeeds, or that excited state of the nervous system resembling delirium tremens, which is apt to manifest itself whenever an extensive portion of the skin is affected with inflammation of any kind, as with burns or scalds, or phlegmonous erysipelas; and in some patients, especially those who are particularly plethoric and robust before the attack, the blood becomes so depraved that it is extravasated in the skin and cellular membrane in the form of purple spots, or petechiæ, which, being densely interspersed with the eruption all over the body, and the pustules themselves being black in the centre, give to the surface a general black appearance, resembling that of the Ethiopian. These symptoms are attributed by Sydenham to wrong management, as stimulating diet, hot clothing, and heated apartments; and his practice tends to prove that he considered them to be all of an inflammatory character. The fever accompanying confluent small-pox is of the nature of typhus, and it has been ascertained by experiment that in the last stages of that fever the blood is almost entirely deprived of its fibrine, albumen, and saline particles. Hence it refuses to coagulate, assumes a black colour, and becomes preternaturally fluid. These pathological changes are in a great measure produced by the loss of organic nervous influence, and the cessation of the process of assimilation; which are necessary for the generation of fibrine, and the other elements of healthy blood. Hence these bloody extravasations, under the cuticle, and from the internal mucous passages, in the advanced stages of confluent small-pox, typhus fever, &c., are indications of expiring vitality. When stupor from congestion or effusion on the brain occurs, retention of urine follows. In some cases boils and abscesses are met with, attended with glandular swellings. Gangrene of the integuments of the scrotum is a fatal symptom. In those who are recovering from scarlet fever, or other severe disease, or happen to be labouring under consumption of the lungs, or other fatal malady, the confluent small-pox appears in the form of large vesicles or bladders, containing a thin serum; and such forms of the complaint are found to be dangerous, or particularly tedious. In some of these cases rigors come on, followed by muttering delirium,

feeble and rapid pulse, dry, dark brown tongue, collapse of the face, cold skin, and death.

With respect to prognosis, recovery may be expected when sleep is enjoyed by the patient, when the pulse is regular, the heat of the skin not below the natural standard, delirium is absent, or only occasional, and when the internal organs are free from disease. On the other hand, a constant state of restlessness and loss of sleep, depression of spirits with presentiment of death, a running irregular pulse and cold skin, severe pneumonia or variolous inflammation in the pharynx or larynx, impeding deglutition or respiration, petechiæ, or uniform dark discoloration of the skin, indicating a loss of vitality in the blood and the cutaneous capillary circulation, apoplectic stupor, accompanied with retention of urine, indicate extreme danger or approaching dissolution. Infants and very old persons are more exposed to danger than children between the ages of seven and fifteen years.

A third variety of small-pox is described by writers under the name of *Crystalline*, or *Horny Pock*. This is distinguished from the other varieties by the eruptions imperfectly suppurating, and being horny and semi-transparent. No pus is formed, and the thinner portion of the lymph being absorbed, the vesicle becomes opaque, and in persons of fair complexion remains white, while in those whose skin is dark or coarse, it assumes a brown, hard, or horny appearance, as in negroes.

A fourth variety is the *Modified Small-pox*, or that which appears after the patient has undergone vaccination. This is distinguishable from the natural disease by the eruptions drying up on the fifth or sixth day without suppurating, and without secondary fever. There is a strong resemblance between this and the preceding variety, and it is said to be confined to those who have undergone inoculation or the natural small-pox. The modified small-pox appears either in a distinct or confluent form; but in consequence of the suppurating stage never occurring, except in very rare cases, the marks or pits which follow natural variola are not visible. An irregularity of the surface, occasioned by minute and superficial depressions in the cutis vera, may be noticed in those who have undergone a severe attack of modified small-pox in the confluent form; and the delirium, resembling mania, peculiar to the natural confluent variola, is sometimes present to an alarming degree during the period of eruption, particularly when the small-pox rages in the epidemic form. In distinguishing modified small-pox from chicken-pox, to which it has some resemblance, the practitioner must observe that a certain mark, denoting a wide difference between them, always exists at the com-

mencement of the eruption, namely, a hard, tubercular sensation communicated to the touch by the incipient eruptions of modified small-pox, resembling that which is felt by the finger passing over small shots under the skin. Besides this difference, the true chicken-pox is always a vesicular disease, the vesicles being almost transparent, and their base surrounded by a wide inflammatory border. There is a still more important anatomical distinction, namely, the vesicle in varicella is composed only of one cell, while the lymphatic papula of modified small-pox is divided into numerous cells, the divisions resembling the spokes of a wheel.

Treatment.—In conducting the treatment of confluent small-pox, we must keep in view that it is a disease of a highly inflammatory character, connected with a condition of the system similar to that which prevails in typhus fever. Hence sanguineous depletion must be used with the utmost caution. We can rarely, except at the commencement of the disease, have recourse to bleeding; and the physician must be careful to distinguish the nervous excitement which arises from the pain and irritation of extensive cutaneous eruptions from simple inflammation. By observing this distinction, and by viewing the delirium and loss of sleep, which are so prominent in confluent small-pox, as the result of nervous and cerebral irritation, Sydenham conferred great benefit on mankind by his judicious exhibition of opium; a practice which, after proper depletion, may be safely adopted in all inflammatory diseases, in which severe pain and nervous irritation threaten to exhaust the excitability of the system. It was the practice of Sydenham to confine the abstraction of blood to the first three days; and there is no doubt this practice had the effect of modifying the inflammatory condition of the patient and the subsequent eruption. In very young children local bleeding will be sufficient, as leeches to the temples when the brain or its membranes are the seat of inflammation, and to the abdomen when dysentery accompanied with bloody evacuations is urgent. In the latter case the opiate treatment must be avoided, as its adoption would be inevitably followed by metastasis of inflammation to the brain, commencing with vertigo and vomiting, and terminating in effusion within that organ, or in exhaustion of the vital principle. On account of the connexion existing between the intestinal canal and the brain, of which I have spoken when treating on dysentery, I have always cautiously abstained from the use of opium in every form of dysentery in children; and when it occurs during small-pox I consider it a favourable event, as in such a complication the brain escapes inflammatory action. When, therefore, dysentery occurs, it should not be interfered with, unless the pain

in the bowels should be severe, in which case a *small dose* of rhubarb or sulphate of magnesia should be given once in four hours till the pain subsides. About the sixth day, when the pustules have made their appearance, and the bowels are not affected with purging, a dose varying from a drachm to half an ounce of syrup of white poppy, or from five to fifteen or twenty drops of tincture of opium, according to the age of the child, should be given every night at bed-time; and from the tenth day till the patient recovers the same dose should be repeated every morning, and an increased dose every night. Should the irritation from the eruption and the restlessness of the patient continue unrelieved, the opiate may be repeated every eighth hour until its good effect has been produced, and sleep has been procured. Of the safety and efficacy of this practice of Sydenham I can speak with confidence from my own experience. During this treatment the bowels must be kept in an open state by some gentle laxative; but drastic purges must be avoided. The patient's room must be kept cool and well ventilated, and his clothing should be as light as possible, and while delirium is present he should be confined to bed, and strong light, noises, and other external stimuli excluded. His diet should consist of milk, barley-water, rice-water, lemonade or imperial, which is made by dissolving a quarter of an ounce of bitartrate of potash in a quart of boiling water, and adding a slice or two of lemon peel. Inflammation in the larynx resembling croup, from the eruptions seated in the mucous membrane of that part, must be subdued without delay by leeches and by suitable doses of chloride of mercury repeated at intervals of two or three hours; and dysphagia, or inability to swallow, must be removed as speedily as possible, which is best effected by introducing the handle of a spoon to depress the tongue, and rubbing off, by means of a lotion, the vesicles and viscid mucus, which will be found adhering to the tonsils, soft palate, uvula, and the posterior part of the fauces. The lotion may be made with two grains of bichloride of mercury, or five of nitrate of silver, dissolved in an ounce of distilled or pure rain-water; and the most convenient mode of applying it is by moistening with it a little lint, sponge, or linen rag fastened to a stick. Attention to this state of the fauces is of the utmost importance, for if it be confounded with that paralytic state of the muscles of deglutition which takes place in the last stage of cerebral disease after effusion has taken place, the patient's life may be lost from want of nutrition. It may always be distinguished from paralysis by inspection of the parts before-mentioned, which will be found covered with eruptions with or without muquet, or a white opaque cream, like secretion

adhering to the cutis vera, and easily removable by the lotion. After this state of the fauces has been removed, the patient must be encouraged to take liquid food, which he will be found to do with comfort and avidity. As soon as pulmonary congestion is suspected, active measures must be promptly adopted to prevent inflammation, otherwise the patient will be rapidly carried off with hepatization, or suppuration of the lungs, which are the natural and progressive results of inflammation in those organs, when the patient has been exhausted by previous disease. Leeches or general bleeding to a moderate extent, according to the age of the patient, should be had recourse to, and nauseating doses of the potassio-tartrate of antimony should be repeated once in four hours. When rigors, followed by sudden collapse of the vital powers come on, a few grains of susquicarbonate of ammonia must be given frequently, and the struggling efforts of nature to support life and restore the circulation and excitability must be supported by wine, brandy and water, and cordials. The rheumatic inflammation which seats itself in the fibrous structure surrounding some of the articulations, will be relieved by evaporating poultices made with bread and water, and some cases may require the application of leeches. If the bowels are not relaxed, half a drachm of sulphate and five grains of carbonate of magnesia should be given the patient twice or three times a day. Should suppuration supervene, the abscess may be allowed to burst and the poultice must be continued; but should scrophulous ulceration be the result, the best application will be folds of linen rag dipped in warm or cold water, according to the season, which must be constantly applied, and renewed as often as they become dry. In these cases, after the patient has recovered sufficiently to take exercise in the open air, the medicines above mentioned may be omitted, and an active dose of salts and senna may be repeated every third morning with advantage. The erysipelas accompanying some cases of confluent small-pox will only require the application of warm water, or warm barley-water, or thin gruel strained; and the purulent inflammation of the eyes must be promptly attended to according to the directions I have given for its treatment during distinct small-pox, and in the chapter on variolous ophthalmia, to which the reader is referred. Petechiæ and hemorrhages from the gums, and other internal mucous surfaces, will require the exhibition of disulphate of quina and diluted sulphuric acid; and if the patient is in a state to tolerate purging, by chloride of mercury and jalap given every third morning, which have the effect of removing viscid and unhealthy mucus, and exposing the food to the action of healthy intestinal

secretion and absorption, which are necessary for the restoration of those elements of the blood which have been exhausted during the previous suspension of the process of chylification. Retention of urine, as soon as it is discovered, should be relieved by the regular use of the catheter twice or thrice a-day. The horny and the simple modified small-pox will require little attention, except the regulation of the bowels and the temperature to which the patient may be exposed; but after these diseases have subsided, a few doses of salts and senna will be required at intervals of three or four days. When the modified small-pox appears in the confluent form, it may at the commencement present all the alarming symptoms of the natural confluent variola; and the following case is adduced to confirm this assertion, and at the same time to illustrate the safety and success of the practice which was adopted by Sydenham, nearly two hundred years ago, when the natural confluent small-pox raged as an epidemic in London:—

Case.—1836, Nov. 12.—Master M., aged 15, having been exposed to variolous infection, complained of headache, accompanied with a costive state of the bowels, for which I prescribed a dose of calomel at night, and salts and senna the next morning. On the second day the bowels were not relieved, and sleepiness attended with convulsive twitchings, interrupted at times with slight delirium, supervened. He complained of great pain in the forehead, and of intense heat and thirst. The pulse 102. The tongue covered with a white fur. I prescribed an ounce of castor oil, and bleeding to the extent of sixteen ounces. The appearance of the blood indicated acute inflammation. On the third day he was well purged, and the eruption of modified small pox appeared on the chest and forehead. The pain and heat continued. Stupor. Answers, when he was roused, incoherent. Dry brown fur on the tongue. Ten leeches to the temples. On the fourth day the fever began to subside, the pulse being reduced to 84, but the convulsions in the muscles of the neck remained, vibrating the head like shaking palsy. The eruption becoming confluent all over the body. Delirium resembling mania. No sleep. On the fifth, variolous inflammation in the throat severe, for which a gargle of biborate of soda was prescribed. On the sixth, no sleep had been procured, and the maniacal delirium was constant. His state was more that of mania than delirium; as the pulse was natural, he knew well his attendants, and recollected every thing, and was labouring under illusions like a monomaniac, fancying at one time that rain or snow was falling upon him, and at another that he was lying on glass, which he employed himself with attempting to take hold of and throw out of the bed. I gave

him a grain and a half of opium immediately, and repeated one grain every hour for three times before he became quiet and composed. On the seventh, although he had not slept, he was more composed, and had his bowels relieved by salts and senna. In the course of the day he fell into a sound sleep, and when he awoke was perfectly rational, complaining only of great itching, an effect I have often observed from large doses of opium. On the eighth, slept soundly, and remained in perfect possession of his mental faculties. The eruptions now became flattened, had acquired a brown complexion, and a dry horny appearance, but none of them contained any pus. On the ninth, most of the eruptions of the face were almost suddenly reduced to minute scabs, which, although they had been as closely connected as possible, left no pits or marks which could be discovered except on close inspection. In the treatment of this case, the benefit of early bleeding, and afterwards of full doses of opium were obvious.

GENUS V.—SCABIES, OR ITCH.

This disease is so common as scarcely to deserve notice; at the same time it is necessary for every practitioner to be able to discriminate it for the sake of his own reputation, as well as the satisfaction of his patients. The eruption is at first sometimes vesicular, but it always ultimately becomes pustular. When it appears in the form of vesicles, it may be distinguished from other eruptions by its sharp pointed appearance, and by the characteristic itching attending it, which is always excited by a warm bed and the approach of the patient towards a hot fire. It usually first appears between the fingers and toes, in the point of the elbows, and in the hams. It afterwards extends to the body and the other parts of the extremities. It seldom attacks the face or head. Every species is contagious. Willan divided this genus into four species: the S. papiliformis, S lymphatica, S. purulenta, and S. cachectica.

1. *S. papiliformis*, or Rank Itch.—This troublesome species consists of minute pointed vesicles, with more or less inflammation at their base, intermixed with a few pustules, which are not always present even in chronic cases. The itching is so intolerable that every part of the body which can be reached by the hands of the patient is marked with red streaks, or with excoriations produced by his frequent scratchings. It is generally met with on the wrists, fingers, and round the waist, and may often be suspected by the constant wriggling motions of the child, which are practised for the purpose of rubbing the clothes against the tormenting

vesicles. This excitement, rubbing, and scratching rupture the apices of the eruptions, which, drying, leave small black scabs, which, together with the absence of constitutional disturbance and the characteristic itching of scabies, sufficiently distinguish the disease from lichen. Between this species of scabies and prurigo senilis there is a considerable resemblance, particularly on account of the severe itching and the black scabs which attend the latter. They may be readily distinguished by a microscope of one inch focus, which discovers a minute vesicle in this form of scabies, and a papulous elevation of the true skin in prurigo. Before an opinion is given by the physician or surgeon, this test ought always to be applied, as otherwise most unfortunate mistakes may be made.

2. *S. lymphatica*, or Watery Itch.—This species is denoted by larger transparent vesicles, without any inflammation at their base. In a few days the vesicles burst and form small ulcers, which first discharge purulent matter, and afterwards cover themselves with a dark coloured scab; and these successive appearances, observable wherever the disease is found, afford a characteristic distinction.

S. purulenta, or Pocky Itch, is known by large yellow pustules, surrounded by an inflamed base. In a few days the pustules burst and ulcerate, with increase of pain. The pustules are generally met with at first between the fingers and toes, and are particularly apt to affect children. I have known this disease communicated to children by nurses who have been suffering with the first species. The same intense itching attends this as other forms of the disease.

4. *S. cachectica*, or Cachectic Itch.—This disease, although contagious, is often generated in the individual on his recovery from measles and other exanthemata. It occurs also to persons who have been labouring under other diseases, which have reduced the general health, as from change of climate or of diet. The eruption is copious, and sometimes even appears on the face; and wherever it is met with, it is found to impart to the skin a dark hue at the affected parts. Willan says, a variety of this species is conveyed to the human subject by dogs and cats suffering with mange, which is an analogous eruption.

Treatment.—The most infallible remedy for every species of itch is sulphur applied externally in form of ointment, composed of one part of that mineral and two parts lard. The patient should be well anointed with it once in four hours during two days, and kept in bed till the expiration of that time. This application is, however, too disagreeable for general use, and I believe may always be dispensed with by substituting the following, which

may be used without confinement, and will be found equally efficacious :—

R—Potassæ Iodidi . . . . . ℥ i.
Adepis . . . . . ℥ iss. M. for ung.

A little of this ointment must be applied all over the body, except the head and face, every night. For poor children, whose parents cannot afford the sacrifice of a bed, and whose disease may be very rank, the following will be found a remedy much superior to the sulphur ointment :—

R—Creosoti . . . . . ℥ i.
Adepis . . . . . ℥ iij.—M. for ung.

This ointment should be applied every night.

Mr. Lawrence tells us that an ointment made with one drachm of sulphuric acid, and an ounce and a half of lard, applied twice daily, has been used with success.* Mr. Johnson, of Wallington Cottage, Lynn, Norfolk, cures itch with chloride of lime.† Dupuytren recommended a lotion, prepared with four ounces of sulphur, half an ounce of sulphuric acid, and a pint and a half of water. It must be observed, that a troublesome papulous eruption frequently follows the friction of sulphur and other acrid ointments, which is apt to mislead the inexperienced. It may always be distinguished from itch by means of the microscope, and will require no further remedy than the discontinuance of all external applications. The itching attending this papillous eruption is as severe as that accompanying prurigo. Sauvages, in his "Nosologia Methodica," has introduced a species of itch, which he demonstrates *Scabies vermicularis*, or Insect Itch, on account of a minute acarus being found under the skin adjoining each pustule. This insect was described in the "Ephem. Natur. Curioso-Physio-Medica," Dec. 2, an. 10, p. 37. It has also been noticed by Linnæus, Avenzoar, Moufet, Bonom, Reicinus, Redi Göoze, Wickmann, Gabercinus, Joubert, and Rochard ; and Mr. Erasmus Wilson, in his work on "Diseases of the Skin," has given a magnified representation of the insect, and is of opinion that every species of the eruption is occasioned by it. I must confess that I am more inclined to adopt Bateman's sentiments on this subject, mentioned in the following passage :—

"I am disposed, therefore, to believe, that the breeding of these acari in the scabious skin is a rare and casual circumstance, like

* "Lancet," vol. xviii., p. 1. † Ibid, vol. xv., p. 127.

the individual instance of the production of a minute pulex in prurigo observed by Dr. Willan; and that the contagious property of scabies exists in the fluid secreted in the pustules, and not in the transference of insects." *

The cachectic species must be treated by internal medicine, as well as by one of the preceding external applications. Children, who are the principal subjects of it, should take a purging dose of chloride of mercury and jalap every third morning. The other species require no constitutional remedies.

VARICELLA.

Order 6.—Vesiculæ, Vesicles.

These consist of eruptions containing lymph, either transparent or opaque, succeeded by surf or scabs.

GENUS I.—VARICELLA, OR CHICKEN-POX.

Dr. Willan separated this disease into three species, and designated them according to their relative size and shape. The first he called Lenticular, the second Conoidal, and the third Globated, or Swine-pox.

This disease is apt to be confounded with variola. It may always be distinguished from small-pox by the absence of the hard, tubercular, or wart-like eruptions peculiar to the latter; by the fluid being contained in one cyst; by the comparatively greater tenuity of the vesicle, which is covered only by epidermis; by its shorter duration than that of variola; by the non-appearance of any pit, the result of the destruction of a portion of cutis vera in small-pox; and by the presence of a dark red areola, surrounding each varicellous vesicle. On the contrary, the pustule of small-pox is polyæcious or multicellular, is covered by the rete-mucosum as well as the epidermis, which gives it a more opaque appearance and a firmer texture, and by its perfectly regular circumference at its base. These anatomical distinctions between variola and varicella, are not more remarkable than the difference which exists in their external aspect and duration,—the varicellous vesicle being oblong, or otherwise irregular in its figure, and passing through all its stages in a much less space of time than variolous pustules.

* "Bateman's Synopsis," 1833, p. 199.

1. *Lenticular varicella.*—The eruption on the second day presents a distinctly vesicular appearance, which on the fourth begins to decline, and on the fifth terminates in scabs, which about the ninth or tenth day entirely separate, leaving a temporary red mark behind them. The vesicles are accompanied with considerable inflammation round their base, and are preceded by a little indisposition. This disease is found on the head, as well as other parts of the body.

2. *Conoidal varicella.*—The vesicles in this species are remarkably pointed or cone-like, and contain a pellucid lymph. On the second day the inflammation at their base is more extensive and characteristic of the genus. On the third day the vesicles begin to shrink, and contain turbid fluid resembling pus. At the end of four or five days scabs begin to form, and they fall off about the tenth day.

3. *Globated*, or Swine-pox.—In this species the contents of the vesicle become on the second day opaque, and the eruptions terminate in scabs, which fall off on the fifth day.

A slight fever and erythema sometimes precede every species of varicella, during a day or two, and the eruption is always accompanied with itching.

Treatment.—Abstinence from animal food and fermented liquors during a few days at the commencement of the disease, constitute the principal treatment. After it has disappeared, the patient should take a few doses of salts and senna.

A mild variety of variola is mentioned by Mr. Cross, as a species of varicella, under the title of *Varicella cellulosa.** As Mr. Cross admits that the fluid in this eruption is contained in *separate cells*, and is placed upon a *thickened basis of the cutis vera*, which are the characteristics of small-pox, and that it is produced by variolous contagion, there can be little doubt that the disease he alludes to is a variety of small-pox, and therefore ought not to be associated with varicella.

GENUS II.—VACCINIA.

This disease is now so universally known, as scarcely to require description. It consists of a circular, multicellular vesicle, with a depression in the centre. The vesicle first makes its appearance about the fifth day after inoculation, and attains its perfection on the eighth day, when it is surrounded by an inflamed border of a dark red colour. On the following day a secondary inflammation

* "History of the Variolous Epidemic," p 207.

is perceptible to a considerable extent beyond the boundary of the original roseola, an obvious and colourless areola being interposed between them. This areola is one of the characteristic marks of the disease, and I believe essential to its perfect development. At this time the vesicle has acquired its utmost extent, being nearly one-third of an inch in diameter; and it afterwards gradually loses its central indentation, becomes free from fluid, acquires a dark brown colour, and, about the fourteenth day, spontaneously separates from the subjacent cellular membrane, leaving a mark denoting the destruction of the cutis vera. The secondary inflammation is sometimes so intense as to resemble phlegmonous erysipelas, when symptomatic fever is present during one or two days. In general there is little or no constitutional derangement perceptible; but much soreness and itching accompany the swollen and inflammatory state of the inoculated part, attended by peevishness and irritability in the infant patient. The cellular structure of the previous vesicle is distinctly visible in the hollow cicatrix. When the vaccine vesicle has regularly passed through all these stages, the constitution is afterwards as securely protected against the attacks of small-pox as if it had been affected by the natural or inocculated variola; and therefore the practice of repeating vaccine inocculation in the same individual is perfectly unnecessary, as was clearly proved by the observations of Dr. Jenner, and the accumulated experience of all intelligent vaccinators since his time. It has been proposed* that re-vaccination should be performed every five years, and if it should *succeed*, that it may be concluded that such repetition of the disease is not too frequent. The success of repeated vaccination is no proof that the constitution has lost its influence, as cow-pox vesicles may be excited as frequently as the surgeon may wish, in most, if not all, patients who ever had been susceptible of the disease; and the fact of two successive crops being generated, after the interval of a few days, by Mr. Bryce's test, is a proof that the system is not rendered insensible to re-vaccination by any particular interval of time. To admit that the prophylactic power of vaccination expires at a given time in any individual, and that it may be revived by re-vaccination, amounts to a confession, that the primary operation had been imperfectly performed, or that the human constitution had undergone some degeneracy or modification since the discovery of Jenner. The occasional eruption of modified or natural small-pox, even in the confluent form, after the regular vaccination, is only a proof of some peculiarity of constitution, which appears to prevail in certain families; but repeated

* "Wilson on Diseases of the Skin," p. 91.

vaccination, however perfect, will have no more effect in removing such idiosyncracy, than in altering the features of the patient.

When vaccination is imperfect or irregular, it affords no certain protection. Its progress should therefore be carefully observed. One imperfection consists in the absence of the areola and secondary rose-rash; another in the formation of pus in the first instance instead of serum, accompanied with premature inflammation and decadence, and sometimes with ulceration. The cause of these irregularities is sometimes constitutional; as I have found them to occur repeatedly to the same individuals when vaccinated with healthy lymph, taken from different patients, which has produced the perfect disease in others. One of the most frequent causes of failure or imperfection, consists in the practice of inserting vaccine fluid taken at too late a period of the eruption, when it is beginning to undergo the transition from pellucid to opaque lymph. Another cause has appeared to me to consist in a defect in the virus, produced by its modification in a patient labouring under marasmus, or some specific disease. Hence I always recommend the supply to be taken from the vesicle at the earliest possible period, and from the most robust and healthy subject. When the inflammation and scab are remarkably small and premature, the patient cannot be considered safe, and should always be re-vaccinated with lymph taken early, and carefully selected. The success of vaccination depends in some measure on the manner in which the operation is performed. I believe the most certain mode of introducing the lymph is in a fluid state, by means of the lancet, on the point of which it is taken. Another effectual mode is by the aid of a few fine gilt needles, which have been immersed in the virus; and when it is inconvenient or impossible to procure fluid lymph, it may be used in a dry state, either on the point of the lancet or the needle. Ivory points are generally employed for this purpose, but they are objectionable on account of their requiring the puncture of a lancet before their insertion. After the operation is completed, the arm should be left exposed about ten minutes, to afford time for the punctures to dry. Much nicety is required in this simple proceeding, to prevent too much oozing of blood, which is apt to wash away the lymph after it has been inserted under the epidermis. The nurse should also be desired not to wash the arm until the vesicle has passed through all its stages.

It has been supposed by many that the efficacy of cow-pox is deteriorated by the co-existence of other eruptions, and that almost every cutaneous disease which happens to follow is the product of vaccination. Strophulous confertus in particular has been most

unjustly attributed to this source. In contradiction to this prejudice, I can safely say, that more cases of this disease have come under my notice before than after cow-pox inoculation; and it is as unphilosophical to suppose that vaccinia can generate strophulus, as a grain of wheat can produce a cabbage.

The progress of the vaccine vesicle may be delayed or suspended by the concurrence of an eruptive fever, or other constitutional indisposition. This fact is now so familar to the profession, that it is needless to dilate upon the subject. As to the protective influence of vaccination, that has been sufficiently proved to be quite as great as that of inoculated small-pox: but it must be observed, that when variola occurs in the epidemic form, more cases of modified small-pox will succeed the pestilence than would appear under ordinary circumstances; and the recurrence of small-pox after variolous inoculation was formerly found as frequent as modified small-pox is now after vaccination.

Treatment.—Neither constitutional nor local remedies will be required, unless the accompanying erythema should produce extreme swelling and induration in the skin and cellular membrane, approaching to phlegmonous erysipelas, or ulceration should take place. In either case, the best remedies will be found to consist of the application during the day of lint spread with ung. hydrargyri, and an evaporating poultice, made with bread and water, during the night. In such a case, citrate of potash and an aperient may be beneficially taken while the symptomatic fever continues.

GENUS III.—HERPES.

The word herpes is derived from Ἕρπειν to creep, and the migratory property of this genus is one of its principal characters. The disease consists of distinct irregular clusters of vesicles, which present themselves in succession upon an inflamed base, which extends so as to form a border beyond them. The eruptions are preceded by indisposition, and pain and smarting, more or less. The contents of the vesicles are at first transparent, and afterwards opaque, and they terminate in dry scabs or troublesome ulcerations. The disease is not contagious.

Herpes may be distinguished from erysipelas by the absence of subcutaneous cellular swelling, and of redness and of swelling in the integument, before the eruption appears; by the small crowded vesicles, which arise in rings or clusters; and by the healthy aspect of the skin in the intervening spaces. It differs from eczema and impetigo by its limited duration; by its distinctly vesicular appearance; and by its transformations and progress.

1. *H. phlyctænodes.*—Preceded by a slight fever during two or three days, this species appears with small vesicles, sometimes regular, and sometimes irregular, on the face or forehead, or some part of the body, or the extremities. The eruptions are accompanied during their evolution by troublesome heat, smarting, and itching, which are increased by external heat. The lymph, which is first transparent, becomes opaque in the course of twelve hours; and, about the fourth day, the vesicles burst, and are succeeded by dark or straw-coloured scabs, which separate about the tenth day. The successive eruptions pass through their several stages in the course of fourteen days.

Treatment.—The heat and smarting of the affected parts will be best relieved by warm barley-water or thin gruel; and when the scabbing process is complete, the application of ung. cetacei, once or twice a-day, will promote the exfoliation of the encrusted deposits. A few doses of some gentle aperient will be the only necessary internal medicine.

2. *H. zoster*, or Shingles.—The latter word, shingles, is derived from cingulum, which signifies a girdle—a very appropriate term for this species—which consists of an eruption of vesicles nearly surrounding the body. The disease commences with lassitude, chilliness, and headache, which are succeeded at the end of a few days by irregular patches of inflammation, on which several vesicles cluster themselves. These clusters vary in diameter from one to two or three inches, and are of various shape, being bordered by a slight redness, which extends a little distance beyond them. During three or four days these detached clusters continue to emerge from the skin in succession, extending towards the spine and sternum, so as to form a large segment of a circle, reaching round a considerable portion of the chest or abdomen, or across the shoulders. The vesicles successively change their appearance, being at first limpid, and afterwards opaque and straw-coloured, and ultimately bluish or livid. At length a slight discharge is observable, followed by scabs, which fall off at the end of twelve or fourteen days. In some cases, after the scabs exfoliate, ulcerations are left, which may remain several weeks. As long as the eruptions continue to spread, the sharp pains preceding them also persist.

This disease arises from exposure to cold, after strong exercise, and generally occurs in summer or autumn. It is the result of muscular or pleuritic inflammation, translated to the external surface of the chest.

Treatment.—At the commencement, citrate of potash may be given once in four hours; and, as soon as the vesicles have seated

themselves in the skin, half a drachm of sulphate and five grains of carbonate of magnesia should be prescribed twice or three times a day, till the process of scabbing commences. The pain and smarting in the affected parts may be relieved by the repeated application of warm barley-water; and when the discharge has subsided, and the scabs have formed and become adherent, they should be anointed twice daily with ung. hydrarg. præcip. alb., which will promote their separation, and prevent ultimate ulceration. When the practitioner is not consulted until the ulceration has taken place, this ointment will be found the most successful remedy.

3. *H. circinnatus*, Ring Herpes, or Herpetic Ringworm.—This arises in small, ring-like patches, the centres of which are at first unaffected, the rings being formed by very small vesicles placed in a circle round the circumference of each patch, and surrounded by a slight, pink-coloured zone, formed by the inflammation at the base of each vesicle. After a few days the central part of each ring becomes rough and rather red; and, as the vesicles decline, this rough portion of the epidermis exfoliates, and at the end of a week, the dark scabs, which succeed to the vesicles, are also detached, leaving a little red mark behind them. The parts usually visited by this disease, are the face, neck, the upper, and sometimes the lower, extremities; and the eruption is often protracted by successive circles during several weeks. Although this cutaneous affection frequently attacks children at school, I have never found it to be infectious. The cause of this disease is exposure to a current of air after exercise, which generally arises from the custom of sitting in rooms with open windows.

Treatment.—Twenty or thirty grains of sulphate of magnesia may be given in infusion of roses, twice a-day. The best local remedy is a lotion, composed of alum, ten grains to the ounce of water. Sulphate of zinc is also a good application, in proportion of five to ten grains to the ounce.

4. *H. labialis*, Labial Herpes.—This commences with a cluster of vesicles, generally on the upper lip and the corner of the mouth, attended with swelling and hardness of the parts. The vesicles at first contain transparent lymph, which afterwards becomes opaque, and ultimately puriform. At the end of three or four days the pus escapes, when dark scabs form, and the intumescence begins to subside; and after ten or twelve days from the commencement, the scabs fall off, and the lip recovers its usual appearance.

This is almost invariably a secondary disease, being a metastasis from the lungs or pleuræ. It is said to be sometimes connected with bilious complaints, dysentery, peritonitis, and malignant and intermittent fevers. When it is an idiopathic

affection, it is found to proceed directly from exposure to cold, and is preceded by rigors and fever of a remittent nature.

Treatment.—A few doses of some gentle aperient, as sulphate of magnesia, rhubarb, or tartrate of soda, and the white præcipitate ointment, will comprehend all the treatment necessary, except when the disease appears in the idiopathic form, when citrate of potash or acetate of ammonia should be administered once in four hours, until the febrile stage has terminated.

5. *H. iris.*—This consists of small circular eruptions composed of variously coloured circles, disposed one within the other, each circle being formed of minute vesicles. The disease commences with a redness on the skin at the affected part, and the size of the circle gradually increases until it attains the diameter of a sixpenny piece. This process occupies six or seven days; and, after the eruption has remained stationary for a few days, it declines, and at the end of a week it disappears. I have known this eruption return every spring and autumn, during several years, and ultimately leave the patient. Like the other species of herpes, this is the consequence of exposure of the body, when in a state of perspiration, to a sudden transition from a warm to a cold temperature.

Treatment.—As this eruption is the result of an effort of nature to obviate internal inflammation, and may therefore be considered salutary, it should not be interrupted either by internal or external treatment.

GENUS IV.—RUPIA.

This is an eruption symptomatic of a morbid state of the constitution, commonly called a state of cachexy, or bad habit of body. It consists of vesicles which are flat, inflamed at their base, tardy in their growth, and terminating in an offensive, sordid discharge, whence it has received the name of rupia, or sordes. The discharge is succeeded by scabs, which are readily abraded and regenerated. This genus may be confounded with pemphigus and ecthyma. From the former it may be distinguished by its smaller dimensions and flatter shape, and by its offensive contents; and the latter may be discovered by its pustular character, which it assumes from its commencement.

1. *R. simplex.*—This appears in form of small blisters, which at first contain pellucid lymph. The lymph soon becomes thick and turbid, and at length puriform. Ulceration, accompanied with a sanious discharge, follows, and then scabbing takes place. After the ulcers have healed, the skin remains of a livid colour, in con-

sequence of the degenerate condition of the blood, which is extravasated from the minute vessels of the part during the progress of the disease. It is to this state of the blood, and the atony of the vascular system, induced by the attendant cachexy, that the discharge owes its sanious and offensive character.

Treatment.—This must consist of generous and nutritious diet, accompanied with bark and some mineral acid. Half a grain of disulphate of quina, and five minims of diluted sulphuric acid, may be given in water three or four times a-day.

2. *R. prominens.*—This is characterised by conical scabs, which are elevated upon the bases of the vesicles, as their fluid becomes concrete. As the scab is superficial, it is rapidly renewed after it has been abraded. The ulceration and repeated scabbing are tedious, but the parts ultimately heal.

Treatment.—The treatment is the same as for the preceding species.

3. *R. escharotica.*—This disease is peculiar to infants in a state of extreme debility and cachexy, and often proves fatal. The loins and lower extremities are the parts principally invaded by the vesicles, which discharge an acrid and disagreeable sanies.

Treatment.—The cause of rupia being uniformly such as I have explained in describing the first species, the same treatment, to which I must refer, will be found applicable in every case.

GENUS V.—MILIARIA.

The miliary eruption has of late years become exceedingly rare, since the pernicious practice of confining children to a heated atmosphere, and loading them with superfluous bed-clothes, during the rise and progress of exanthemata, has been abolished. It still occasionally appears in connexion with some of these diseases, and therefore a slight notice of it may be expected. It is more commonly the result of profuse perspiration, and therefore it is sometimes met with during acute rheumatism, when the patient is confined to bed, and excessive diaphoresis encouraged.

This disease appears in the shape of minute vesicular eruptions, at first sight resembling papulæ. They are elevated, and generally pale, and receive their appellation from their resemblance to millet-seeds. The terms, red and white miliaria, are derived from the different stages of the disease. The base of each vesicle being at first red, that colour is imparted to it in consequence of the lymph being in that stage transparent, and transmitting the colour through its pellicle; but when the lymph becomes opaque, which happens at the end of twenty-four hours, the vesicles acquire a pearl-like

appearance, which is so characteristic of the disease that it cannot be mistaken for eczema. It may be distinguished by the absence of swelling and redness, which usually accompany eczema, and by the more densely crowded and minute form of that eruption.

Treatment.—The only treatment required is a cooling diet, proper ventilation of the apartment, and a reduction of the temperature by the abstraction of unnecessary clothing.

GENUS VI.—ECZEMA.

The Greek word Ἔκζημα, which signifies *a burning eruption*, and from which this term is derived, is sufficiently characteristic of this disease. It consists of minute vesicles crowded together, accompanied with swelling, burning heat, and a general redness. It is not a contagious nor febrile complaint, and is the effect of some external or internal irritant. It is rarely found in any form in infants or children. Willan has subdivided it into the three following species:—

1. *E. solare.*—This arises from exposure to the direct rays of a summer sun of such parts of the body as are not covered by the dress. Hence the face, neck, shoulders, and fore-arms, are generally its seat. The eruption is accompanied by heat, smarting, and tingling, especially when the parts affected are placed within the influence of the sun's rays or a fire. The skin at the seat of the disease is swollen, and this is remarkably evident when the fingers are affected with it. The vesicles are small and a little elevated, and impart a feeling of roughness to the touch. This, like the other species, is exceedingly tedious, and terminates in light brown scabs, and is very apt to return from time to time.

Treatment.—The principal relief we can afford will be by local treatment. The most beneficial and comfortable application is a decoction of marsh-mallow (althæa officinalis), or of linseed. All astringent lotions and ointments aggravate the disease. As every form of eczema is dependent on some particular excitability in the skin, peculiar to certain individuals or families, little advantage will be obtained from internal remedies. Much, however, may be done by diet, which must consist of milk, gruel, rice, and on a careful avoidance of salted meats.

2. *E. impetiginodes.*—In this species vesicles and pustules are found together in the parts affected with eczema. Amongst the external irritants which usually excite this eruption, are sugar, lime, blistering and other irritating plasters, particularly Burgundy pitch, castor oil, and turpentine. The medicines taken internally, which are apt to produce this disease are copaiba, turpentine,

arsenic, and croton oil. The intermixture of pustules with the vesicular disease, which produces a slight resemblance to impetigo, has given rise to the specific term by which this species is designated. The pustules, especially those resulting from the resin contained in blistering plaster, are of various sizes, sometimes as large as boils, and continue to appear and suppurate and scab, in successive crops, long after the vesicular portion of the eruption has subsided. These, however, occasion no further injury than the annoyance they produce, which is much complained of by the invalid, recovering from a severe or tedious illness.

Treatment.—As soon as the cause of this disease is ascertained, it should be immediately removed. For instance, if only one dose of turpentine, or any other medicines I have enumerated, should have been taken, it should not be repeated; for such is the idiosyncrasy of some patients, that a single dose, or one external application of one of these acrid remedies, will produce the eruption as completely as if it had been the result of accumulated doses or repeated applications. When much swelling in the integuments accompanies the eruption, the disease is best relieved and most speedily removed by a spirit lotion, composed of rectified spirit one part, and water three parts. In some cases, where the application is admissible, an evaporating poultice composed of bread and water, is an excellent and comfortable application. In some cases, the pustules produce a beneficial effect, especially when they follow the application of a blister recommended for the relief of chronic, internal inflammation. In such cases the patient should be advised to let the external disease alone.

Case.—A lady, who was suffering with chronic inflammation of the dura mater, was directed by me to have about twenty drops of croton oil rubbed a few minutes on the scalp. The next day eczema appeared all over the face, accompanied with so much infiltration in the loose cellular membrane of the eyelids, that the eyes were completely closed, and the nose and lips were greatly swollen and disfigured. This artificial metastasis of inflammation to the face had the effect of removing the internal membranous inflammation, and in the course of a few days the eczema subsided by means of a spirit lotion.

3. *E. rubrum.*—The most frequent cause of this species is the internal or external use of mercury; and when it is produced by this mineral it is found the most troublesome, intractable, and chronic of any of the species. The disease, in most instances, begins in the fore-arms, wrists, and hands, or the inside of the thighs, with a stiffness occasioned by the swelling of the skin and subjacent cellular membrane. This state is accompanied with

burning heat and intolerable itching, and, on minute inspection, the skin is found covered with almost imperceptible vesicles, which, to the naked eye, appear at first like papulæ. In a few days the vesicles become larger and more apparent, and a general redness, resembling erythema, follows. The intense itching induces the patient to scratch the affected parts, particularly when he approaches the fire; and thus the vesicles are broken, and a discharge of lymph escapes, which concretes into thin scabs. As the disease advances fissures occur, which, together with the scabs, present a slight resemblance to psoriasis. In this stage of the eruption a disagreeable odour is emitted from the effused lymph. In this manner the disease sometimes extends all over the body, including the face and head. In aggravated cases the epidermis is exfoliated in large patches, the cutis being left in a raw state, which is succeeded by a fresh secretion of glutinous lymph, which again concretes into a large scab. The disease is thus often protracted during ten or twelve weeks. As this eruption declines, the epidermis is detached in smaller and whiter fragments, until at last they appear like little white, branny scales, the true skin remaining to the last more or less distended and discoloured. In very severe cases the hair and nails are detached and renewed, and the new nails are often found to be bent inwards and more brittle than natural, as in lepra.

This disease is sometimes occasioned by cold and other causes, as well as by the use of mercury.

Treatment.—The inflamed and vesicated parts should be frequently bathed with the spirit lotion I have recommended for the other species, or by decoction of marsh-mallow, and the patient should be kept cool and lightly clothed. His diet must be light and easy of digestion, as milk, gruel, tea, coffee, arrow-root or rice pudding, &c., and every kind of salt meat, and vinegar, and spices, must be avoided. When the swelling of the integuments has subsided, and the scales have assumed a white, dry, branny appearance, and the heat and redness have receded, the unpleasant dryness, which arises from the suspension of the secretion from the sebaceous glands, will be much relieved by the application of olive oil.

Order 7.—Tubercula.

In this order of tubercles, Dr. Willan has included nine genera. Of these I only intend to speak of Phyma, Verruca, Molluscum, and Vitiligo; the remaining five being either peculiar to adults, or not indigenous diseases.

GENUS I.—PHYMA.

This genus comprehends several species. The only one met with in children in this climate is the furunculus, or common *boil.* This disease commences with inflammation in the cellular and adipose membrane subjacent to the skin. A phyma, or subcutaneous tumour, first shows itself, accompanied with pain and tenderness. Next the inflammation extends to the skin, and produces considerable redness and induration. The external swelling now becomes more extensive, and is attended with intense burning heat and throbbing. At length the colour of the skin of the inflamed part acquires a dark, purple hue, the tumour becomes more pointed, and an obscure fluctuation is felt in the midst of the indurated swelling. Lastly, a slight vesication, and afterwards ulceration, appear on the most prominent part, and expose a white mass of cellular and adipose membrane, destined, as the ulceration proceeds, to escape through it in the form of slough. After this detachment of the slough, the surrounding inflammation, induration, and thickening, subside, and the cavity is soon filled up with healthy granulations, which rapidly heal. The seat of this disease is generally the back, abdomen, and the thighs, legs, and fore-arms. Its origin in most instances, as that of other phlegmonous inflammations, is from exposure to cold; but it is sometimes produced by a disordered state of the organs of digestion, in the same manner as superficial whitlow in children. I have been consulted by patients, who, under the usual mode of treatment, have been tormented by successive boils during twelve months. I consider this disease nothing more than an aggravated and severe form of erythema nodosum. It consists of a phlegmonous inflammation in the cellular and adipose membrane, in which the same phenomena occur, on a more limited scale, as in phlegmonous erysipelas, to which the reader is referred. The obstruction in the small vessels circulating in the cellular membrane, occasioned by the application of cold, produces the death of that structure, as far as the disease extends, and the blood extravasated from the over-distended and ruptured capillaries becomes coagulated, and undergoes a conversion into pus-globules. The mode by which nature expels the dead mass is by external progressive absorption, on the same principle that she contrives an outlet for any other extraneous matter.

Treatment.—Liquor potassæ, sarsaparilla, and various other remedies, have been mentioned by writers and lecturers for the treatment of this troublesome disease; but all who speak of it

confess its obstinacy and the inefficiency of remedies. The only medicine which exerts specific action on the disease is bichloride of mercury, which should be given in small doses. For instance, one-eighteenth of a grain in a mixture twice a-day, to a child four or five years old, and one twelfth in a mixture or pill, to a child from six to twelve years. This medicine will not only shorten the progress of the disease, when suppuration is inevitable, but will, when used sufficiently early, prevent that termination; and put a a stop to the disposition to generate successive crops of boils, which, as I have before stated, are often found to torment the patient during many months. When evident derangement in the stomach and bowels exists, a dose of chloride of mercury and jalap may be given with advantage every third morning. The best local treatment, in the first instance, will be the frequent application of warm water, and when suppuration has commenced, a common poultice, which should be continued until the slough has exfoliated; after which nothing more will be required than a fold of linen, moistened with warm water, until cicatrization takes place.

GENUS II.—VERRUCA, WART.

This is an hypertrophy of the dermis, or true skin, and a thickening of the epidermis. It appears under two forms,—the rough, large, hard, wide-spread wart, and the smaller, soft, smooth one. Warts are usually met with on the hands, face, and neck. Sauvages distinguishes the two species I have mentioned by the terms, *gregalis* and *simplex*.*

Treatment.—The most effectual application for the large, hard, rough, or gregarious wart, is undiluted nitric acid. Mr. Wilson advises the summit of the wart to be cut off before the acid is applied.† This is unnecessary, and only adds to the pain. I never knew more than one application required. Should it fail the first time, it may be repeated at the end of a week. The only remedy required for the soft, smooth wart, is the solid nitrate of silver, moistened at its point. When the first application fails, the black cuticle must be removed with a sharp knife at the end of a week, and the caustic should be repeated. I have succeeded in effecting a cure by holding the hand under a stream of cold water, till the skin becomes cold and torpid. In this operation, I apprehend the warts retire in consequence of the circulation in their minute vessels being suspended by the cold water, and the

* "Nosologia Methodica," tom. i, pp. 189, 190.
† "Wilson on Diseases of the Skin," p. 261.

arteries being unable afterwards to recover their former activity, on the principle, that all new and extraneous parts possess less vitality than parts of the original structure.

GENUS III.—MOLLUSCUM, OR SEBACEOUS TUMOUR.

This is a tumour varying in size, and containing sebaceous matter. Some of these tumours are globular, some ovoid, others flat, and they are either adherent to the skin, or connected by a neck, and pendulous. They are perfectly harmless, and unconnected with constitutional derangement.

Treatment.—When these tumours are connected with a neck, they may be snipped off with a pair of scissors, or removed by ligature. Those which are seated in the skin may be removed by an incision made completely across them, dividing them into two halves. If the sacs are small, they will only require the application of nitrate of silver after their contents have been expressed. A little lint being introduced into the cavity, the cyst will slough and exfoliate, after which the parts will immediately heal. In children, these cysts are never so indurated and thickened as to require a more potent application, and there will be no necessity to dissect out the sac, unless the disease is seated in one of the eyelids. Should the sac be adherent all round, it will not be advisable to dissect it out from the lid. In this case, after its contents have been pressed out, all that will be required will be to introduce a probe and move it about in all directions. When the cyst in other situations is unusually large, a little nitric oxyde of mercury may be applied to it upon a piece of lint with better success than the nitrate of silver.

GENUS IV.—VITILIGO.

This word is derived from *vitium*, a defect, and the termination *igo*, which is a contraction of *imago*, and signifies a resemblance. It was applied by the ancients to black as well as white marks, the black ones being probably what we call moles. Pliny says that the white vitiligines should be taken away, and the black ones cut out:

> "Vitiligines albas tollere." *
> "Emasculare nigras vitiligines." †

My remarks will be confined to the white vitiligo, which appears on different parts of the body in the form of thick, pearly

* Plinii "H. N." xx. 15 post. Med. s. 59. † Ibid. xxi. 19 Med. s. 75.

white marks of various figure, generally longitudinal. It gives no pain, and sometimes appears and disappears with rapidity. It more frequently is permanent, unless removed by art. On account of its resemblance to delicately white veal, Dr. Bateman fancied the word was derived from *vitulus*, a calf. This is, however, a philological blunder. The disease appears to me to consist of an hypertrophy of the internal or mucous portion of the epidermis, which accounts for its opaque, white, and superficial appearance. On examination, it will be found to be seated on the outer surface of the cutis vera. When it occurs on the face, neck, or fingers, it is unsightly, and gives the patient and his friends much annoyance.

Treatment.—Solid nitrate of silver, moistened at the end with a little water, and applied a short time to these marks will speedily remove them. I met with one case in a young lady whose fingers were quite disfigured with these marks. They were cured by one application of the caustic.

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Order 8.—Maculæ.

In this order are comprised various permanent marks on the skin.

Genus I.—Ephelis.

The literal meaning of the word ephelis is sun-mark, from Ἥλιος, the sun. Other marks, or spots, as freckles, &c., are, however, included under this genus. There is a variety of ephelis, which appears on different parts of the body, consisting of a dark patch, which is slightly elevated, very rough, and permanent. When this occurs on the face, I have observed it to undergo a gradual increase in extent. It may be distinguished by its peculiar rough and fissured appearance.

Treatment.—As soon as the winter season approaches, sun marks spontaneously disappear. With respect to freckles, I am not aware that any application can be depended upon for their removal without inducing a greater disfigurement. Bateman advises "dabbing the spots two or three times a-day with the mineral acids, in the proportion of about a drachm of the strong sulphuric acid to a pint of water, or the same quantity of muriatic acid to half a pint; or by using, in a similar manner, the liquor potassæ, diluted with about twenty times its quantity of water." * I am inclined to believe these applications will be found perfectly inefficacious.

* "Bateman on Cutaneous Diseases," p. 320.

When the rough, dark marks I have described appear upon and disfigure the face, they may be removed by an escharotic; but it must be observed, that neither nitrate of silver, nor any of the mineral acids, will be sufficiently powerful to destroy the disease. The only remedy to be depended upon is the hydrate of potash, which must be carefully confined to the limits of the part intended to be destroyed.

GENUS II.—NŒVUS, &c.

This genus is divided by Willan into two species, namely, nœvus maternus, and spilus, or mole.

1. *Nœvus maternus.*—Under this denomination two different diseases are included by many writers and practitioners. One of these is *nœvus maternus*, properly speaking, or the varicose excrescence of I. L. Petit; and the other, *cuticular aneurism*, or aneurism, from *anastomosis*, first minutely described by the late Mr. John Bell. Nœvus maternus consists of an enlargement of the capillary veins, and is either congenital, or appears some time after birth, during infancy. All parts of the external surface are liable to it, but it is usually found on the face, the body, or the lower extremities. It first appears in the form of small red spots or patches, which generally increase in size with great rapidity, the spots, which at first were distinct, ultimately coalescing. As this disease is seated in the true skin, like cuticular aneurism, it is equally liable to produce alarming or fatal hemorrhage, when, in its advanced stage, the vessels happen to be lacerated. It is therefore advisable to examine it frequently, in order to ascertain whether it may remain stationary, or increase, or be disposed to disappear.

The yellow, red, or brown stains or spots, which the French call "taches," and which are always stationary, are seated in the mucous covering or network, which reposes on the cutis vera, and are altogether different to the venous and arterial nœvi.

The cuticular aneurism, which is produced by an aneurismal dilatation of the capillary arteries situated in the true skin, is a pulsating tumour of a scarlet, or deep red, colour. It sometimes commences with one or several distinct spots, which either disappear or gradually increase. It is usually seated on the temple, face, or head. The eyelids and the sides of the nose are apt to be affected with it, and therefore its progress should be carefully watched and speedily arrested, to obviate the danger of irreparable deformity, or of hemorrhage, consequent on the rupture of the pulsating vessels, which, from one or more enlarged arteries, and

their own free inosculations, may be rapidly fatal to young children.

There is another kind of disease, which I proceed to describe here, because it bears a striking resembling to nœvus, and, as far as I am aware, has not been described by any writer. It is not, strictly speaking, nœval or congenital; for in the two cases which were brought under my notice it did not appear until after birth: in the one case on the ninth day, and in the other on the third month. Its seat in each instance was on the nose near the eyes, and it originated in the nasal periosteum in each. The external appearance in both cases was that of a dark red tumour, which was indolent and free from soreness: and one of these tumours was connected with a cuticular aneurism seated on its surface, which, on being destroyed partly by hydrate of potash and entirely by nitric acid, left the nasal disease unaffected by the escharotics. This singular affection consists of a scrophulous enlargement of the bone and periosteum, and in both cases slowly disappeared; in the first at the end of three years, after the use of an iodine ointment. It is of great importance to distinguish this disease from nœvus, as the prognosis and treatment are widely different.

Treatment.—One of the best remedies for varicose excrescence or nœvus, is creosote, which may be applied about once a week to the whole of the diseased surface by means of a feather, or camel-hair pencil. By this application twice used I succeeded in removing this disease, which occupied thirty square inches of the skin of the abdomen, and which had been only temporarily cured by an extensive eschar produced by hydrate of potash. Creosote has besides this decided advantage over the former remedy, namely, that of destroying the disease without disfiguring the skin. When the marks appear distinct from each other, every one, however minute, must be touched with the escharotic. Nitric acid will often succeed. I have ascertained from long experience that this disease is much less apt to return or appear round the circumference, after it has been removed by escharotics, than when it has been extirpated by the knife; and therefore I have of late years discontinued to advise such an operation. Many other remedies have been adopted with various success by different practitioners. The mode of applying nitric acid adopted by Sir Benjamin Brodie, is by using a glass pen dipped into the acid and drawn over the diseased parts, or by puncturing the principal vessels and afterwards introducing a little acid with the pen.* Nitric acid, as well

* "Medical Times," Dec. 19, 1841.

as creosote, leaves no mark. Dr. Sigmund applies repeated compresses saturated with liquor plumbi diacetatis (or what he calls acetum plumbi)* with success.

The stationary spots or "taches" require no remedy. When destroyed by caustic, the marks left by the remedy are more unsightly than the original stains.†

When cuticular aneurism is so situated as to admit of incision and the union of the divided parts by the first intention, that is the most eligible operation for its cure. In other cases, caustic, or the double ligature, may be preferable. Mr. Wardrop cured a large cuticular aneurism on the face of an infant five months old, by tying the carotid artery.‡ In a similar case the infant died on the fourteenth day after the operation from the irritation of the ulcer.‖ The ligature applied to the diseased parts is the most effectual plan, when excision or caustic is inapplicable; as several cases in which the carotid, temporal, and other arteries have been tied without success have occurred, and cures have been afterwards effected by ligature. Hence proximate are preferable to distant obliterations, which can only command the circulation in particular directions. In one instance, after the carotid artery had been tied, death took place from inflammation of the jugular vein.§ The disease has been cured by punctures being twice made through it.¶ The tumour has been successfully strangulated by two hare-lip pins passed through crossways, and a ligature applied tightly underneath them, by Dr. Bacton.(a) Mr. Lloyd prefers in most cases an injection composed of sp. ammon. arom., or sp. ætheris nitros. one part, and nitric acid from ten to fifteen parts. For the mode of applying the syringe and compressing the disease, see the "Medical Gazette," vol. xix. p. 16. Mr. Doubleday effected a cure by introducing a couching needle in the centre, and moving it about in all directions, so as to break up its structure. This proceeding was repeated seven times at intervals of one month, and the disease vanished at the end of a year.(b) Diluted liquor ammoniæ has been tried as an injection, but death took place instantly from its use.(c) Mr. Liston divided the integuments, and partially detached the tumour by two elliptical incisions, and then

* "British and Foreign Medical Review," Jan., 1844, p. 239.
† "Billard, Traité des Maladies des Enfans."
‡ "Lancet," vol. xii., p. 233.
‖ Ibid, p. 394.
§ Ibid, vol. xv., p. 570.
¶ "Medical Gazette," No. 418, p. 349.
(a) "Pennsylvania Hospital Reports."
(b) "Lancet," No. 742, p. 255.
(c) "Medical Gazette," No. 526, p. 530.

passed a double ligature through its base and tied it.* He has also adopted another plan, namely, making a crucial incision and dissecting the flaps back to their base, over which ligatures were applied. Cuticular aneurism has also been cured by needles made red hot by means of a spirit lamp, and passed twenty times through different parts of the tumour.† The operation was repeated twice afterwards at intervals of a week, and at the end of a month the tumour entirely sloughed away and left no vestige of the disease. No hemorrhage and apparently little pain attended the operation.‡

Professor N. R. Smith, of Baltimore, cures it by passing with a needle threads moistened with a saturated solution of caustic potash through the tumour in different parts,‖ and Lafarque by puncture made with a lancet dipped in croton oil, which is followed by boils and ulcerations.§

With respect to the scrophulous tumefaction resembling nœvus, the best treatment consists in the internal and external use of iodide of potash.

2. *Spilus.*—The following is the definition of this mark given by Dr. Good:—

"Brown, permanent, circular patch; solitary; sometimes slightly elevated, and crested with a tuft of hair."¶

Unless the mole is crowned with a tuft of hair, and greatly disfigures the face, it will be advisable not to interfere with it, as it has been found that the mark left by the escharotic employed for its destruction is more disagreeable in appearance than the mole itself: and all writers on the subject seem to entertain great apprehension from the accidental injury to a mole. Hairy moles may, however, be safely removed by excision, provided sufficient care is taken to include the whole of them, and to bring the sides of the wound into contact.

DISEASES OF THE MOUTH AND PHARYNX.

APHTHA, OR THRUSH.

This appears in the form of small blisters, which burst, and expose an ulcerated surface on the sides of the tongue, the lips, inside the cheeks, or on the fauces. It sometimes descends into the larynx,

* "Lancet," No. 759, p. 919.
† Ibid. No. 770, p. 343.
‡ "Lond. and Edinb. Monthly Journal of Medical Science," June, 1842, p. 552.
‖ "American Journal of Medical Science," July, 1843, p. 260.
§ "Provincial Medical and Surgical Journal," Feb. 17, 1844, p. 303.
¶ "Study of Medicine," vol. v., p. 692.

and invades the whole inner surface of the alimentary canal. The origin and seat of the ulcers have been much disputed by the latest continental writers. Callêsen and Billard* assert, as was suspected by Bichat, that they originate in inflammation in the muciparous glands; while Plenk† considered them as originating in vesicles accidentally formed in the mucous membrane. The disease appears to me to consist of an inflammation in the true skin, and effusion of lymph under the epidermis, which is elevated into the shape of a vesicle, and, on bursting, exposes a white slough, leaving a florid, bleeding surface, and a small cavity, bounded by an inflamed margin. It is probable that a similar process takes place in the internal coat of the stomach and intestines, although the epidermis has not yet been demonstrated in the normal state of the parts, by the dissections or experiments of the most celebrated anatomists. "Mais ce que nos experiences ne peuvent faire les inflammations l'operent frequemment."‡ When aphtha is confined to the mouth, little alteration is perceptible in the general health; while very serious or fatal effects result from its existence, to any considerable extent, in the stomach and bowels. Hence, vomiting or purging especially the latter, invariably prevails, attended with a moaning and distressing cry; and when the larynx is the seat of the eruption, a peculiar hoarse or whizzing sound is observable during inspiration, as has been noticed by Gardien.§ The skin feels dry and cool, from defective circulation and excitability, and the face is contracted and wrinkled, and presents an expression of indescribable misery. No perceptible fever is present in very young infants, who are also, from their tender age, incapable of generating that reaction in the cutaneous circulation, which in children after the age of six months has the effect of restoring the balance of the capillaries, and obviating the occurrence of inflammatory action. Another cause of this absence of fever consists in the comparative insensibility of the mucous tissues. Inflammation of the mucous membrane of the bowels, even in adults, never augments the frequency of the pulse beyond 102. In twelve cases of aphthous inflammation in the stomach and bowels in infants, Billard found the pulse never exceed from 60 to 80 beats in a minute.‖ Where the whole of the alimentary canal is the seat of aphtha, and the disease proves fatal, deglutition becomes impossible, and a respiratory rattling from exhausted excitability follows. When the disease

* "Traité des Maladies des Enfans," p. 224.
† "Doctrina de Morbis Cutaneis," c. 1. 10.
‡ "Bichat," p. 47.
§ "Traité Complet des Accouchemens," &c. s. iv., p. 112.
‖ "Maladeis de l'Appareil Digestif," p. 226.

attacks the larynx, the fatal termination, unless speedily arrested, is very rapid; and the same result follows a dark or purple appearance in the vesicles. This disease is sometimes symptomatic, as when it appears at the decline of remittent fever, marasmus or pulmonary consumption.

When the eruptions are confined to the mouth, except when they appear in the secondary form just mentioned, their cause will be found to depend on a constipated condition of the bowels, accompanied with indigestion; but when a general aphthous affection prevails, including the alarming symptoms just described, it is produced by imprudent exposure to cold or moist air, which operates by suddenly suspending the capillary circulation in the skin, and preternaturally exciting that of the gastro-intestinal mucous membrane, between which two surfaces there exists a natural continuity and sympathetic connexion. The general belief that this disease is principally confined to infants who are not suckled, and whose food is consequently supposed to be imperfectly digested, as stated by Dr. Robertson,* by no means corresponds with my own observation; as I have almost invariably found the most severe and fatal cases to occur to those who have been suckled, especially by fashionable ladies, or their substitutes, who are equally incredulous respecting the effects of exposure to cold. This erroneous opinion has probably received support from the disagreeable sour smell afforded by the intestinal discharges. That indigestion is the cause of this sour and unpleasant odour is probable: it is, however, not the cause of the disease, but the effect of the suspension of the healthy gastric and intestinal secretions. The offensive, putrid smell, which is observable in those lingering cases, which ultimately terminate in recovery, is evidently owing to the unnatural secretion of serum from the inflamed internal surface of the alimentary tube.

Treatment.—Those solitary eruptions which are met with in the mouth, are rapidly cured by a lotion, composed of one grain of bichloride of mercury and an ounce of distilled water, or by an application consisting of one drachm of powdered biborate of soda, and seven drachms of clarified honey. As, however, the vesicles are liable speedily to return, it will be prudent at the same time to administer, every second or third day, a few grains of rhubarb and magnesia; and, when the disease obstinately resists this simple treatment, half a grain of chloride of mercury, and two grains of jalap, should be given every third morning. These doses of the latter medicines will be commonly sufficient; and, when the age of the patient exceeds six months, the quantity of the

* "Cyclopedia of Practical Medicine," vol. i., p. 119.

ingredients should be increased in proportion, allowing one grain of the chloride and three of the jalap for every year, until the child has attained the fourth year.

The treatment of this complaint, when it attacks the intestinal canal, should consist of one or two drops of tincture of opium, combined with chalk-mixture, and repeated once in four or six hours, until the pain and purging have subsided. Should the disease occur to an infant fed by the spoon, and a wet-nurse can be conveniently procured, suckling should be had recourse to; otherwise barley-water, or thin gruel, prepared from grits, and properly strained, should be prescribed for food. As farinaceous decoctions contain gluten and saccharine matter, which are nearly the same elements as those found in milk, with the exception of oil, it is not, in my opinion, essential for the recovery of the patient that a wet-nurse should be procured, provided appropriate remedies are speedily adopted. As soon as the bowels become confined, a small dose of rhubarb should be occasionally administered. It rarely happens that the derangement of the bowels is found to subside after the pain and purging have been subdued, particularly in infants a few months old, who are apt, when the attack is severe, to continue in a state of emaciation, indicating defective lacteal absorption, and requiring the exhibition of chloride of mercury and jalap, in the manner described for the disease in a simple and local form. In such a state, repeated purging will be found necessary to remove the morbid secretions, which obstruct the mouths of the lacteal absorbents. To this state marasmus often succeeds, for the pathology and treatment of which see the article, Marasmus. The extension of aphtha to the mucous lining of the larynx, is a most dangerous complication. In this case the application of leeches on the external skin opposite the affected part, and the combination of chloride of mercury in doses of one grain, once in four hours, will be indispensable. Unless the earlier symptoms of laryngeal inflammation are vigourously attacked, there will be little chance of recovery. Should the dyspnœa threaten suffocation, before the other active remedies have afforded relief, a warm bath, at 100 degrees of heat, should be applied; and, when the pulmonary circulation becomes so impeded that decarbonization of the blood becomes incomplete, the face assuming a purple colour, and apoplexy impending, recourse should be had to the operation of laryngotomy. All the cases of laryngeal aphtha which have fallen under my notice, have been unconnected with similar disease in the stomach and bowels; and the dangerous symptoms have approached before the system has been reduced. Should a co-existence of aphthous inflammation

in both canals take place during a state of collapse, induced by continual purging, artificial respiration would be of no avail; as in such a case the exhaustion of the vital supply from the ganglionic system would in no way be restored.

MUGUET, OR MUCOSITY.

To Buschat, Guersent, Veron,* and Lelut, we are principally indebted for a correct description of the nature of this disease. It consists of a secretion of white, thick, opaque laminæ, adhering to the free surface of the epidermis, on mucous membranes. It is most frequently observable on the tongue, cheeks, and fauces, either in distinct spots or patches, or covering the entire upper surface of the tongue. When attentively observed, it will be found to be preceded by slight diarrhœa, or dysentery; and it is a common concomitant or sequence of those fevers which originate in gastro-enteritric inflammation. Being readily conveyed to the delicate skin covering the nipple, it is a frequent cause of those excoriations which affect that part during lactation; but this contagious property is denied by Bacon and Billard. These white, milk-like deposits are readily separated from the epidermis by gentle friction, and are speedily renewed by the inflamed surface. The daily renewal and accumulation of this secretion on the fauces in the decline of certain febrile diseases, renders deglutition difficult, and, if neglected, impossible. Muguet has a resemblance to those false membranes which are found on other mucous surfaces, and, exposed to chemical agents, affords, according to Fourcroy, Vauquelin, Burzelius, and Hatchett, nearly the same results as mucus,—according to Bichat, Vauquelin, and Hatchett, as epidermis,—and according to Double, Guersent, Dismelles,† Bretonneau,‡ as the buff of the blood and membrane formed by croup. The disease is generally confined to the mouth, when no perceptible excitement of the circulation is present. When it is connected with inflammation in the mucous membrane of the stomach or intestines, or other distant membranous affections, as in remittent fever and inflammatory typhus, great and alarming febrile action is present.

The essential difference between this disease and aphtha, to which the slough of the latter has some resemblance, consists in this,—that muguet is seated on the external surface of the epidermis, while aphtha is found on the true skin, beneath the outer cuticle.

* "Observations sur les Maladies des Enfans."
† "Traité Theorique et Pratique du Croup."
‡ "Archives Gens. de Medicine," Maes, 1827.

This disease, like aphtha, has generally its origin in obstructed cutaneous perspiration, and occurs to those who are suckled as well as to those who are dry-nursed. If carefully investigated, I believe that muguet will be found mostly connected with an inflammatory condition of the gastric or intestinal mucous membrane.

Treatment.—As muguet is seldom found unconnected with disease in some other part of the alimentary passage, on which its continuance is dependant, I must refer the reader to those affections. At the same time, I may observe, that the most simple attack will seldom entirely subside without the assistance of internal medicine, as castor oil, rhubarb, or sulphate of magnesia. In some obstinate cases, it may be found necessary to administer chloride of mercury and jalap, according to the directions given for aphtha. The only local treatment required is the frequent abrasion of the diseased secretion, by means of a lotion composed of ten grains of alum to an ounce of water.

RANULA.

This is a thin, transparent tumour, situated beneath the apex of the tongue, consisting of a dilatation of one of the salivary ducts, and containing an albuminous fluid of the consistence and appearance of white of egg. It originates from an obstruction in the orifice of the duct, which is sometimes distended to the magnitude of a walnut, and may be situated on either side or in front of the frænum. Mr. Walker says it sometimes consists of a cyst situated over the ducts. Sometimes a portion of phosphate of lime is found within the obstructed duct. Such a case occurred in my practice. As the disease interferes with suckling and articulation, it should be removed.

Treatment.—This tumour can only be cured by some surgical operation. The plan I have found invariably to succeed consists in the opening of the tumour by means of a lancet or pair of fine scissors, and the excision of the front part, which generally constitutes one-third or one-fourth of the distended duct. A little lint is afterwards introduced into and left in the sac, and at the end of a week or ten days all vestiges of the disease will be found to have disappeared,* In a case under Mr. Lawrence's care, where this practice was adopted, it failed, and the ranula was afterwards cured by nitrate of silver rubbed over the sac.† It was successfully treated by seton and injection of nitrate of silver;‡ also by seton

* See a paper on "Ranula," by J. M. Coley, "Lancet," No. 254, p. 496.
† "Lancet," vol. xviii., p. 765. ‡ Ibid., vol. xvii., p. 134.

by Langier. * De Graaf's plan consisted in passing a curved needle and ligature, cutting off the upper part of the sac, and afterwards dressing the surface below with hydro-chloric acid. Sabatier and Dupuytren used the actual cautery; but even this was not always successful; and, therefore, the latter was induced to recommend and practise another operation, which consisted in the introduction of a gold, silver, or platina tube.† The tumour has also been cured by the total excision of the sac.‡ It is probable, in this instance, the disease consisted of a cyst over the salivary duct, which Mr. Walker thinks sometimes occurs, and which, when thick, he believes may be safely cut out by an aneurismal needle, and when thin, divided and afterwards cured by potassa fusa applied to the whole surface. § Ranula has been cured by Mr. Liston by puncture and the application of hydrate of potash to the whole sac. ‖

GANGRENE OF THE MOUTH.

At the beginning of the seventeenth century Battus, a Dutch surgeon, described this disease in his "Manuel de Chirurgie;" and Van de Voorde afterwards gave it the name of *Water-Kanker*, which it still bears in Holland. The title of gangrene was given to it by Van Swieten; and I. Van Lil describes a case, in which a great portion of the superior maxillary bone was destroyed. He also quotes many Dutch authors, who witnessed the disease in an epidemic form in the Netherlands, as a consequence of the exanthemata. Bruinemann and Courcelles long ago employed with success, as an external application, the strong, sulphuric acid; and L. Stevalgen had recourse, with equal success, to the hydrochloric acid for the same purpose. Lund, a Swedish physician, also was aware of this disease, and considered it to be confined to the children of the poor, who were exposed to a humid atmosphere, out of health, and badly fed. His treatment consisted in the exhibition of bark. In England the first writer on this malady was Boot, who remarked that it is more frequently found in the upper than the lower lip; and Underwood, Symmonds, Pearson, and S. Cooper, agree with respect to its nature, origin and treatment; and Dr. Marshall Hall has also written a paper on the disease in the "Ed. Med. and Surg. Journal," vol. xv., p. 547. It is said by Poussail, that in the United States of America, 72 out of 240 infants were

* "Lancet," vol. xvi., p. 260.
† "Leçon's Orales," 1832–3.
‡ Desautt's "Parisian Journal," vol. ii., p. 212.
§ "Lancet," No. 652, p. 833.
‖ "Lancet," New Series, vol. i., p. 780.

attacked with gangrene of the mouth after remittent or intermittent fevers. Poussail and Saviart saw, at different times, a gangrene in the mouths of infants collected in the Hotel Dieu, at Paris; and Sauvages has described it under the name of *Neerosis infantilis*. In 1816, Dr. Baron * published a short memoir on this subject, in which he proposed the application of red-hot iron, and supported that proposal by the relation of a cure performed by that remedy. After the publication of this memoir, Hébréard † devoted some attention to this disease, and recommended for its cure the frequent use of lotions composed of hydrochloric acid. Since that time, Isnard, Cliet, Rey, Destrées, Billard, Murdock, Taupin, Bretonneau, and Guersant, have written on this disease, as well as many German authors, among whom may be mentioned F. de Hilden, Richter, Wendt, Hildenbrand, Girtanner, &c.

This disease is almost peculiar to infants who are feeble at birth, or children whose health has been deteriorated by a moist and unwholesome atmosphere, imperfect nutrition, or some antecedent disease, as scarlet fever, measles, small-pox, &c. It first appears with a swelling on the cheek, the central part of which is much harder than the circumference, and marked by a dark red spot, the skin having an appearance like wax, or as if it were oiled. The swelling, which is seated in the cellular membrane, extends to and distends the upper eyelid, and resembles œdema. At this time the patient looks pale, his breath is offensive, he has but little fever, is unhappy, and seldom complains of any pain in the cheek or mouth. An ulceration forms in the middle of the cheek, on the inside of the mouth, or on the membrane covering the gums or lip, and is covered with a putrid, grey, fetid slough of a characteristic odour. This ulcer soon assumes a purple colour, and the parts mortify. The child at one time is engaged with surrounding objects, at others lies in bed indifferent to every thing, without strength or energy. He appears bloated on one side of his face, and shrunk and miserable on the other; his bloody or blackish saliva flows through his mouth, and he is constantly asking for food, which he devours with avidity, together with the putrid sloughs separated from the gangrenous parts. His intellect is clear, except during the night, when he is occasionally delirious. Some time between the third and sixth day the most hard and prominent part of the cheek assumes a purple colour, and an eschar forms, which is extended from day to day, so that it ultimately occupies the whole of one

* "Bulletins de la Faculté de Medicine."

† "Dict. des Sciences Médicales," tom. xvii., p. 323.

side of the face, extending even to the neck. Meantime the mucous membrane is completely destroyed down to the bones. In this state the appearance of the child is hideous; his appetite continuing voracious, he is constantly snatching the gangrenous shreds into the mouth, while he allows the offensive and blackish sanies to flow upon him on all sides. After a while his appearance becomes still more repulsive, when the eschars are partly separated and expose an opening in the cheek, through which may be seen the bare and tottering teeth, and the jaw-bones black and denuded. The morbid mass is now still more putrid and repulsive, and the child, burning with thirst, drinks with avidity, and continues to take food voraciously, although quite exhausted. He has no sickness, but has generally towards the last a troublesome purging, accompanied with rapid emaciation. His pulse becomes small and insensible, and death supervenes without a struggle.*

The remote cause of this rare disease appears to consist of a degraded condition of the general health, and particularly an enfeebled state of the capillary circulation, induced by some previous inflammatory or other exhausting disease, which has reduced the constitutional vigour. Of these antecedent diseases the most frequent is measles; the next in frequency is that cachectic state, which is found in the children of the poor, who are exposed to a humid and unhealthy atmosphere, and are deprived of proper nutriment and clothing. The feeble state in which children are left by severe attacks of any other of the eruptive fevers, equally with the condition I have just mentioned, predisposes them to inflammatory diseases, by depriving the small vessels, which circulate so freely in the cellular membrane, of their natural contractile power. Hence, when the circulation in the cellular structure, interposed between the mucous and cutaneous membranes of the cheek or lip, is retarded by any cause, the vessels, having lost their proper contractile force, which is designed by nature to overcome accidental interruptions, enlarge and permit the blood to remain stagnant. In proportion to the resistance thus presented to the perfect circulation in the part affected, is the excitement or vis a tergo in the surrounding capillary arteries; an inordinate activity is instinctively commenced in their vessels, for the purpose of attempting to overcome the obstruction in the morbid part; and, as the transmission of their contents is impossible through the ramifications already deprived of their vitality, or incapable of

* "Traité Clinique et Practique des Maladies des Enfans," par Barthiez et Rilleit, tom. ii., pp. 147, 148.

obeying the natural stimulus of the blood, the serous part of that fluid is forced through their minute extremities into the adjoining cellular membrane, which, from its increasing infiltration, becomes distended and indurated, and presents on the out-stretched skin the pale, lymphatic appearance before described as partly characteristic of the disease. When the serous membranes covering the abdominal viscera, or the heart, &c., become the seat of vascular obstruction, and inflammation follows, the excited and distended vessels relieve themselves by discharging serum or coagulable lymph from the free surfaces, while the neighbouring cellular structure, with which their adherent portion is connected, comparatively escape the force and pressure of the opposite arterial excitation. Until the process of infiltration within the lip or cheek is removed by early and proper treatment, all the small vessels near the original seat of the disease become successively strangled, as it were, by the increasing compression of the serum, which they have themselves effused; and thus death and putridity extend their destructive and offensive influence.

The appearances discovered after death in three children who died of this disease at the Infirmary for the Diseases of Infants in Paris, were the following:—In the first was found in the upper lip a lemon-coloured serosity mixed with little drops of blood, infiltrated in the subcutaneous cellular tissue. The mucous membrane on a level with that spot was tumefied and very soft; and the lower lip presented equally a slight œdematous swelling. On the frænum of the tongue was found a superficial ulceration, which was discovered during life. The tongue was the seat of an œdematous swelling, and the œsophagus that of a violent sanguineous congestion. The stomach was sound, the duodenum, which contained a brown-coloured viscid liquid, presented an appearance of numerous red striæ. The rest of the small intestines were slightly rose-coloured, and their internal membrane swollen and friable. The colon presented some red intermixed with slate-coloured streaks. The liver and lungs were gorged with blood, and the foramen ovale was open, but the arterial duct impervious. The vessels on the periphery of the brain were gorged, and the ventricles contained but little serum.

In the second case, in dissecting the lower lip, it was found infiltrated with a bloody serum, the accumulation of which gave to the covering of the lip a thickness at least of four lines. This tissue was cut neatly, and cracked a little under the stroke of the instrument; the mucous membrane began to fray and to detach itself from the external surface of the maxillary bone. There did not remain on the tongue any thing except a little muguet. The

stomach presented a violet-colour, and its inner membrane was tumefied and friable. The whole of the intestinal tube was spread over with red streaks. The mesenteric glands were more red and tumid than in the natural state. The lungs were sound, the arterial canal obliterated, the foramen ovale still a little open, and the brain was healthy.

A post mortem examination of the third child presented the following morbid appearances:—The face presented the same œdematous swelling which was observed during life. The eschar in the centre of the cheek had the consistence of cream, and was raised into shreds. The tissue of the cheek presented at the outside an appearance like lard. The gum at the corresponding point was entirely destroyed by gangrene, and the inferior maxillary bone was bare. The œsophagus was injected, and the stomach marked with small red points. There was a general capilliform injection of the small intestines. The large intestines were sound. The nerves, arteries, and veins which run towards the cheek did not, on dissection, present any remarkable appearance. There were firm cellular adhesions between the costal and pulmonary pleuræ on the left side, and the left lung was crepitant. The right lung was strongly infiltrated with blood in the whole of its inferior lobe, and crepitation was observed in the upper part. The pericardium was a little distended, and contained nearly two table-spoonfuls of a puriform serosity. The inner surface of the pericardium was of a delicate red colour, the cardiac membrane was more red, and covered with a pseudo-membranous exudation as thick as a double leaf of letter paper. This exudation was more thick on a level with the auricles than the ventricles. The substance of the heart was dense and of a pale colour, and the fœtal openings were obliterated. The brain presented a well-marked general congestion.*

Treatment.—A disease so rapidly fatal as gangrene of the mouth, requires the most prompt and vigorous remedies, otherwise the patient will speedily fall into an incurable state. The utility and necessity of stimulating and escharotic applications will appear, from what I have said, to have been long ago obvious to all who have had much experience with this formidable malady. The principle on which they act so beneficially, appears to me to be that of stimulating into contraction the diluted vessels surrounding the dead parts, and still possessing vitality. The consequence of this contraction is the immediate cessation of that rapid process of inflammation, which, as I have explained before, is produced and

* "Maladies des Enfans," par Billard, pp. 238, 240, 242.

extended by defect of tone or nervous energy in the capillary circulation. In slight cases, it may be sufficient to rub off, with diluted hydrochloric acid, the muguet or the ash-coloured slough found on the mucous membrane; but when the black spot, apparent on the outside, which proceeds from the cessation of the circulation and the death of the part, begins to increase, a crucial incision should be made through it down to the living parts, and undiluted nitric or hydrochloric applied by means of lint fastened to a glass rod. After making the incision, Billard advises the application of butter of antimony, or the actual cautery, which was extolled by Bacon above all other remedies. Those who have witnessed the astonishing effect of undiluted nitric acid in arresting the destructive progress of sloughing phagedæna, recommended by Mr. Welbank in a paper on the subject in the "Medico-Chirurgical Transactions," will have no hesitation in adopting this bold and decided practice, which has now, with different modifications, received the sanction of experience. Should the first application of the escharotic fail, it should be repeated daily, until the sloughing process has subsided. After each operation, the only other external remedies required will be at first an evaporating bread and water poultice, until the discharge has begun to subside, and the dead parts have exfoliated, and afterwards dossils of lint, or soft linen rag, moistened with warm water, which may be continued until the mutilated parts have become cicatrised.

Little reliance must be placed on internal remedies, notwithstanding it is the belief of some writers, particularly Siebert, that it is the result of a scorbutic diathesis. Should any symptoms of land scurvy have preceded the attack, it will be necessary, in addition to nourishing diet, to prescribe some preparation of bark, with some mineral and vegetable acid. It was the opinion of Dr. Underwood that the diarrhœa, which appears towards the termination of the disease, is occasioned by the offensive matter constantly swallowed by the patient.* This symptom may be relieved by opium; and should the child recover, change of air may be found advisable.

CANCRUM ORIS, SLOUGHING PHAGADÆNA OF THE MOUTH.

Ulcers appear on the gums or inside the cheeks of children from a year and half to seven years of age, which sometimes remain stationary, and at other times spread with rapidity, and endanger the life of the patient. When they first appear, they are circular,

* "Diseases of Children," by M. Underwood, M.D., ninth edition, p. 425.

and at their circumference seem as if the parts had been eroded. Some inflammation surrounds their base. As soon as they assume a malignant character, a slough appears on the surface, and the cheek swells so as to disfigure the face. In general, only one side of the mouth is affected. When the gums are the seat of the disease, they are spongy, and the ulceration spreads with great rapidity, attended with an acrid discharge, which has a most offensive smell; and, in some of the worst cases, the gums are entirely eroded, and the teeth, with their alveolar processes, exfoliated. When the ulcer penetrates the cheek, it spreads rapidly, occasioning the most frightful deformity. This disease is apt to follow measles, small-pox, &c., and it is sometimes excited by the violent action of mercury. An excellent account of this disease may be seen in the fourth volume of the "Dublin Hospital Reports," by Dr. Cuming, and in the seventh volume of the "Provincial Med. and Surg. Transactions," at p. 446, by Mr. Ryland.

Treatment.—This disease is rapidly cured at its origin by a few applications of the nitrate of silver. In the more advanced stages, it will be necessary to apply a lotion composed of diluted hydrochloric acid, in the proportion of half an ounce or an ounce to a pint of water; and, when the sloughing and ulceration are rapidly extending, the nitric or hydrochloric acid should be applied undiluted, in the manner directed for the treatment of gangrene in the mouth. When the gums are irritated by stumps of teeth, these should be extracted. With respect to internal remedies, few will be required, except such as are necessary to support the strength, in conjunction with nourishing diet and occasional opiates and aperients. In many of the most unfavourable cases, Mr. Wallace, of Dublin, has effected a cure by the internal exhibition of sesquicarbonate of ammonia, in doses varying from five to twenty grains; and Dr. Hunt has successfully treated the disease, by giving from twenty to forty grains of chloride of potash, in the course of twelve hours.*

ENLARGEMENT OF THE TONSILS.

Some children are subject to enlargement of the tonsils after every exposure to cold. This enlargement is of no consequence, unless it is so extreme as to interrupt respiration, and prevent the child from enjoying natural rest at night. In such cases a loud snoring takes place, and the child is awoke almost every minute with a sense of suffocation. Another inconvenience attends enlarged tonsils, viz., deafness, which is produced by the pressure of

* "Med. Gazette," April 7, 1843, p. 76.

the swollen glands on the eustachian tube, a trumpet-shaped passage in the throat, communicating with the tympanum, and designed to assist in producing the reverberation of sound in the ear. Another inconvenience attending this disease is an imperfection in the gutteral and nasal sounds in pronunciation.

Treatment.—In the commencement a leech may be applied to each tonsil, by means of a leech tube, the leech being previously secured with a thread of silk drawn through its body by a needle, and held by an assistant. After the inflammation has been thus relieved, a gargle, consisting of one drachm of alum, and half a pint of infusion of roses, may be used several times a day. When the swelling of the glands is so extreme as to obstruct respiration and interrupt sleep, producing the distressing and urgent symptoms I have mentioned, further means will be necessary. In many cases this excessive enlargement, when recent, will give way to the internal use of iodine.

Case.—Ann H., aged 13: Had enlargement of both tonsils, which were irregular on their surface, and presented a honeycomb appearance.

R—Potassæ Iodidi . . . gr. xij.—solv. in
Liquoris Potassæ . . . ʒj.—et adde
Aquæ Distillat. . . . . ℥ vi.—M.
Capiat cochleare unum bis die in aqua.

This medicine was continued one month, at the end of which time the swelling had entirely disappeared.

Case.—Ann B., aged seventeen, suffered severely with enlargement of the tonsils. I prescribed the same medicine as for the preceding case, and at the end of twenty-four days the disease was completely removed.

In case these remedies should fail, Velpeau's application, consisting of alum three parts, and concentrated tincture of capsicum one part, may be tried; or that of Mr Horne, of London, which consists in the use of nitrate of silver once a-week during several months.* I have tried this latter plan without success.

In some instances the enlargement acquires extreme hardness, and remains stationary, in defiance of all remedies. When loss of sleep is extreme, and apprehensions are entertained respecting the safety of the child during the night, an operation will be necessary. There are two modes of removing the disease by surgery, viz., ligature and excision. The ligature may be applied either by a curved needle or a double canula. When the former proceeding is adopted, the tumour should be seized and extended forwards by

* "Lancet," vol. xxvi., p. 634.

a tenaculum or double hook, and the ligature thrown over it and tied at its base. Mr. Fletcher, of Gloucester, makes use of a noose. When the needle is used, it should be passed through the front of the tonsil, at its base, and brought out behind, and a double ligature having been previously introduced through its eye, one portion of the ligature should be taken hold of and extended by an assistant, while the surgeon ties one half of the tonsil as low down as he can. The assistant must then raise up the tonsil again by this ligature, while the surgeon with the other ties the other half of the gland. The ends of the ligature must afterwards be cut off close to the knots. This operation is best adapted for tumours, which are too broad at the base to be tied with effect with one ligature. When the double canula is employed, the ligature is by its assistance, as with two fingers, carried completely round the gland, and being deposited at the bottom of the swelling, it is tied so firmly as to strangle the circulation. The ligature should be tightened twice a-day, and, as soon as the tonsil has mortified, which will be found to occur in about thirty-six hours, the canula and ligature should be removed, and the dead part be left to drop off, or it may be cut off when it becomes loose.

This is a certain and effectual, but disagreeable operation, and should not be proposed, except when the enlargement of the tonsil is so great or the passage so small as not to admit of any other proceeding. It is, however, an operation which I have, under particular circumstances, several times performed with success, to the great subsequent comfort of the patients. When the knife is used, the gland should be secured by a hook, held by the operator's left hand, while with the right he separates the part he intends to remove either with a curved bistoury or a knife. Mr. Liston only removes the prominent and obstructing portion on a level with the velum by means of a velcellum, or hook, and a probe-pointed bistoury. He says, no more hemorrhage follows this superficial operation than what follows from the extraction of a tooth.* Alarming discharge of blood is liable to follow the excision of large and broad tonsils, and therefore in children excision can rarely be adopted except when the tumour is small, especially at the base. Should dangerous hemorrhage occur, the most speedy and certain manner of suppressing it is the application of the actual cautery. In performing the operation of excision, Velpeau commences below and carries the knife upwards through the gland, which prevents the parts being obscured by the blood during the operation.† Mr. Cæsar Hawkins has published an

* "Practical Surgery," p. 252. † "Medical Times," No. 31, p. 57.

account of an instrument, with which the tonsil may be easily divided to any extent. It is the invention of Dr. Warren, of the United States, and has been improved by Mr. Hawkins. It consists of a plate, with a hole at its extremity. This is pushed over the tongue, and the tonsil exposed through the opening to the extent required. A cutting instrument, concealed in a groove, is now moved through, and readily divides the tonsil. *

A fungous enlargement of the tonsil sometimes takes place, producing constant uneasiness, difficulty of swallowing, and some degree of hoarseness, and requiring great circumspection in its treatment. The following case will explain this peculiar disease, and a successful mode of treating it:—

CASE.—Miss —— consulted me on account of a fungous enlargement of the left tonsil, which had a very broad base, extending into the pharynx. She had been under the care of an eminent surgeon in the country, who tried in vain to cure the disease by nitrate of silver. He was afraid of attempting excision, apprehending fatal hemorrhage. She afterwards consulted several surgeons in London, without obtaining any relief. I dissected portions of the fungous mass at three different times, after intervals of some days, and ultimately, with the help of my finger placed in the pharynx, succeeded in removing the whole with the knife, after it had been by this expedient brought within its reach. A troublesome hemorrhage continued five hours, resisting the use of cold water and solution of alum, used as gargles. It was at length restrained by the application of my finger continued upon the bleeding surface about seven minutes; but the effects of the hemorrhage were severe, both on the pulse and the state of the skin, which became exanguine. Had the bleeding not subsided when it did, I intended to have applied the actual cautery. The disease was perfectly cured.

DENTITION.

A KNOWLEDGE of the process which nature adopts in the formation of the first or deciduous teeth, is a necessary part of a medical and surgical education; and the general attention which dentition receives during childhood, renders it imperative that I should not omit any information on so interesting a subject in the present treatise.

* "Medical Gazette," 1840, p. 706.

In the fœtus, about the third month, the margin of each jaw is found to consist of a channel, enclosing a mass of follicles, destined to form the future teeth. At the fourth or fifth month these follicles become more obvious, being then composed generally of eight distinct, globular capsules, which may, with care, be elevated by the anatomist from the maxillary bone, so as to display the artery and nerve, which penetrate and form a pedicle for each. Minute perpendicular eminences, the rudiments of the alveolar processes, now present themselves; and as the fœtus approaches the period of his birth, the transverse septa are distinguishable, and the sockets become more complete. As soon as the separate cells are formed, the capsules, no longer retaining their globular shape, accommodate their figure to their respective alveoli. Each jaw generally contains at birth ten of these partitions,—four for the incisors, two for the canine, and four for the molar teeth. Each capsule being now minutely examined, is discovered to consist of two membranes, the inner one being designed to construct the tooth and deposit its enamel, and the outer one to erect the alveolar processes; and as the operations of these membranes proceed, they are perceived ultimately to constitute the periostea for the respective teeth and sockets. Between these two membranes a fluid is observable, which is more or less considerable, in proportion to the age of the fœtus;* and which, as the formation advances, is gradually absorbed. In the inner, or proper, capsule, about the fifth month the gums of the incisive teeth are perceptible at the upper part, next those of the canine, and afterwards those of the first molar teeth. To these primitive gums succeed solitary particles of bony matter in the capsules of the incisors and canines, and a congeries of osseous scales in the first molar membranes. The ossific process then proceeds from the crown of each tooth downwards, and the enamel is afterwards deposited by the inner surface of the same membrane, which had secreted the osseous matter. Should any constitutional disease occur during this delicate animo-chemical process of crystallisation, it is rendered incomplete, and the teeth, which are ready for the reception of enamel at the period destined for its deposit, are either partially supplied with or totally deprived of it. Hence, in delicate children we find, after severe illness, the first incisors frequently present horizontal patches of imperfect enamel, alternating with bony furrows, entirely deprived of this covering.† The des-

* Mekel. "Manuel d'Anat. Generale, Descript. et Pathol."

† See "A Practical Treatise on the Remittent Fever of Infants," by J. M. Coley, p, 156.

tined period for the deposition of the enamel having expired, this function of the inner membrane ceases; and as the crown of the tooth advances, the capsule, by which it was constructed, being no longer required, is gradually absorbed.

The growth of the fangs now proceeds downwards, while the alveoli are simultaneously increased in depth; and when the teeth are explored during this process, the crown, or enamelled portion, is found complete externally, while the root remains towards the lower part still in a soft, pulpy, rudimentary state. The process of ossification commences at first externally, and when the outer portion of the crown is complete with its bone and enamel, the cavity is afterwards filled up; and as the root is being prolonged and ossified by the pulp, an inner, vascular membrane is observable, which constructs and lines the internal bony canals, through which the arteries and nerves proceed to their separate teeth. Thus we find that each complete tooth has at the part, which enters the alveolar process, both an internal and external membrane.*

About the seventh month after birth the two middle incisors present themselves through the gums on the lower jaw, then the two outer incisors above and below, afterwards the eight molars, and, lastly, the four canines; making altogether twenty temporary or deciduous teeth. Some deviation from this proceeding occasionally occurs; the two lower incisors are now and then cut before birth, in which case they soon become deciduous; those on the upper jaw sometimes appear first, and, in some rare instances, no teeth are observed until the expiration of almost two years, which is the period generally occupied for the appearance of the entire set. In one case the two middle incisors, which were first perceptible so late as fifteen months after birth, became quite loose, projected, and were ready to be cast off at the age of twenty-two months. In this instance, as in most others, when dentition is remarkably delayed, a dangerous and protracted disease in the alimentary canal occurred.

Irregularities in the first set of teeth are rare, in consequence of their small size. When they do occur, the deviation usually happens to the cuspidati, which are last projected, and may be diverted from their proper situation in different parts of the bony palate. A deficient number, or an entire absence of teeth, may take place. Borelle met with a woman, who, at sixty years of age, had never had any teeth.†

About the seventh year after birth, the second or permanent

* "Billard." † "Cyclopedia of Practical Medicine." Art. Dentition.

set of teeth begin to make their appearance. Previously to this event the incisors are found loose, being supported principally by the gums, their roots having undergone more or less absorption. When they remain firm at this period, the permanent incisors appear either in front or behind them, being always secreted in new and distinct capsules. The jaws having by this time acquired a great increase of size, the secondary teeth are found larger and more numerous. After the incisors are brought into view, amounting, as in infancy, to four in each jaw, eight bicuspides follow, and take the place of the primary molars; next eight molars shoot up some time from the tenth to the fourteenth year after birth; afterwards four cuspidati; and from the nineteenth to the twenty-ninth year, but usually at puberty, four wise teeth appear, one at each extremity of the jaws, and render the number of permanent teeth exactly thirty-two. These teeth, or four of the incisors or the canines, are sometimes wanting; and some instances are said to have occurred, where a third set of teeth has been cut at an advanced age.

The gums of most of the permanent teeth are visible in the fœtus behind and below the milk-teeth.*

I have in my possession a singular anatomical preparation, which I removed from the rectum of a woman about 30 years of age, who died of mortification of the omentum. It consists of a portion of the upper jaw of an extra-uterine fœtus, containing two incisive teeth and a cuspidatus, whose crowns are complete, and whose roots are enclosed in their respective capsules. Adjoining the cuspidatus is perceptible a primary molar tooth, which has been displaced and inverted and continues adherent to the periosteum of the canine tooth by means of its investing membrane, which assumes the shape, and appears to have performed the office of a gubernaculum, about half of its fang having been absorbed. The particulars of this extraordinary case are recorded in the "Edinburgh Medical and Surgical Journal," Vol. vi. p. 50.

DISEASES OF DENTITION.

The following remarks of Guersant, respecting the vulgar and unfortunate prejudices prevailing on the subject of dentition, and its supposed influence in producing diseases with which it has no connection, are so appropriate, that I am induced to introduce them for the notice of my readers:—

"On attribue dans le monde la plupart des maladies de

* "Cyclopædia of Practical Medicine." Art., Dentition.

l' enfance au travail de la dentition. La difficulté d' observer les maladies du premier âge, et le peu de connaisances positives que nous avons sur cette partie de la pathologie, ont contribué à enraciner cette opinion : et ce préjugé, resultant de notre ignorance, est ensuite devenue populaire, commun, à tous les autres préjugés en medicine."*

It is lamentable to notice the ignorance displayed by the profession as well as the public on this subject; every concomitant disease, the exact nature of which is not obvious to their apprehension, being attributed to the teeth. To enumerate all the complaints thus believed to be induced by dentition would be a waste of time.

The diseases peculiar to dentition are such as arise from local inflammation. The rapid growth of the gums and alveolar processes, and the simultaneous activity of the dental capsules, require a corresponding supply of blood and nervous energy. Hence the flushings in the face, increased heat of the head, and cerebral excitement about that period. To this cause have been improperly ascribed those effusions of blood in the alveolar processes, which have been followed by destruction of the capsules and the alveoli. Two instances of this kind evidently occasioned by cold and accompanied by inflammation in the mucous coat of the alimentary canal, and a congested state of the liver, are related by Billard. In the first, an infant eighteen days old, was discovered an effusion of blackish fluid blood in three alveoli of the primary teeth. The incisive teeth and part of the germ, which was not ossified, floated free and detached in the effusion, which formed the tumour; the bony crowns of the teeth were softened, reddish, and almost macerated in the fluid. Some points of muguet were found at the inferior extremity of the œsophagus, red striæ traversed the surface of the stomach, and the mucous membrane at the end of the duodenum was thickened and tumefied. Near the valve of Bauhin six follicular plates, very red and much swollen, were met with; and the liver was gorged with blood.† In the second case, which also proved fatal to an infant twenty-six days old, the tongue and roof of the mouth were so affected with muguet that the nurse was unable to suckle him, and he vomited his food directly after he had taken it. Great heat of the skin and thirst occurred every evening, and the muguet extended itself. The gums in both jaws then became swollen, and deglutition almost impossible. The swelling in the upper

* "Dict. de Med.," en 21 vol., t. 6. Art. Dentition, par M. Guersant.
† "Traité des Maladies des Enfans," p. 266.

lip made rapid progress, and the face was œdematous. Violent cough and a purple ecchymosis supervened before death. On dividing the swelling on the gums, it was found to be occasioned by blackish grumous blood, in the midst of which floated the dental gums, which, totally detached, escaped with the blood that flowed from the tumour. The stomach was contracted and wrinkled, and its mucous coat thickened and intensely red. The liver was distended with blood, and all the abdominal venous system in a very remarkable state of congestion. The tongue was the seat of a distinct œdematose swelling.*

These cases and dissections prove the co-existence of extensive disease in the stomach as well as the mouth, probably the result of exposure to cold at the latter end of autumn. As the attack commenced in each infant a few days after birth, the process of dentition could have had no share in the cause of the disease. In short, effusion of blood into the alveoli, destruction of the processes, and exfoliation of the capsules of the teeth, cannot take place, except from external violence, or inflammation brought on by cold, or some constitutional derangement.

When the milk-teeth are about to penetrate the gums, the absorbents remove the intervening substance, and thus, first one point of the apex of the tooth, and then another, is exposed to view. Sometimes the cuticle is so distended that inflammation supervenes, which, terminating in the effusion of serum or blood, detaches a portion of the epidermis, which assumes the character of a small vesicle. Artificial aid is unnecessary, unless the symptoms of local pain or constitutional irritation be present, when the inflamed and swollen gum should be divided with a crucial incision down to the presenting surface of the tooth.

The principal diseases of the first set of teeth are caries and inflammation in the periosteal membranes, terminating in abscess, or what is commonly called, *gum-boil*. The first effect of inflammation in the periosteum is to excite pain, tenderness, and swelling in the gum adjacent to the tooth, and an effusion of fluid between the fang and its investing membrane, which is thus converted into a kind of cyst. Successive attacks of inflammation at length end in the formation of pus, which either bursts through the tumour in the gum, or may be artificially opened. In some cases, after the abscess has burst or been opened, a fungus springs up from the diseased membrane lining the cavity. In other cases, the pressure of the abscess having produced absorption of a portion of the alveolar process at its lower part, it effuses its con-

* "Traité des Maladies des Enfans," pp. 267, 268.

tents through the aperture thus formed, and the matter insinuates itself along the surface of the lower jaw, and forms an external tumour near its base. This tumour is at first hard and discoloured, but in the course of time it ultimately inflames, and bursting or being opened, leaves a puckering in the integument, which adhering to the bone, remains a permanent blemish. When the diseased tooth, which is the cause of the mischief, is removed before external redness takes place, the tumour ultimately retires and leaves the skin unblemished.

Children are subject to facial neuralgia from inflammation in the periosteal membranes of the teeth. This observes the same periodicity as it does in adults. What is called caries is a decay in the osseous part of the tooth, the nature of which has never been satisfactorily explained. It sometimes commences externally, at others it begins under the enamel, which is afterwards broken off and oxposes the cavity. By those who believe that the teeth retain some minute and invisible kind of vascularity after they are completely formed, which others deny, caries is supposed to be a species of ulceration in the bone: yet no exfoliation ever takes place, and nothing like granulation has ever been observed in the carious cavity. When human teeth which have been long extracted from dead bodies, and when those formerly made with the tusk of the hippopotamus, have been artificially fixed in the human mouth, and exposed to its secretions, they are found to undergo the same decay and present the same carious cavities as those found naturally formed in their respective sockets. Hence we may presume that these carious cavities are the result of some chemical process; and this supposition is strengthened by the fact that the process of decay is suspended by excluding the saliva and the external air by the introduction of pure gold, which is insoluble by the salivary secretion.

When the digestive organs are so deranged that the supply of chyle is interrupted, and a species of scurvy is the result, the gums are apt to bleed from the slightest touch; and ulcerations also occur under such circumstances in the gums, where they are connected with the teeth.

During the primary dentition it is not uncommon for the bowels to become constipated. This proceeds from the determination of blood towards the alveolar processes, and the consequent enervation of the alimentary canal. It is a most unfortunate mistake, into which medical men as well as the public are apt to fall, to attribute a relaxed state of the bowels to dentition. It is impossible, upon any sound pathological theory, to attribute either dysentery or diarrhœa to inflamed gums or alveoli; and in practice

this gratuitous theory is followed often by most unhappy and fatal results, particularly when the popular and routine custom of administering opium with astringents is adopted, or reliance is placed on needless lancing of the gums, and the muco-intestinal inflammation is neglected and unrelieved by appropriate remedies.

Treatment.—Those inflammations of the gums, accompanied with muguet, which have been described by Billard, should be treated immediately by the application of a leech or two to the inflamed parts; and the lotion I have recommended, when speaking of muguet, should be regularly used. The congested state of the vessels of the stomach and liver will be most appropriately treated by small doses of castor oil, or rhubarb and magnesia. It must, however, be observed, that the only chance of rescuing the patient at so tender an age will be afforded the physician at the very commencement of so severe a disease.

The inflammation in the periosteal membrane of the tooth is best treated by the application of a leech to the tumefied gum, which will generally subdue it at once, and prevent the suppurative process. The most safe and pleasant mode of introducing the leech into the mouth, is to to pass a needle and thread transversely through the animal, which should be afterwards placed within a glass tube. When suppuration takes place, the abscess may either be left to burst spontaneously, or it may be opened at a proper period with a lancet. As soon as the tenderness in the gum has subsided, the tooth should be extracted, as the patient cannot expect to enjoy any long immunity from a repetition of the abscess. Those cases which terminate in fungus, or in the formation of a tumour at the base of the jaw, should be treated in the same manner; as no other remedy than the extraction of the tooth can be relied upon to cure the fungus, or to prevent the disagreeable and lasting deformity, which an abscess connected with a diseased tooth would otherwise inflict on the face of the child.

The only permanent cure for tooth-ache, occasioned by a decay in the tooth, is extraction. As the first set of teeth are only temporary, the process of introducing a round file, and removing the decayed surface, and filling up the cavity with gold, would be superfluous for a child. The front teeth ought to be extracted with a pair of small forceps, and the grinders by the key instrument, or by an instrument lately introduced by the dentists, which acts in the manner of a lever, with the assistance of a strong and practised hand. In using the forceps, the dentist should make use first of a slight rotatory motion, to separate the tooth from the alveolar process, and then extract it; and when the key instrument is employed, he should apply the left fore-finger on the

middle of the convex surface of the claw of the instrument, to prevent its slipping while he is extracting the tooth. For this purpose, the claw will be found greatly improved by the addition of a small stud at the part above mentioned; and with the key instrument, thus improved, the smallest stump may be removed with facility, provided the gum has been previously lanced to a sufficient depth, and with much more ease and dispatch than by the barbarous instrument, called a punch, which ought long ago to have been exploded.

The front permanent teeth are subject to irregularity, and require attention from seven to eighteen years of age. When the incisors are forced out of their proper situations by any of the temporary teeth, the latter should be removed; and when the cuspidati project, and endanger the upper lip at any time under eighteen years, the adjoining bicuspis should be extracted. After the patient is above eighteen, the irregular canine tooth should be removed, as there is no chance beyond that age of the errant cuspidatus occupying the place of a bicuspis, the growth of the jaw being then complete.

A fungous and bleeding condition of the gums connected with scurvy is only to be cured by proper food and attention to the digestive organs. The food should consist of fresh meat and vegetables, and the child should take a mixture composed of diluted sulphuric acid and disulphate of quina, drinking lemonade through the day as a beverage. The bowels should be relaxed every third day with chloride of mercury and jalap. A severe case of this kind, with other alarming symptoms of scurvy, as vesications and ulcers in different parts of the body, occurred in my practice lately in a boy, who had been at a cheap school, where the diet consisted almost entirely of red-herrings and other salt-fish. The ulcerations in the gums may be treated with a lotion composed of three or four grains of nitrate of silver to the ounce of water.

The most proper remedy for facial neuralgia, before the first set of teeth have fallen out, when the teeth are decayed, is extraction. When the disease occurs afterwards, it should be treated as it is in adults, by means of disulphate of quina, which may be given in the dose of one grain three times a-day, and, should that fail, by five minims of the solution of the arsenite of potash once in six hours. It must be observed, however, that when there exists any chronic inflammation or abscess in the periosteum of the tooth, the only effectual remedy is the entire removal of the tooth.

Those cases, in which constipation is present, and obstinately

continued by the process of dentition, must be treated, as long as that condition prevails, by a tea-spoonful of castor oil, or a small dose of salts and senna, every morning. No fears need be entertained respecting the habit of giving repeated aperients, while dentition is proceeding, as the bowels assume their natural functions, as soon as the teeth are developed. When the costiveness is unusually obstinate, a dose of chloride of mercury and jalap must be given every third or fourth morning.

SALIVATION.

An increased secretion of saliva from an excited state of the salivary glands, is a general occurrence during dentition in infants, and is considered a salutary effort of nature to secure the brain from the effects of the great determination of blood towards the head, which prevails during that process. Salivation, too, sometimes occurs spontaneously during confluent small-pox, in consequence of the inflamed state of the mouth and throat, produced by the presence of pustules in the mucous membrane covering those parts. The salivation, to which I intend principally to confine my attention, is that excited by mercury or iodine. The symptoms of mercurial ptyalism are a flow of thin, offensive saliva from the mouth, a swelling of the gums, which are partially separated from the teeth, and more or less ulcerated at their margins, and, in extreme cases, ulceration in the tonsils and mucous membrane of the cheek, in both of which parts, as well as the gums, deep sloughs sometimes take place, followed by exfoliation of some part of the alveolar processes. The action of the heart and arteries, is, for the most part, greatly hurried; but, in some instances, the impulse of the heart is irregular, slow, and intermitting, and the skin is cold and pale, and the countenance contracted; in which state Mr. Pearson, surgeon to the Lock Hospital, observed that patients sometimes suddenly died, after using no more exertion than merely walking across a ward.* In all severe cases, the appetite fails, and emaciation proceeds to a very great extent; but it is a remarkable fact, that many patients who have suffered severely from the effects of mercury become afterwards remarkably fat. This obesity can, I think, only be accounted for on the supposition, that the mercury has, in such cases, the effect of removing biliary obstruction, and exciting into new action the secretory functions of the whole of the chylopoietic viscera.

The salivation excited by iodine never produces ulceration.

* "Observations on some Articles in the 'Materia Medica,'" &c.

The tonsils and gums become inflamed, the action of the heart is rapidly accelerated, and emaciation becomes extreme; and the hurried pulse and loss of flesh frequently continue many months after the use of the medicine has been discontinued.

It may not be amiss to observe, that salivation may be found to follow the indiscreet continuance of the arsenite of potash, as well as copper-coloured eruptions on the skin, and a state resembling that accompanying purpura.

Treatment.—Whether the salivation proceed from mercury, iodine, or the last-mentioned preparation, the medicine should be immediately discontinued. Mercurial salivation will be most rapidly relieved by eight or ten leeches applied beneath the inflamed maxilla, and a soft poultice round the front of the neck.* A gargle, made with one drachm of liq. plumbi diacetatis and half a pint of distilled or rain water, is one of the most useful applications for the purpose of relieving the heat and inflammation, and modifying the salivary secretion. The best remedy for the ulcers is a solution of nitrate of silver,—ten grains to the ounce of distilled water. In slight cases an alum gargle will be sufficient.

The salivation arising from iodine and the arsenite of potash requires no remedies after those medicines have been omitted. The practice of prescribing the continuing of the latter medicine until it acts as a poison on the constitution, is highly reprehensible, and discovers a culpable ignorance of its special curative powers, which all experienced physicians are aware exhibit themselves in the course of a few days or a week, and are confined to those diseases observing periodicity.

DYSPHAGIA, DIFFICULTY IN SWALLOWING.

Difficult deglutition, when inflammation in the tonsils or the velum and uvula is present, is sufficiently obvious to require no particular notice. It sometimes, however, takes place from a cause which may not be suspected: for instance, when the mouth and fauces are perfectly free from aphthous, mucous, and pustular inflammation, and the disease is seated in the muscles, which elevate the pharynx to receive the morsel during deglutition. This disease is of a rheumatic character, and proceeds from exposure of the neck to cold. The patient is able to masticate his food, but when he attempts to swallow, he finds the pain accompanying that act so severe, and the difficulty so great, that he is in constant dread of taking any nourishment.

* Dr. Watson, "Med. Gaz.," Dec. 25, 1841.

Treatment.—A warm bath, up to the chin, at ninety-eight degrees of heat, should be used every night at bed-time, during fifteen minutes, and the child should be afterwards put into a warm bed, and have the following embrocation applied to the upper part of the neck and throat:—

R—Lin. Camph. C.,
Lin. Sapon. C. . . . aa ʒ vj.—M.

After these external means have been adopted, the subjoined medicines should be exhibited:—

R—Pulv. Ipec. Comp. . . . . gr. iij. ad vij.
Capiat hora somni.

R—Camphoræ cum Spiritu Contritæ . gr. xx.
Pulv. Acaciæ . . . . . ʒ ij.
Potassæ Bicarb. . . . . ʒ j.
Acidi Citrici Cryst. . . . . gr. xlv.
Aquæ Font. . . . . ℥ vi.
M.—Capiat Cochl. duo larga 4is horis.

PAROTITIS, OR MUMPS OR BRANKS.

This disease occurs epidemically, and is said to be contagious. It commences with a swelling on one side of the face, extending from the front of the ear to the middle of the cheek, and sometimes descending below the inferior maxilla. It is not accompanied with much fever, and at the end of four days begins to subside. I have never known it to occur more than once to the same individual. It occasionally, but very rarely, migrates to the testis in the male, and to the breast of the female; and, when this migration takes place, it is said to happen generally on the same side.* When the swelling on the cheek is examined, it is found to consist of an enlargement of the parotid gland, which, during the inflammatory process, acquires a stony hardness. The submaxillary tumefaction is occasioned by inflammation in the lymphatic glands, which is not an essential part of the disease, and in a scrophulous child may terminate in abscess and ulceration.† The usual termination of the inflammation in the parotid gland in children, is a gradual return to its original state by a process called resolution, which signifies absorption of the effused lymph, constituting the temporary swelling and induration. Inflammation of the parotid gland appears sometimes as a translation of diseased action, when it may be said to be critical as in acute fevers, miliaria, the plague, or a

* Kerr. Article "Parotitis," in "Cyclopæd. of Prac. Med."
† "Journal de Med.," May, 1775. "Regler C. c. D. and River. Cent.," 1 Obs. 72.

malignant form of pleurisy. It has also been observed by Dr. Pringle to be critical in jail-fever.*

Treatment.—Medical treatment will be unnecessary, unless the inflammation and pain are excessive, when a few leeches and an evaporating poultice may be applied, and a saline purgative administered. When the disease is translated to the testis or mamma, it need not be interfered with further than that the patient should be confined to the horizontal posture, unless violent pain should be felt in the testis, in which case an emetic should be prescribed, and leeches and an evaporating poultice applied. In severe cases of this kind the testis has been known by Dr. Hamilton more than once to become entirely absorbed after the cessation of the disease.†

HARE-LIP.

This congenital defect consists of one or more fissures in the lip, generally the upper, accompanied sometimes with corresponding clefts or divisions of the palate. The only mode of curing the deformity is a surgical operation. Some difference of opinion has prevailed respecting the most eligible period for the operation. Mr. Abernethy recommended it to be performed before the age of two years,‡ and Mr. Lawrence, on the third, fourth, or fifth month.§ Dupuytren preferred the third month, and invariably succeeded at that age.‖ On the other hand, Roux operated on an infant at the breast, who died on the same day; on another infant, in whom no union followed; and on a third only nine months old, who had a narrow escape from death in consequence of syncope.¶ Mr. Liston considers the second or third year the best.(a)

Operation.—When the operation is performed on a very young infant, he should be held on the lap of the nurse, and the head should be placed between the knees of the surgeon, who having divided the frænum, and given one side of the lip to an assistant to be held and compressed, should either take hold of the part to be detached, and divide the lip at that part, beginning at the prolabium, and carrying the knife upward; or, introducing a conical piece of cork beneath the lip, should cut down upon it through the lip, inclining the incision inwards, and commencing at the apex of the fissure. Some surgeons compress the lip with a pair of forceps, and, with a stroke of the knife, cut away the projecting

* "Pringle," vol. ii., chap. 6.
‡ "Lancet," vol. xii., p. 451.
‖ Ibid., vol. xxiv., p. 294.
(a) "Practical Surgery," p. 469.
† "Edinb. Transactions," 1773.
§ Ibid., vol. xviii., p. 819.
¶ "Medico.-Chir. Rev.," No. xxi., p. 172.

portion of the lip, keeping the instrument close to the forceps. The assistant must continue his compression, to prevent hemorrhage; and, having placed the finger and thumb of the other hand on the opposite side of the opening, the surgeon should proceed to remove a portion of the lip on that side. Two hare-lip pins must now be pushed through the lip, at the distance of a third of an inch from the cut edge on each side, the raw surfaces having previously been brought into accurate union. The lower pin should be first introduced, and afterwards the other, and the divided parts must be kept in close apposition during four or five days, by means of the twisted suture, which should be extended sufficiently for this purpose. The pins ought to be carried down almost to the mucous membrane, at the cut edges, to insure perfect union. After the pins are removed, the ligatures must be allowed to remain until they fall off. No other dressing will be required, and Mr. Lawrence says the infant may be suckled immediately after the operation.* This distinguished surgeon uses only one hare-lip pin, which he introduces near the prolabium, and he secures the upper part by a common suture. The plan adopted by Sir A. P. Cooper of using two interrupted sutures, and dispensing altogether with the pins, is now universally discontinued.

When the child is operated upon at two years, he should be confined with a sheet, so that he may be unable to move his arms and legs; and, where there are any projecting teeth, they should be removed before the incisions are commenced. Mr. Lawrence usually found the fissure in the palate gradually obliterated after the operation for hare-lip has been performed.† The cutting instrument employed by Mr. Lawrence is a pair of scissors with knife edges. The one I have always employed is a small scalpel. Should there be any bony projection, that must be removed with forceps, or the knife, and the parts should be allowed to heal before the operation for hare-lip is commenced; and most surgeons, when there are two fissures, operate on one first, and wait till that has been united before they proceed to any operation on the other.

DYPHTHERITE, OR MEMBRANACEOUS SORE THROAT.

This term is derived from the Greek word, Διφθέρα, which signifies a membrane. It is confined to an inflammation of the pharynx, extending to the tonsils, which terminates in the formation of a false membrane. Aretæus was the earliest writer on the subject of angina gangrenosa, which he described under the titles

* "Med. Gazette," No. 521, p. 347. † "Lancet," vol. xi., p. 653.

of the Egyptian and Syriac ulcer. He divided the disease into two species, one in which the artificial membranes are small and white, and the other in which these productions were large, depressed, and exhaled a fetid smell, constituting the angina gangrenosa. About the year 1337 the latter disease appeared as an epidemic in Holland, and in other parts of Europe, and re-appeared in Spain at the commencement of the seventeenth century, and was described by Mercatus, Villareal, Nunnez, and other Spanish writers, as affecting the tonsils, extending into the air-passages, and producing death by suffocation, whence it received the name of *garotillo*. In 1618 the epidemic showed itself at Naples, where it became as fatal as in Spain, commencing its attack in the pharynx, producing dysphagia, and terminating its career by spreading to the larynx, and exciting suffocation, as if the patient had been strangled. Seventeen years after this period the disease reached Kingston, in North America, where it was more particularly confined to infants. From 1743 to 1748 this epidemic raged in Paris, according to the reports of it left us by Malonin and Chomel; and, a short time afterwards, Fothergill and Stow published accounts of an epidemic, malignant, sore throat, which prevailed in England, which was sometimes secondary, and in connexion with scarlatina, and at others primitive, and resembling, from the description of Stow, the disease under consideration. In 1771, Bard, of New York, published his sentiments on this subject, which partly corresponded with those of Bretonneau, who considered the disease to be analogous in its nature with that of croup, and the false membrane to be the product of a concretion. In proportion as the real nature of this disease has been unfolded by modern researches, it has been disarmed of much of its supposed malignity, and brought more under the control of art. It begins with inflammation of the mucous membrane of the soft palate, tonsils, and pharynx, terminating in the secretion of a false membrane, *without any ulceration or destruction of the true skin.* As the inflammation advances, it is apt to extend to the larynx, and to produce the symptoms and fatal results of croup. In one form of the disease, gangrene or sloughing of the inflamed parts takes place, particularly in children of feeble constitution. The attack begins with a little fever, attended with a slight difficulty in swallowing. On inspecting the throat, the tonsils are perceived to be swollen, and small portions of white or yellowish lymph may be seen, resembling muguet, on different parts of the soft palate and pharynx. After a short time these deposits of lymph assume a grey colour, and acquire an offensive odour; and a copious discharge of saliva flows from the corners of the mouth. At this period the cervical

glands become inflamed and swollen. At length the grey lymph, constituting the false membrane, either falls off in a mass, and is ejected through the mouth, or it is separated in fragments and discharged by degrees, and is often reproduced. The appetite is little affected, and neither vomiting nor diarrhœa is present, unless the mucous coats of the stomach and bowels are the seats of the dyphtheritic production. When recovery commences, the false membranes cease to be reproduced, and the surface of the mucous membrane, by which they had been secreted, presents a red, excoriated aspect, without any degree of actual ulceration; the swelling in the cervical glands subsides; and, at the end of eight or ten days recovery follows. In the more malignant cases, the disease extends into the air-passages, producing symptoms of laryngeal and tracheal inflammation. First hoarseness is observed; then a harsh, suffocating cough, accompanied with a croupy sound and an anxious expression, followed by a pale, cadaverous countenance, with the eyes sunk in their sockets; hurried and feeble pulse, cold skin; and terminating, when unrelieved, in irresistible stupor, a purple colour of the lips, face, and extremities, and speedy death. When the bronchial tubes are visited by this disease, the cough becomes more frequent, the breathing more rapid, and accompanied with a mucous or rattling sound, and the patient sometimes expectorates shreds or tubular portions of lymph, presenting a membraneous appearance. This is frequently the sequel of laryngeal inflammation, and, after the latter has been relieved, disappoints our hopes by a rapidly fatal termination. Sometimes, also, the schneiderean membrane becomes the seat of the membraniform secretion, when a most fetid discharge takes place through the nostrils; and, in this variety of the disease, symptoms of typhus present themselves. The morbid appearances observed after death, are not confined to the pharynx, larynx, or trachea; but false membranes are often discovered in the œsophagus, stomach, and intestines.

This disease is sometimes a symptom of malignant scarlet fever.

Treatment.—As the danger of this disease is in proportion to the nature and extent of the false membrane, our principal reliance must be placed on local remedies. Of these the most effectual are hydrochloric and nitric acids, either of which may be conveyed to the diseased parts by means of sponge or linen rag fastened to a piece of cane or whalebone. The acid should be rubbed or pressed firmly on the surface of the parts affected, so as to insure its contact with the inflamed membrane and the detachment of the lymph. In very slight cases, resembling muguet, a lotion composed of two grains of bichloride of mercury, or ten to

twenty of nitrate of silver, to an ounce of distilled water, will be found sufficient to separate the excretion and remove the subjacent inflammation, the progress of which must be carefully watched and promptly arrested. The operation of these powerful stimuli on the congested and inflamed surface is that of producing contraction and, restoring the natural action of the minute vessels. The physician, therefore, must not suppose that the object for applying hydrochloric acid is not merely to destroy the texture and to disinfect the false membrane, but to excite activity in the torpid vessels, on the same principle that nitrate of silver and other stimulants remove chronic inflammation and ulceration in the cornea when its vitality has been diminished. When the larynx becomes the seat of dyphtherite, it must be treated in the same active manner as primary croup, by leeches, and chloride of mercury given in frequent, repeated doses till the gums become affected, or the laryngeal inflammation has subsided. The chloride may be given for this purpose in doses of two grains once in two hours; and the same practice should be adopted in the treatment of severe cases, when the tonsils and pharynx only are affected; experience having proved its utility in arresting the progress of the inflammation and preventing its extension to the respiratory organs, which it is of the utmost importance to protect from its destructive invasion. The peculiar and curative action of mercury on the capillary circulation will be found to co-operate with the external stimuli, and I believe it acts on the same principle, namely, that of exciting an artificial activity in the general circulation, by means of which the small arteries are enabled to propel their lingering contents through the inflamed and congested membrane. During the whole illness the apartment should be carefully ventilated to dilute the putrid effluvia. When gangrene occurs, the hydrochloric or nitric acid will be found the best application. It may be used daily, and in the intermediate time a gargle composed of two drachms of the acid to half a pint of water may be applied by the patient, or carefully injected with a syringe. In this condition of the patient sesquicarbonate of ammonia may be exhibited frequently with advantage in a dose of three or four grains. After the inflammatory stage of the disease has terminated, the strength of the patient may be supported by broth, and other nutritious aliment, and by disulphate of quina, as soon as the vessels of the skin become relaxed. During the earlier periods of the malady milk will be found the most appropriate and grateful food for the patient.

When all hope of recovery from other means is at an end, the operation of laryngotomy has been proposed and performed in

one instance by Bretonneau with success. The propriety of recommending this operation will depend on the absence of bronchial inflammation. Should this be present there will be no advantage from any operation; on the contrary, the cough and difficulty in expectorating the mucus and shreds of lymph would be partly increased. When, however, the bronchial passages are free from disease, and death appears to be inevitable, the operation of opening the larynx or trachea may be adopted, and ought to be recommended.

Operation.—Various modes of opening the larynx have been pursued by surgeons. The most simple and one of the most recent operations is that of Mr. Hilton's, described in "Guy's Hospital Reports," from which the following account of it is extracted:—

"In this operation I used a curved trochar and canula, the canula being oval from side to side, and the trochar lancet-shaped, much flattened above and below, and cutting at its point and edges. This instrument may be passed through the crico-thyroid membrane into the larynx, or through the trachea, with the greatest facility, the larynx being held steady by the surgeon's left hand; indeed, it is scarcely necessary to divide the skin with a lancet before attempting its introduction; yet, with the circumstances permitting, I think that a good previous step. The forms of the cutting instrument and the canula are so adapted that the canula presses upon the whole of the cut surface, and thus prevents any internal bleeding; and, further, as regards laryngotomy through the crico-thyroid membrane, the oval outline of the canula is the form best adapted to the form of the space between the cartilages. It is said some persons cannot bear a canula in the larynx or trachea. I apprehend that when this inconvenience arises, it occurs from the end of the canula touching the posterior part of the larynx or trachea, a point easily determined at the time by knowing the length of the canula, and passing a probe to its then internal extremity. This contact it is difficult to avoid with a straight or slightly curved canula; and such an one is also very liable to be blown out of the larynx by the patient coughing. With the intention of avoiding these inconveniences, it is better to use a trochar and canula very much curved, which, when introduced, hooks itself into the larynx or trachea, and is very secure in its position, with its internal aperture presenting itself completely to the centre, and in the axis of the trachea, in which it is placed, and so offering the greatest facility to the passage of the air during respiration and for the exit of mucus.

"This operation with the trochar and canula may be done

well, and almost in an instant, by any medical man,—is not in itself in any way dangerous,—not painful,—and almost invariably gives immediate relief, imposing very little inconvenience on the patient at the time or subsequently: and when the necessity for the artificial opening no longer exists, the aperture closes with facility, and leaves but little cicatrix.

"One supposed valid objection to the use of the trochar is the impossibility of seeing what structures are divided by it, and that you consequently run the risk of opening some blood vessel, which may bleed into the trachea and lungs. In the first place, no consideration of this kind ought to interfere to delay the puncturing the tube when danger appears at hand from suffocation, as the patient may be irretrievably dead by the loss of time in the more prolonged operation of cutting systematically through the structures to arrive at the larynx or trachea; but as the canula fits accurately the aperture made by the trochar, all the divided vessels which could pour their blood into the windpipe would be compressed by the canula, and so prevent the occurrence of hemorrhage. But granting that some blood might be admitted into the trachea, it would be, in all probability, in part, if not completely expelled at the next expiration; and even supposing it were not, the patient would only then be in the same condition as persons suffering from severe hæmoptysis, with this additional advantage, that the source of the hemorrhage might be made visible by withdrawing the trochar, and the hemorrhage arrested by rubbing the surface of the wound with nitrate of silver, by torsion of the vessel, or placing a ligature upon it."*

In most cases the inflammation and false membrane will be found to have extended too low for satisfactory relief to be obtained by laryngotomy in this disease, as well as in croup, and therefore an opening into the trachea may be necessary. This operation may be performed in the following manner:—

Tracheotomy.—This should be commenced by an incision beginning just below the cricoid cartilage, and extending downwards in the mesial line nearly to the sternum, to the extent of an inch and a half. The fascia must then be divided and the vessels carefully avoided. As soon as the thyroid gland is exposed, the patient should be directed to swallow, during which act the muscles of deglutition will raise the thyroid gland, when in an instant the surgeon should plunge his knife below the gland through two or three of the rings of the trachea, keeping its back upwards to avoid wounding the gland. A canula must then be introduced and

* "Guy's Hospital Reports," Oct., 1842, p. 454.

retained in the usual manner by tapes round the neck. This should not be removed too soon. Some patients have worn canulæ several years, and when they wish to articulate with a proper vocal sound, they apply the finger to the aperture, and thus avoid whispering by excluding the external air. Those who have not before performed this operation will be astonished at the depth at which the front of the trachea is found below the thyroid gland at the point where the opening is to be made, the distance being seldom much less than an inch from the integuments.

Mr. Tuson's Operation of Tracheotomy.—The following simple and successful operation was adopted by Mr. Tuson, at the Middlesex Hospital. It has a great advantage, where the seat of the disease will admit of it, on account of the ease and celerity with which it may be performed, and the almost entire absence of bleeding:—

"The patient sat up in a bed, with the trunk perfectly erect; the head was brought back, and allowed to rest upon a high pillow. An incision (one-third of an inch) was made through the skin and fascia, and between the muscles in the medean line, below the first cartilaginous ring of the trachea. The point of the scalpel was introduced directly towards the cartilage, and then carried through the cartilaginous rings of the trachea. The edges of the cartilages were kept open by blunt hooks on either side; the air freely escaped. A silver canula was now passed through the orifice, and safely fastened; only a small quantity of mucus escaped through the canula, and but a few drops of blood were lost during the operation."*

The immediate relief afforded by artificially admitting atmospherical air into the lungs, is most striking and gratifying, and ought to induce every humane physician to recommend, and every surgeon to acquire dexterity in performing such an operation. I have witnessed the recovery of the patient even after all the dreadful apprehensions of death from suffocation, and all consciousness have been obliterated by the deadly stupor, which nature kindly induces, and which benumbs all sensation before the last act of expiration takes place. On these occasions, the purple colour of the lips and skin has quickly disappeared; the patient has recovered his lost sight, and looked about him with delight; and the natural universal complexion and temperature of life have been restored by the rapid decarbonization of the blood, effected by the free re-admission of oxygen into the pulmonary air-cells.

When the disease is confined to the larynx, the following

* "Lancet," New Series, No. 1106, p. 206.

operation on the trachea will be found sufficient, and much more easy of performance.

Tracheotomy.—The patient being laid on a table or bed, with his head hanging over it, an incision two inches long must be made, beginning at the cricoid cartilage, and extending downwards in the mesial line between the sterno-thyroid muscles. Care being taken to avoid the thyroid gland, the sterno-thyroid muscles must be pushed laterally, in order to bring the trachea into view, when the operator must introduce his knife between the third and fourth tracheal rings, and divide one or two of them by cutting from within outwards, in order to afford sufficient space for the introduction of the canula.

SUBSTANCES SWALLOWED OR LODGED IN THE PHARYNX.

The substances most frequently swallowed by children are pieces of coin, or buttons. When they are small, they pass through the alimentary canal, and are discharged on the second or third day. Where they are unusually large, they may be detained during a very long and uncertain period in the stomach or intestines.

Case.—A child in the country, about four years old, swallowed a very large brass button. This was not discharged until the end of two years.

The most dangerous articles to swallow, are such as are small, round, as cherry-stones, glass-beads, &c. These and small plum-stones are liable to pass into the vermiform appendix of the cæcum, which is a kind of cul de sac attached to that intestine, and to produce death, with all the symptoms of strangulated hernia. Two such cases have come under my notice. The one occurred to a boy at school, who had swallowed a cherry-stone, and died at the end of a week, with symptoms of intestinal strangulation; the other arose from the swallowing of a small prune-stone. In both cases the appendix vermiformis was found after death in a state of mortification, which extended to the adjoining intestine.

Substances too large to pass may remain in the pharynx, where they excite constant uneasiness and inclination, with ineffectual efforts to swallow. When liquids are given, they are readily swallowed, and thus the nature of the accident may be misunderstood; and in such cases, if an attempt be made to pass a probang, the surgeon may be disappointed, on account of the variation in the size of the pharyngeal opening into the œsophagus, varying in children so much that in some, who are very young, it will be found impossible to pass such an instrument.

Small bones or pins sometimes lodge at some part of the opening into the pharynx.

Treatment.—As parents are naturally anxious, when their children have swallowed any hard substances, it will be proper to recommend them to have the discharges from the bowels carefully examined, until the substances have been discovered; and, for the purpose of expediting their passage through the intestines, a dose of castor-oil should be given every morning, during a reasonable time, till they have made their appearance, which, as I have said before, happens generally on the second or third day. When symptoms of strangulation, as pain in the bowels, with vomiting, succeeded by delirium, tenderness of the abdomen, and a rapid pulse, take place, the lodgment of a cherry-stone, or some other round or small substance, which may be known to have been swallowed a few days before, may be suspected. If the pain is seated in the right side of the hypogastric region, and the symptoms are urgent, and unequivocally denote inflammation, from obstruction in the vermiform appendix, the propriety of liberating the incarcerated substance should be taken into consideration; and, if such an operation is decided upon, I think it may be undertaken with every prospect of success, provided the state of the pulse and the degree of abdominal tenderness may not forbid the proceeding. A much more hazardous operation has several times been successfully performed on the sigmoid flexure of the colon, even when the disease producing the obstruction has been of a cancerous nature. A tumour was removed from the sigmoid flexure, including three inches of the intestine, which was united by the quilled suture, and the patient survived a year without a fistulous opening;* and the colon has been opened twenty-five times on infants, either at the cæcum or sigmoid flexure, for the cure of imperforate anus, or other purposes, with safety; and, in 1776, Pillore made an artificial opening into the cæcum in an adult whose lower intestine was obstructed by a cancerous tumour. Amussat, too, has lately proved the practicability and value of these operations in at least ten instances.

The best mode of removing substances lodging in the pharynx, is the exhibition of an emetic, which will be found invariably to answer the purpose.

Pins, &c., or small pieces of bone, adhering to the fauces, may be extracted by a pair of forceps, and sometimes by the finger and thumb, when a proper instrument is not in readiness.

Leeches are sometimes swallowed accidentally by children.

* Academie de Médecine, Paris, July, 1844.

The best remedy will be to administer, as soon as possible, a teaspoonful or two of common salt (chloride of soda), dissolved in a little water, and, at the end of ten or fifteen minutes, an emetic. Should not this expedient succeed, the salt must be repeated in a larger quantity, and, at the end of an hour or two, the emetic may be repeated. When leeches are swallowed, they either adhere to the pharynx or œsophagus, or remain in the stomach, attached to its mucous coat by their suction-apparatus, until they have satiated themselves with blood. If, therefore, the accident is discovered within two or three hours, the plan I have mentioned will not fail to dislodge and expel the intruder.

It should be observed, that the accidental deglutition of leeches, when applied to the tonsils or gums, may always be prevented by securing them by means of a silk thread passed through the middle of their bodies, without interfering with their appetite or power of sucking blood.

DISEASES OF THE ŒSOPHAGUS.

CONGESTION OF THE ŒSOPHAGUS.

I AM in doubt whether a congested state of the vessels of the œsophagus, found after death, should be considered a manifestation of disease in infants, as the continual use of that tube in deglutition has the effect of keeping up a constant excitement in the passage, and producing in its mucous membrane such an appearance as may be readily mistaken for a loaded and obstructed condition of the blood-vessels in the part. Inflammation, however, has been repeatedly discovered by Billard in the inner coat of the œsophagus, as well as muguet, ulceration, and gangrene.

INFLAMMATION OF THE ŒSOPHAGUS.

This disease is seated in the mucous membrane, and is generally the result of poison, or of an extension of inflammation from the stomach. The symptoms of this disease are similar to those of inflammation of the stomach, viz., constant vomiting, depression of strength, and paleness of the surface. The food is rejected undigested, and generally as soon as it is swallowed. As the disease advances, the face becomes livid, the infant refuses to swallow, or, if compelled against his inclination, he rejects immediately whatever he may have imbibed. In the meantime, rapid emacia-

tion takes place, and some time from the fourth to the seventh day the patient dies.

On examining the bodies after death, Billard found the mouth pale, the pharynx injected, the mucous membrane more or less of a vivid red colour, and the epidermis destroyed.*

Treatment.—Leeches must be applied along the left side of the trachea, and small doses of chloride of mercury given once in four hours, till the inflammation has subsided. The French practice of relying upon rice-water with gum, milk and water and cataplasms, will be found quite as inefficacious in Great Britain as they are in France, and should not be relied upon by British practitioners, except as adjuvants. Should the disease assume a chronic form, a small blister should be applied on the left side of the throat.

MUGUET OF THE ŒSOPHAGUS.

The symptoms of this are similar to those of the preceding disease. The child at first returns his food as fast as he swallows it, and at length altogether refuses it. Emaciation proceeds, and the pulse becomes more and more feeble. The child moans as when aphtha exists in the intestines, his face becomes contracted, and sometimes the lower extremities are distended with serum, effused into the cellular membrane. On inspecting the mouth, its lining integument will be found covered with muguet in patches, on various parts, particularly on the soft palate and the buccal mucous membrane, the presence of which may be suspected by a disinclination to take food, and by a discharge of saliva at the corners of the mouth. The marasmus daily increases, the pulse sinks, the extremities become cold, the face is expressive of misery, and life becomes soon exhausted.

Treatment.—Little relief can be afforded in this disease, unless it is discovered and actively treated at the commencement. The mouth should always be carefully examined, and, when muguet is discovered, it should be rubbed off the membrane by means of a piece of sponge tied to a piece of cane or whale-bone, and moistened with a lotion of bichloride of mercury, in the proportion of a grain or two to the ounce of water. The patient should also take a tea-spoonful of the following mixture once in four hours:—

R—Hyd. Bichloridi . . . . . gr. j.
Tinct. Opii . . . . . m. xii.
Aquæ font. . . . . ℥ iij.
M.—Capiat cochl. minimum 4is. horis.

* "Billard," p. 295.

This dose is sufficient for an infant. A child from four to seven years old may take double the quantity.

The patient should also take a powder composed of one part chloride of mercury and three of jalap, according to his age, every second morning.

ULCERATION OF THE ŒSOPHAGUS.

Billard has presented us with a case of this singular disease, together with the post-mortem appearances. The symptoms were such as accompany intestinal aphtha, and were complicated with induration of the cellular membrane, and an inflammation about the anus, always more or less connected with that form of aphtha.

In the mucous membrane of the œsophagus was found an ulcer six lines long and four wide, yellow at the bottom, with thick edges, which were red and bloody. The mucous membrane was destroyed at the ulcerated part, the basis of which extended to the cellular membrane. The stomach was slightly injected, and, near the ileo-cæcal region, there were several follicular plaits, of which some were slightly excoriated. The inner membrane of the large intestine was very red, considerably wrinkled and tumified, and very friable.

GANGRENE OF THE ŒSOPHAGUS.

In the case which Billard has described, there were no peculiar symptoms by which it might have been distinguished from the preceding diseases of the œsophagus. The child was troubled with diarrhœa, and rapidly declined with marasmus and collapse of the vital powers. These symptoms are common to dysentery and aphtha, and therefore not peculiar to the disease under consideration.

The mucous membrane of the œsophagus was almost entirely in a state of gangrene, and, in some parts, as black as soot.

DISEASES OF THE STOMACH AND BOWELS.

INDIGESTION, FLATULENCE, INWARD FITS.

Most delicate infants, especially those who are not suckled, experience, at a very early age, great inconvenience, pain, and misery, from the presence of undigested food in the stomach. The human

* "Billard," p. 301.

stomach is composed of three coats: the outer or peritoneal, common to all the abdominal viscera; the middle, or muscular; and the inner, or mucous or villous coat. We also find the stomach supplied with arteries, veins, absorbent vessels, and nerves. The peritoneal is a serous coat, from the free surface of which is secreted a fluid or halitus, intended to permit the different parts invested with that membrane to remain in contact with, or to move on each other, without acquiring adhesions. The muscular coat consists of numerous white, fibrous bands, which, during the digestion of the food, acting in succession in a vermicular peristaltic manner, agitate the food, and expose every part of it to the action of a solvent. This solvent is the gastric juice, which is secreted by the villous or free surface of the mucous coat, for the special purpose of dissolving the aliment, and reducing it to a pulp, which, from its resemblance to an expressed juice, is called chyme. As soon as this chyme is prepared, the lower orifice of the stomach, called the pylorus, or porter or gate-keeper, instinctively opens itself, and permits the contents of the stomach to pass into the first intestine, called the duodenum. The gastric juice is an inodorous, transparent, slightly viscid liquid, imparting a saline taste when first secreted, and containing, during digestion, a small portion of muriatic acid.* It is furnished by separate glands, varying in size from the ninety-second to the ninety-eighth of an inch, the largest being situated towards the fundus, and the smallest towards the pylorus. The secretion of the gastric juice, and the whole process of digestion, are performed independently of volition, under the influence of nerves proceeding from abdominal, ganglionic centres, designed to support and regulate the vital functions. The sensation of the stomach, the sense of hunger, pain, &c., proceeds from a cerebral nerve,—the pneumogastric, which, from its origin in the brain, and its ultimate distribution in the stomach, maintains a remarkable sympathy between those two important organs. Hence, we meet with vomiting in connexion with some disease or sympathy of the brain and cerebral affections, proceeding from gastric derangement. During the edental period of infancy, nature has provided, in the secretion of the mother's milk, a liquid food, not requiring mastication, and containing all the elements of nutrition,—albumen, oil, and sugar,—ready prepared for reception into the infantile stomach. When this aliment is imbibed in excess, it is regurgitated by means of a retrograde action of the muscular coat of the stomach, and the effects of indigestion are obviated. When, however, this does not occur, the food, whether milk or

* "Tiedman," "Gmelin," and "Liebig."

farina, is imperfectly digested, and, running into a state of fermentation, the stomach becomes distended by the generation of carbonic acid gas, and the peristaltic motion necessary for bringing every portion of the food into contact with the gastric juice is suspended or impeded, and the process of digestion rendered incomplete. The reduction of the food into chyme, which, when perfectly performed, is attended with an agreeable sensation, is thus productive of pain in the stomach, which is prolonged until that organ has relieved itself of its imperfectly concocted contents through the pylorus, which reluctantly admits the crude aliment into the duodenum or principal elaboratory of the chyle, where the primary elements of the blood are separated from the excrementitious mass, and prepared for absorption and transmission into the circulation. This prolonged uneasiness being mistaken by officious nurses for hunger, food is crowded into the stomach as often as the infant cries, and thus the mischief is hourly increased. Meantime emaciation proceeds, the cries of distress increase, and the countenance assumes a miserable aspect. A constant rejection of the food follows, and, in extreme cases, death may ensue from want of nutrition, a species of marasmus having been induced, and the absorbent vessels having removed every particle of fat, and the skin, universally contracted, adhering to the bones. The same alarming or fatal results have also occurred to infants who have been suckled with innutritious milk, or by a diseased nurse, in which cases a diarrhœa is apt to attend. After death, no traces of inflammation have been found;* but there has been observed a morbid softness, or what we may properly call decay, in the mucous coat of the intestines, arising, in my opinion, from their exhausted vitality or imperfect supply of nervous energy in the abdominal ganglionic centres. The first distant affection observable is a slight convulsive motion of the muscles of the eye-balls; next, spasm of the muscles of the larynx, a kind of hysterical suffocation, excited by the inferior laryngeal branch of the pneumogastric nerve; and, lastly, in some cases, after the third or fourth month, a peculiar spasm of the glottis, called laryngismus stridulus, or cerebral croup, during which respiration is suspended, and the child becomes discoloured in the face. These remote and severe effects of continued indigestion are not common, and are mostly connected with a consequent derangement in the upper portion of the alimentary canal, below the stomach, to which I shall allude when speaking on the subject of cerebral croup. The more frequent symptoms of indigestion are pain, eructation of flatus, a slight spasm in the

* Dr. R. T. Evason's "Diseases of Children," p. 281.

muscles of the larynx, rolling of the eyes, and a temporary dark appearance of the lips, arising from an obstruction to the return of venous blood through the jugular veins from the head. The connexion existing between the pneumogastric and phrenic nerves, gives origin to a very common symptom, when the stomach is distended, namely, hiccough, or a convulsive motion of the diaphragm. Rejection of the food, as soon as it has been taken, occurs at an advanced period of the disease, and arises from the morbid sensibility of the mucous coat of the stomach, the consequence of continued pain, and is a principal cause of the emaciation accompanying it. This intolerance of food not only interrupts the process of digestion, but also that of chylification, and all the tributary secretions into and along the alimentary tube. Hence the large intestines, from want of their natural distention, and the regular exercise of their muscular fibres, become torpid, and constipation is the result. In most cases, the slighter forms of indigestion and flatulence spontaneously subside as the child advances in age, generally about the fourth or fifth month; but those who have been afflicted during infancy, seldom through after life possess strong digestive powers, and are frequently, when females, the subject of neuralgic and hysterical diseases.

Treatment.—The objects to be attained in the treatment of this disease in its early and most simple form, are to effect the absorption of the gas, with which the stomach is distended, and to accelerate the action of the bowels. These purposes are speedily accomplished by the following mixture:—

R—Magnesiæ	℥ ss.
Sachari albi	℥ s.
Olei Carui	gtt. j.
Spiritûs Ammon. fœtid. . . .	℥ ss.
Tinct. Sennæ	℥ ss.
Liquoris calcis q. s. ut fiant	ℨ jss.

Half a tea-spoonful, or a tea spoonful, to be taken when the flatulence is troublesome.

The instantaneous relief afforded by this composition is sometimes astonishing, which I attribute to the rapidity with which the lime and magnesia attract and absorb the free carbonic gas.

When constant rejection of food and extreme emaciation occur, the best remedies are a fourth or half a grain of disulphate of quina three times a-day, and every third morning a powder composed of half a grain of the chloride of mercury, with a grain and a half or two grains of jalap. The quina has the same beneficial effect in removing the morbid sensibility of the gastric nerves as it mani-

fests in other neuralgic affections, and the purging powder, by removing morbid secretions and increasing the peristaltic action of the bowels, renders the alimentary mucous surface in a more favourable condition for completing the process of chylification. When diarrhœa occurs from unwholesome milk, another nurse should be provided, and should not this change have the effect of repressing the purging, a tea-spoonful of chalk mixture, containing half a minim of tincture of opium, may be given the infant twice a-day.

MUCO-GASTRITIS, OR INFLAMMATION OF THE MUCOUS MEMBRANE OF THE STOMACH.

In the preceding chapter on indigestion, I gave a general description of the structure of the human stomach. I now proceed to explain more minutely the natural formation and appearance of the mucous membrane in particular, as that is the principal seat of the functional and organic diseases of that organ; and a knowledge of its healthy state is necessary, to enable us to discover its morbid condition. The colour of this membrane is light grey or grey pink, shaded by venous ramifications, varying in size and numbers. The sub-mucous tissue, to which its adherent surface is connected, is rather thick, of a faded white colour, and over-run with blood-vessels, which are larger and less numerous than those on the free surface of the membrane. The inner coat of the stomach varies in different parts; being thinner, paler, and more transparent at the upper or larger, than the smaller or lower, extremity of the organ. In consequence of its tenacity in the former situation, the vessels of the submucous tissue are perceptible through it; and the connection between this tissue and the mucous membrane found more loose than at the lower end of the stomach. Hence the boundary between the larger extremity and the rest of the organ is often plainly marked by a line, where the character of the mucous membrane suddenly changes, its density increasing and its colour approaching that of a delicate pink, in proportion as it extends towards the pyloric orifice, and its adhesion to the subjacent tissue being in the same proportion progressively more firm. The free surface of the mucous membrane is covered all over with viscid mucus of variable density, sometimes transparent and sometimes opaque, the product of muciparous glands, which appear like flattened papillæ. This membrane will, in common with the other tunics, undergo great distension from food and flatulence, and from debilitating and relaxing diseases; and, on the other

hand, it may experience remarkable contraction from the powerful action of the muscular coat, which may continue after death, produced by inflammation in the peritoneal covering. When the stomach is fully dilated, its inner surface presents a smooth, polished appearance without any ridges; but during a state of contraction, it is thrown into numerous folds, which are longitudinal at the larger, and cross each other at the smaller curvature, so as to form large arcolæ.

The inflammatory diseases of the stomach have been separated of late into erythematous or muco-gastritis, muguet of the stomach, follicular inflammation with ulceration, gangrene, and sero-gastritis, or inflammation of the peritoneal coat of the stomach.

Muco-gastritis commences with chilliness, pale countenance, headache, constant thirst, and vomiting, which continue from thirty-six to forty-eight hours, unless sooner relieved.* After the vomiting has subsided, and re-action in the vessels of the skin takes place, the temperature on the surface of the body is greatly augmented. The thirst is so irresistible, that the child is constantly asking for water, or some other liquid, which is rejected from the stomach as soon as it has been swallowed. At this time the tongue is coated with a white, dense, fur, and the thirst becomes more intense. About the fourth day a profuse perspiration commences, and on the following day the patient becomes convalescent. In many cases, when the disease is complicated with muco-enteritis, it terminates in remittent fever, particularly when it is neglected or improperly treated at the commencement. Sub-acute inflammation of the recti-abdominis muscles often attends this disease, and may be discovered by tenderness, pain and fulness in the front of the abdomen, which is generally mistaken for gastric peritonitis; a very different disease, both with respect to its nature and treatment. The diagnosis is not difficult. When the inflammation is seated in the abdominal muscles, the feeling is partial, and extends no further than the pain and soreness, the seat of which is defined by an obvious thickening of the integuments occasioned by a temporary effusion of a lymphatic secretion. The pulse is never higher than from 102 to 112. Inflammation in the peritoneal coat of the stomach, on the contrary, is denoted by a more extreme tenderness on pressure, by the superincumbent integuments being uniformly unaltered in density, and by the pulse being never under 120 to 130, or 140, according to the age of the child, its rapidity being increased in proportion to the juvenility of the patient. There is another disease, to which muco-gastritis may

* "Barthez et Rilliet," tom. prem., p. 435.

be said to have some resemblance, and by which it is sometimes succeeded by sudden metastasis, namely, cerebral meningitis, or acute inflammation of the pia mater, one of the membranes of the brain. It may be distinguished from this disease by the absence of stupor, and the ghastly countenance and pale lips, which are its uniform, concomitant symptoms.

The morbid appearances met with after death from inflammation of the mucous membrane of the stomach, which is an exceedingly rare event, are a capillary injection, a red appearance observable in patches extended more or less, irregular streaks, which commonly follow the shape of the ridges of the stomach, and numerous red points, very nearly approaching each other. These are accompanied either with or without a swelling, and with a friable state of the mucous membrane, more or less distinct. Sometimes the mucous secretion is more thick, viscid, and abundant than in the natural state of the parts. The rest of the ramiform inflammatory redness is in the vessels of the stomach, that of the capilliform in their minute terminations, that of the red patches, striæ and red points in the mucous membrane, and especially, as has been remarked by Lernet, in the papillæ or villosities of that membrane. This erythematous inflammation will be more or less intense, in proportion as the internal membrane may be found more or less friable and tumid. The ramiform appearance denotes a slighter degree of inflammation, and the capillary points, the striæ, and red patches, one of a more severe character. These different degrees of the disease, from the most slight to the most serious inflammation and disorganization of the mucous membrane are found sometimes in the same individual. In pursuing these necrotomical investigations, care must be taken to avoid confounding these marks of inflammation with a passive congestion of the stomach, which is always discoverable at the lowest part of that organ, as in other parts of the body, when it occurs after death. This passive discoloration is always accompanied with a general congestion in the vessels of the alimentary canal, in the great abdominal trunks, and in the right cavities of the heart.*

Treatment.—As the vomiting is the most urgent symptom, when medical advice is required, a mustard poultice should be immediately applied during one hour to the epigastrium, or pit of the stomach. The mustard poultice is made by mixing a tablespoonful of flour of mustard and the same quantity of oatmeal with as much cold vinegar as will render the whole of the consistence

* "Billard," pp. 326, 327.

of a common poultice. As soon as the poultice has been removed, from two to five grains of chloride of mercury must be given the child, mixed with a little sugar, and at the end of three or four hours a small dose of salts and senna should be administered, and repeated once in two hours, till the bowels have been well relaxed. Should the first dose of this medicine be returned, a few minims of tincture of gentian may be added. As soon as the bowels have been evacuated, the citrate of potash should be given the patient once in four hours. Cold water is generally preferred to any other beverage, and may be allowed with safety, until perspiration commences. After the appetite has returned, broth, arrow-jelly, rice-pudding, and other light food may be taken. When the disease has extended to the bowels, and remittent fever commences, a proper dose of chloride of mercury and jalap, in the proportion of one part of the former and three of the latter, should be given every second or third morning.

The sub-acute rheumatic inflammation, sometimes accompanying muco-gastritis, must be treated by leeches; and when it continues after the gastric disease has subsided, the bowels must be freely acted upon by the exhibition of five grains of carbonate, and half a drachm of sulphate, of magnesia three times a-day, until the pain and soreness have ceased.

SOFTENING OF THE MUCOUS MEMBRANE OF THE STOMACH.

(See "Cholera.")

MUGUET OF THE STOMACH.

The inner membrane of the stomach, like that of the mouth, is subject to an acute inflammation, which terminates in the secretion of an opaque mucous deposit on its surface over the delicate epidermis. The symptoms are redness of the mucous membrane of the mouth, which is covered in patches with muguet; vomiting; constant pain or uneasiness; thirst; intense heat in the skin in some cases, and in others defect of animal heat; rapid emaciation, especially in the extremities and abdominal parieties, which latter are remarkably tense and tender upon pressure, and sometimes flattened. When the disease extends to the bowels, a purging is also present. The feet are generally cold, the pulse irregular, and the countenance expressive of pain and misery. At length a state of insensibility succeeds, interrupted by frequent uneasiness. After a period of suffering, extending to six, ten, or

fifteen days, the child becomes exhausted and worn out with pain, loss of sleep, and innutrition. When the temperature of the skin is much exalted, the disease is less alarming than when it is diminished below the natural standard. In the most dangerous cases the face assumes at an early period a death-like aspect, the lips being white, and the languid eyes sunk within their orbits; while the frigid and inanimate skin retreating with its bloodless capillaries, and the fluttering or imperceptible pulse, indicate to the experienced attendant the inevitable approach of death.

As muguet will always be found more or less in the pharynx, or some part of the mouth, as symptomatic of this disease, its diagnosis will not be difficult. The mouth and throat, therefore, should always be examined in doubtful cases.

The morbid phenomena observable after death are deposits of muguet on the tongue, pharynx, œsophagus, and stomach; the mucous membrane of which is intensely red, much thickened, and very friable. The epidermis covering the mucous membrane, which is invisible in a state of health, may be seen white, fissured, and formed into ridges more or less deep beneath the mucous secretion. The mucous membrane, when softening occurs, resembles jelly, and sometimes complete perforation of the stomach is discovered at the centre of the diseased part. The muciparous follicles and the villi are rendered distinct and prominent by the inflammation: and the mucous membrane, where it is not softened, is thick and easily lacerated.

Treatment.—In slight attacks of the disease, where re-action, denoted by intense heat on the surface takes place, leeches may be applied with advantage to the epigastric region; and in such cases, should the vomiting still continue, a mustard poultice may be afterwards laid upon the skin, as soon as the bleeding has subsided. Should the hemorrhage from the leech-bites prove troublesome, or produce collapse, which in this disease is much to be dreaded, the means recommended in another part of this work for suppressing this discharge must be immediately adopted. (See "Hemorrhage from Leech-bites.") If the child is of sufficient age to take the citrate of potash in a state of effervescence, it should be tried. In this milder form of the disease the infant may be suckled from time to time, with the view of supporting his strength by the possible absorption of some of the milk. When the food is constantly and completely rejected, barley-water with gum-arabic should be administered in small quantities.

The more dangerous variety of this malady, which is easily

discovered by its deadly influence on the vitality of the affected organ, by the fluttering and frequently subsiding and recurrent pulse, cadaverous aspect of the countenance and coldness of the skin, must be treated on the same principle as the severe form of cholera, namely, by the cautious exhibition of opium, with the view of relieving the agonizing pain, and supporting the vital powers. From two to ten drops of tincture of opium, according to the age of the infant or child, should be given once in four or six hours; and in case the medicine is rejected, it should be administered with a small quantity of warm starch in the form of injection by the lower bowel. In the same manner broth or milk must be injected once in two hours, together with a few drops of the medicine first mentioned. Leeches should on no account be resorted to in these cases, as the least degree of collapse from loss of blood may be fatal. After the pain and irritability of the stomach have been relieved, half a grain or a grain of chloride of mercury may be given once in four hours, in conjunction with the opium. This combination will accomplish all that can be effected to modify the inflammatory action, and to arrest the disorganization of an organ of vital importance to the animal economy. In the decline of the disease, when recovery is expected to take place, some benefit may be conferred by the exhibition of bark, or some other tonic; and animal food may be allowed as soon as the appetite and digestion have returned.

FOLLICULAR INFLAMMATION OF THE STOMACH.

The follicles of the stomach are commonly found isolated, and not grouped together as in the small intestines. Sometimes they are elevated, and resemble small, round, white granulations, slightly projecting and terminating in black points which denote their excretory orifices. At other times they are inflamed, considerably swollen, ulcerated, and disorganised. In the former case scarcely any symptoms are present. In the latter very dangerous or fatal symptoms of gastric inflammation may attend. Infants are most liable to this disease, which is marked more by the debility accompanying it, than by any peculiar symptoms, except the discharge from the stomach of a large quantity of bluish and bloody fluids.

Treatment.—The same treatment should be adopted for this disease as for muquet of the stomach. The danger will be found in proportion to the severity of the attack and the youth of the patient.

GANGRENE OF THE STOMACH.

This disease appears in the form of eschars or sloughs of various extent in the stomach. It is a very rare disease, and was first described by Denis; Billard has also published the following case of gangrene as the result of inflammation:—

"Alexandrine Liseman, âgié de trois jours, entre le 3 Mars á l'infirmerie, et presente l'état suivant: lorsqu' on ouvre ses langes pour l'observer, on trouve une grande quantité de sang noirâtre rendu par l'anus. L'enfant a également vomi de ce fluide en grande quantité. Cette petite fille est d'une forte constitution, ses membres sont chargés d'embonpoint, toute la surface du corps offre une légère teinte celérique. Les mouvemens sont presque nuls, la face est pâle, les lèvres décolorées, les tégumens flasques, le cri complet, mais très faible; le pouls d'une lenteur et d'une petitesse extrêmes. (*Eau sucrée, frictions sèches sur le corps.*) Le 3 Mars, le même état persiste; le 4, les selles sont melangées d'un sang noriâtre et poissé; l'enfant, qui n' a cessé de vomir, rend par la bouche des matières de même nature. Cependant on observe que la chaleur générale du corps a reparée, le pouls s'est un peu élevé, il bat 70 fois; la face est moins pâle, mais le cri est toujours faible. (*Eau vineuse sucrée.*) La mort arrive au déclin du jour."*

On examining the dead body, the integuments were found discoloured, and the mucous membrane of the stomach, not far from the cardia, was completely destroyed to a considerable extent, the centre of which was tinged with black blood, and the sides, irregularly fringed, were black, and appeared as if they were burnt. On the outside of this black patch the mucous membrane was thick, of a purple colour, and easily reduced to a pulp. All the inner surface of the stomach was covered with a semi-liquid matter of a brown colour, mixed with bloody streaks, and the mucous membrane beneath this matter was thin and discoloured, especially near the pylorus. The small intestines were tinged with yellow bile, and contained some clots of coagulated blood.

VOMITING.

The frequent regurgitation of food from the stomach of an infant is a salutary provision of nature, intended to obviate indigestion and other consequences of repletion. Vomiting is also

* "Billard Traité de Maladies des Enfans," p. 341.

symptomatic of other diseases, as inflammation of the stomach or bowels, or of the brain. Great care should be taken to ascertain the cause from which this symptom arises; for when it proceeds from the brain, it would be empirical and useless to apply remedies proper only for disease in the stomach. When vomiting is occasioned by congestion or inflammation in the brain, the patient has a pallid appearance, the face is contracted, the skin is cold, the pulse feeble and frequent, and sleepiness resembling stupor is constantly present, except during the act of rejecting the contents of the stomach. The sickness may be found to be a symptom of strangulated intestine, and therefore in all severe or doubtful cases the child should be carefully examined for this fact to be ascertained before the treatment is commenced. Some cases of marasmus are accompanied with vomiting.

Treatment.—As the proper treatment of this symptom must depend upon its cause, the reader is referred to the several diseases which I have just enumerated for more particular information.

HEMORRHAGE FROM THE STOMACH.

(See "Purpura Hæmorrhagica.")

DISEASES OF THE BOWELS.

After the food has escaped from the stomach it is received by the intestines in a pulpy or digested state, where it undergoes the farther process of chylification, or conversion into chyle. The intestines constitute a long variously formed tube, and are divided by anatomists into two portions, called the small and large. The smaller intestines are denominated the duodenum, jejunum, and ileum; and the larger the cæcum, colon, and rectum. To the cæcum is connected a small narrow appendage, a kind of cul de sac, which it is proper to notice, as it is sometimes the seat of fatal inflammation, from the lodgment of plum stones, or other small hard bodies. The duodenum, which is the recipient of the chyme, or digested food, from the stomach, is a short but important organ, a kind of second stomach, in which the process of digestion is more completely elaborated. At a short distance from the stomach the pancreas and liver pour their streams into this

intestine, and it is freely lubricated by numerous mucous follicles, observable in groups, resembling little flasks. Here the process of digestion ends, and chylification and lacteal absorption commence, and this latter operation is gradually prolonged in the jejunum and ileum. After the fluid contents of the smaller have entered the larger intestines, fæcefication begins; the thinner parts being absorbed, and the more solid deposited in the cells of the colon, and gradually propelled towards the rectum, through which they are ultimately evacuated in a solid state, having lost their nutritive properties. The intestines, like the stomach, consist of three coats: the serous, or outer; the fibrous, or middle; and the mucous, or inner coat; all which are connected with cellular membrane. The outer, or peritoneal, is a serous membrane, which is the common covering for all the abdominal viscera. The middle coat is formed of fibrous bands, some longitudinal and others transverse, which acting in succession, alternately contracting and dilating the intestines, maintain a vermicular or peristaltic motion, by means of which the contents of the alimentary tube are exposed to the action of the secernent and lacteal absorbent vessels, spread over all parts of the inner surface of the mucous coat. In addition to the vessels just mentioned, the whole of the intestinal canal is plentifully supplied with mucus, secreted by numerous follicles. The density of the intestinal mucous membrane varies, being greatest at the duodenum and diminishing towards the termination of the ileum. Its adhesion to the adjacent fibrous coat and cellular membrane is slight, except immediately below the pylorus, where the congregated glands of the duodenum connect it with the subjacent tissue. The isolated mucous follicles are not obvious except when exposed by disease. Where they are perceptible they form a very slight round projection, with a depression in the centre. The free surface of the mucous coat of the small intestines has a fleecy or velvet-like appearance, whence it has acquired the name of the villous coat. The villi may be seen in the natural state by means of a microscope of one inch focus; and in a state of inflammation or muco-enterite they are still more distinctly visible. Each villus consists of a capillary artery and vein, a lacteal absorbent, and a minute nervous fibril proceeding from the organic or abdominal ganglionic system. When magnified by inflammation, the villi have a dotted, red appearance; which is occasioned by the red globules of the blood being admitted and detained in the minute vessels, which were destined in a state of health to circulate only the colourless portions of that vital fluid. The villi in their natural state have a grey appearance, and when the digested food is brought within

their contact they become erect, and by an instinctive property inherent in them, derived from the abdominal nervous ganglia, they perform the office of separating and imbibing the chyle intended for the nutrition of the body. To assist the villi in this important function, nature has contrived to extend the inner surface of the small intestines by forming it more voluminous than the other coats, and affording it so loose a connection with them that it necessarily makes for itself plicæ or plaits. The plaits, which are constantly visible, present a tissue of meshes or areolæ, surrounded by projecting tortuous lines, which, being irregularly intercepted, form partitions between the areolæ. In infants, as well as adults, these plaits are found more numerous as we explore the lower part of the small intestines, and in both we may notice minute black points seated on all parts of the mucous membrane, which are sometimes so numerous as to give it a dark grey colour; being comparatively distinct and evident on the plaits where the membrane is extended and crowded, and almost imperceptible on the other more relaxed portions of the mucous surface. Those on the plaits are situated in the centre of the areolæ, where the orifices of the mucous follicles are found. It is proper that we should be aware of the existence of these dark-coloured points, although at present physiologists have been unable to explain their nature: some supposing them to be indications of some former inflammation or congestion; and others,* merely deposits of black matter similar to that which is found in the pulmonary parenchyma and the bronchial glands. I have sometimes found these black appearances of an angular form.

The large intestines commence with the cæcum, which is remarkable on account of its appendix and valvular apparatus, intended to prevent regurgitation into the ileum. This appendix undergoes but little comparative enlargement with the growth of the individual, and therefore it should be a particular object of solicitude with those who are intrusted with the care of children to prevent the swallowing of cherry-stones, &c., which are liable to enter it and to produce mortification.

The coats of the larger intestines are the same in number as in the smaller ones; but the villi are much less, and the mucous follicles more distinct. One of the principal peculiarities of the colon is the arrangement of its muscular fibres, which has the effect of producing its cellular appearance. This is owing to the longitudinal fibres being shorter than the intestines, in consequence of which the bowel is contracted into cells. The thick-

* "Barthez and Rilliet."

ness of the mucous membrane of the larger intestines increases from its commencement at the valve of the colon to its termination at the anus, where it has at least double the density which it possesses at the cæcum, a fact which should be had in view during our necrotomical investigations. In the colon and rectum this membrane is sprinkled with numerous mucous follicles, scarcely visible in a state of health. They appear under the form of a little grey submucous spot, presenting at its centre a small hole of a deeper colour, often marked by a black spot, which may be easily penetrated at the opening without tearing the adjoining membrane. The follicle itself, into which this small aperture leads, is beneath the mucous membrane, attached to the fibrous coat, which may be ascertained by scraping the membrane, when the traces of the follicle may be seen in the fibrous tissue to which its walls adhere.

Having described the principal points deserving of notice in the structure of the intestinal canal in its natural state, I now proceed to notice the diseases to which it is chiefly liable during infancy and childhood.

CHOLERA.

Vomiting, purging, and severe pain in the bowels, preceded by abdominal distension, are the characteristic symptoms of this disease. In delicate infants and children every paroxysm of pain is sometimes accompanied with convulsions in the muscles of the back or extremities. Cholera, which literally signifies a flow of bile, has been misapplied in designating this disease, and is calculated to mislead by the false pathology from which the term was originally derived. Dr. James Johnson, in his excellent work on the influence of tropical climates on European constitutions, has exposed in the following remarks the vulgar belief which I fear still pervades the medical profession, that the disease is produced by an inordinate secretion and discharge of bile :—

" In no disease has a *symptom* passed for a *cause* with more currency and less doubt than in cholera. From Hippocrates to Celsus, and from Celsus to Saunders, *bile* has been considered, without a hearing, as the original perpetrator of all the mischief. ' Bilis sursum ac deorsum effusiones,' says the first ; ' Bilis supra infraque erumpit,' says the second; and ' Cholera morbus,' says the last of these authors, ' may very properly be considered under the head of those diseases which *depend* on the *increased secretion* of bile.' (On the liver, p. 179.) Yes, I venture to affirm that cholera does *not* ' depend ' on an increase,

but on a diminution, and in many cases a total suppression of the biliary secretion," p. 234.

Although Celsus borrowed the word cholera from the Greek physicians, he considered the disease as an affection of the stomach and bowels, and merely stated that this appellation was adopted from the flow at first of limpid, or white, and afterwards black, and various other discharges accompanying it, which the ancients supposed to be biliary.

" A visceribus ad intestina veniendum est, quæ sunt et acutis et longis morbis obnoxia. Primoque facienda mentio est cholera; quia commune id stomachi atque intestinorum vitium videri potest. Nam simul et dejectio et vomitus est: præterque hæc inflatio est, intestina torquentur, bilis supra infraque erumpit, primum aquæ similis, deinde ut in ea recens caro lota esse videatur, interdum alba, nonnunquam nigra, vel varia."*

When children are attacked with cholera, the first discharges from the stomach and bowels consist of their natural contents. These are followed by serum, or a white fluid resembling thin gruel; and when the vomiting has continued some time the evacuations consist in part of bile, variously coloured, being either dark green or black. Hence it is obvious that the appearance of bile in the fluids ejected from the stomach and bowels is the effect only of mechanical compression on the biliary reservoir, produced by the violent contraction of the abdominal muscles during the act of vomiting. In severe cases a sudden and alarming collapse succeeds every paroxysm of pain, vomiting, and purging; the pulse, which is always slow, becomes imperceptible, the extremities are cold, the countenance is pale and contracted, and a state of nervous exhaustion follows, resembling a dying condition, and sometimes speedily ending in death. When proper remedies are applied, this collapse is in general soon followed by cessation of pain, vomiting, and purging, and by a return of the natural temperature, and perfect recovery afterwards rapidly takes place. Those cases which have been neglected, and in which the collapse has long persisted, are apt to be followed by fever, either of the remittent character or that of typhus, tedious in its progress and uncertain in its result.

In infants and children, as well as in adults, cholera is produced by a sudden suppression of the insensible cutaneous perspiration. Hence it occurs most frequently in the autumnal months, when the transitions from heat to cold are most remarkable, and when the vital energy of the vessels of the skin has been

* " A. C. Celsus de Re Medicâ," cap. xi.

diminished by the previous heat of the summer. When we consider that the periphery of the body is covered by the same kind of integument as that which lines the internal mucous passages, and which is only modified by its villous apparatus adapting it to the different circumstances of its locality, and when we recollect the important functions performed in the animal economy by these extensive tissues of vessels and nervous fibrils, we cannot be astonished at the sympathy existing between them, nor the disturbance which must follow any interruption of that harmony which is essential to health.

The true pathology of cholera I believe to be this:—In the first instance, a sudden suspension of the cutaneous circulation takes place, denoted by a sensation of chilliness and contraction of the skin. This is followed by a corresponding inaction or collapse of the abdominal ganglionic system and of the nerves and vessels of the gastric and duodenal mucous membrane. Hence we observe a remarkable diminution in the force and frequency of the heart's pulsations and in the aortal current, which is sometimes quite imperceptible in the extremities. When the collapse of the vital functions continues several hours without re-action, or when it returns after every paroxysm of pain, vomiting, and purging, the patient often dies before the circulation and nervous energy are restored. In ordinary cases the collapse is temporary, and is soon followed by a plethoric or congested state of the vessels of the stomach and upper portions of the intestines, which relieve themselves by a copious extravasation of serum and fibrine. In proportion as this unnatural effusion proceeds, the abdomen becomes full and somewhat tense, and the villi, suspending their proper digestive and chylopoietic functions, the appetite entirely fails. At length the distension and morbid contents of the stomach and bowels excite their fibrous coats into severe and painful contraction, and vomiting and purging follow.

The effect of irritation in the intestinal and gastric mucous membrane, in producing convulsion through the medium of the excito-motory system of nerves has been explained, when I was speaking on the subject of indigestion, and what are vulgarly called the inward fits of infants; and this will be more fully exemplified in the chapter on spasm in the glottis or cerebral croup. Hence, in cholera, the muscles of the legs or abdomen are excited into forcible and painful contraction, commonly called cramp, after every paroxysm of abdominal pain, as the disease advances. While the nutritive process is at a stand, and these morbid evacuations continue urgent and copious, and while the circulation and excitability are rapidly sinking, the secretions of the liver and kidneys

are suspended; and after recovery takes place, or when the disease terminates, as it sometimes does in dysentery, the evacuations from the intestines present a white or dirty white colour during some days, in consequence of the absence of biliary secretion. The blood having lost its accustomed supply, and being copiously drained by the deluge of serum poured out by the intestinal capillaries, emaciation is more rapid and remarkable from cholera than from any other disease. From these causes also intense thirst is a constant symptom.

The morbid appearances found after death by no means correspond with the severe symptoms observed during life. This may be accounted for, in great measure, by the rapid exhaustion of the living principle, especially when death takes place in a short space of time after the commencement of the attack. The stomach and duodenum being highly sensitive organs, are both more intolerant of disease than the lower portions of the alimentary passage. Hence, the only changes discovered in these parts are sometimes a florid injection of the villi, in which the red globules of the blood may be distinctly seen congested in their minute vessels, while dark, purple veins are crowded over the peritoneal tunic. In some cases, the only obvious result of the disease is a softening of the mucous membrane, which is much reduced in density, and has deceived some pathologists, who have attributed this phenomenon to the action of the gastric juice. I have already stated, that the secretions designed for digestion and nutrition are completely suspended during this disease, and therefore the softened, eroded condition of the mucous coat cannot be the result of the action of the gastric juice, but is probably occasioned by enervation, or a loss of vitality, resulting from the sudden exhaustion of the abdominal ganglionic nerves, from which it derives its living principle.

Treatment.—Our chief remedy in this disease is opium, which must be given immediately in a full dose. From five to twenty drops of tincture of opium, mixed with a few grains of sugar, will generally remain on the stomach, and afford relief in half an hour. A child above seven or eight years of age will require a larger dose. After this medicine has been exhibited, nothing else should be taken into the stomach, until the pain has ceased. Should this effect not take place within one hour, a larger dose of the medicine must be given. After the pain and vomiting have subsided, gruel, with a little brandy, may be given in a small quantity, and the patient should be kept in the recumbent position. Should the bowels not be moved on the day following the attack, a dose of rhubarb and magnesia must be prescribed.

When dysentery succeeds, two or three grains of rhubarb must be given once in four hours; and when this disease terminates in remittent fever, accompanied, as it always is, with offensive, intestinal evacuations, chloride of mercury and jalap should be given every second morning.

The typhoid fever, which follows cholera in children, is a degenerate remittent, which has been neglected in its primitive form, or been excited by an injudicious continuance of opiates, after the cholera has been subdued and a sub-acute muco-enterite has been established. In such cases, the purgative treatment must be adopted, as recommended for the preceding disease, and local bleeding with leeches must be had recourse to, when there is evidence of inflammation translated to the brain. Citrate of potash should be administered once in four hours; and as soon as the skin becomes moist, and mucus is deposited in the urine, disulphate of quina, with diluted sulphuric acid, should be prescribed.

HEMORRHAGE FROM THE BOWELS.

(See "Purpura.")

DYSENTERY.

There is no disease occurring to infants and children more frequent and fatal than dysentery, and none more commonly misunderstood and improperly treated. It commences with chilliness and audible rumbling and pain in the bowels, followed by mucous and sometimes bloody stools and tenesmus. The countenance is contracted, and during the paroxysms of pain it becomes pale. Loss of appetite is present at the commencement, attended with fulness and tension of the abdomen, which latter symptoms subside as soon as the purging begins. In some cases, especially when the disease is epidemic, and the intestinal discharges are bloody at the beginning, and the vascular excitement is sudden, the cerebral functions are disordered, and various muscles thrown into involuntary action through the operations of the excito-motory system. Hence we find in such cases delirium or stupor, with or without general or partial convulsions, of which latter the most common are those constituting opisthotonos, and proceeding from an excited state of the nerves arising from the anterior portion of the medulla spinalis produced by the eccentric impression made by the inflamed state of the intestine on the sentient or internuncial nerves. From recent experiments and discoveries of the late Sir C. Bell, and other physiologists, it appears that the nerves of

the spinal marrow are symmetrical, arising by two roots, the larger or posterior one expanding into a small ganglion, and the anterior root being destitute of such a conformation. The posterior or ganglionic portion is destined for sensation, the anterior for exciting muscular motion. The involuntary, muscular actions, which are of a remittent character, are called convulsions, and those which are permanent are denominated spasms. They may arise from disease in the spinal marrow or brain, when they are called by Dr. Marshall Hall *centric*, or from disorder near the termination of the sentient, spinal nerves, when they are called *eccentric* by the same physiologist. It is of great importance in conducting the treatment of diseases complicated with spasm or convulsions, to ascertain whether they are centric or eccentric; and I think this may generally be done, with attention, by a practitioner conversant with the modern anatomy and physiology of the nervous system. The impressions made on the nervous centres are more vivid in infants than adults; and although they may at first only produce functional disorder, yet this, when long unrelieved, may terminate in exhausted excitability or fatal organic disease. Delirium and stupor, with general convulsions, are most apt to occur when the ileum, or upper portion of the colon, is the seat of the disease; and opisthotonos, or continued convulsion of the muscles of the spine, when the lower portion of the latter intestine and the rectum are principally affected. The sympathy existing between the upper portions of the alimentary canal and the brain were noticed nearly twenty years ago by Sablairoles, who wrote on this subject a very interesting volume,* a perusal of which will well repay the medical reader. As the disease advances, unless re-action takes place, the skin becomes more cold, the pulse more and more feeble, the face cadaverous, the stomach rejects every thing, swallowing becomes impossible, and death terminates the scene within four or five days, and sometimes within forty-eight hours. In more favourable cases of this acute form of the disease, a return of animal heat takes place on the surface, which, exceeding the natural temperature, constitutes fever. This fever is of an irregular remittent form, and continues until the dysentery subsides, when it terminates in a relaxation in the vessels of the skin; unless chronic inflammation in the glands of the mesentery should supervene, in which case it will assume a distinctly periodical or hectic shape.

In the chronic variety of dysentery the attack is less sudden and alarming, and often proceeds unnoticed during several days or

* "Recherches d' Anatomie et de Physiologie Pathologiques, relative à la Prédominance et à l' Influence des Organes Dygestifs des Enfans sur le Cerveau."

weeks. Little or no discharge of blood or sickness is present. An attentive observer will notice several times daily a rumbling noise in the bowels, followed by a little pain, and a sudden, irresistible purging, accompanied by a temporary loss of the natural colour of the face, and disinclination to attend to amusement. These symptoms usually follow soon after every meal, and may hence be observed to occur with great regularity every morning after breakfast; abstinence from food, and the warmth of the bed during the night, affording comparative rest to the peristaltic motion of the stomach and bowels, and inviting a return of the insensible perspiration of the skin. The inflamed state of the mucous membrane of the colon renders the presence of its contents, as often as they are presented to it, a source of pain; which arises from the morbid sensibility of the parts and the forcible contractions of the muscular fibres, which produce a succession of spasmodic or temporary strictures in that intestine, or a kind of internal tenesmus, which, when the disease has extended to the ileum, I have discovered after death to terminate in fatal intus-susception. This chronic form of dysentery may continue several months, accompanied with increasing emaciation, occasioned by the irritable state of the alimentary canal, which continues as long as the chronic inflammation in the colon. In such cases, it is not uncommon for the purging to return only once in twenty-four hours, and thus deceive the inexperienced practitioner. In this chronic state I have known, especially in scrophulous children, the discharges to consist principally of muco-purulent matter in large quantity, secreted by the inflamed mucous follicles or villous surface, probably rendered granular, as other mucous coats are liable to be, from chronic inflammation. The quantity of muco-purulent discharge has in such cases much exceeded what could possibly proceed from ulceration.

The remittent fever, which follows chronic dysentery in children, sometimes terminates in a variety of typhus, especially when the patient has been exposed to that disease, or to morbid animal effluvia.

Every form of dysentery may be distinguished from diarrhœa by the presence of pain in the former, and its absence in the latter. It is of great importance for the physician to make this distinction, as the treatment proper for diarrhœa might be fatal to a child afflicted with dysentery; and it is of still greater importance for him to divert his attention from the process of dentition, both in reference to the cause and the treatment of the disease. There never was a greater popular error, into which, unfortunately, also, most medical practitioners have fallen, than that of attributing

dysentery to the irritation or alveolar inflammation occasioned by the teeth. In some instances, this prejudice is indulged by medical men to a most ridiculous and fatal extent, especially when the pressure of the primary teeth against the distended gums is represented by them as the cause of this or any other disease, both before any outline of the teeth is perceptible, and long after they have been completely formed, and have all of them made their way through the gums. In treating on spasm of the glottis, or the crowing inspiration of infants, I shall have occasion to explain the influence exercised by dentition on the intestinal canal; when I hope I shall be able to prove that the process has the very opposite effect to that which it is generally supposed to produce.

After death I have found the distended arteries forming numerous ramifications on the external surface of the intestines, particularly the colon, wherein the internal inflammation existed. I have also found that intestine thickened and doughy at the inflamed parts, and contracted in several places. The villi of the internal coat have been prominent and injected with blood globules, varying in colour from that of a bright scarlet to dark purple, approaching to black; in the former case, distinct, in the latter crowded together, and presenting an appearance of extravasation and abrasion, from which the bloody discharges had proceeded before death. These pathological appearances have not been confined to the colon, as I have found the ileum, to a certain extent, always involved in the disease: and the morbid appearances do not in every instance correspond with the symptoms observed during life, as has been noticed by some French writers, particularly Barthez and Rilliet, whose opportunities of witnessing post mortem examinations have been extensive.* The mucous follicles have sometimes been found ulcerated; at other times ulcers and perforations have been observed in the villous coat, in the chronic form of the disease.

Treatment.—The acute, inflammatory dysentery, when it is accompanied with fever, a white furred tongue and much discharge of blood, should be treated by leeches to the abdomen, and a mild, saline aperient. The best medicine is sulphate of magnesia, which may be given to an infant in the dose of ten grains, and to a child three or four years old, in the dose of half a drachm once in four hours, until the pain has entirely ceased, after which the purging will spontaneously subside. Opium and astringents should on no account be given in these cases, as such

* "Traité Clinique et Pratique des Maladies des Enfans," tom. prem p. 538.

practice would inevitably produce cerebral disease, and, if persisted in, the death of the patient. Tenesmus, when urgent, may be relieved by injections of warm water, and a hip bath made as warm as it can be borne. In India this latter is found one of the most prompt and useful remedies for this symptom. When these means fail, a full dose, *i.e.* half a drachm of sulphate of magnesia, dissolved in water, given to an infant, and one or two drachms to a child, to which ten or twenty minims of tincture of gentian may be added, will effectually remove this troublesome symptom. In adults it is found serviceable and safe to employ opiate injections, but I have never had occasion to resort to this practice for children, on whom opium always has a most pernicious effect in this form of dysentery.

The congestive form of the disease, or that which is from the first attended with a collapse of the vital powers, with a shrunk and cadaverous countenance, cold skin, a pulse scarcely perceptible, vertigo, and constant sense of fainting and inability to maintain the upright posture, is full of imminent danger. All these phenomena are referrible to the diminished energy of the abdominal ganglionic system, on the sound condition of which the healthy state of the circulation, and the generation of animal heat on the surface, principally, if not entirely, depend. The first object, therefore, should be to restore the circulation, artificially, by the use of a warm bath, at 100 degrees of heat; by applying hot flannel to the surface, and covering the patient with blankets; and by administering small, repeated doses of chloride of mercury and opium. In this state, also, the expiring vital functions must be revived, if possible, by such generous diet and stimulants as the patient can take, to assist these remedies in preventing the exhaustion which is followed by every intestinal evacuation. On the same principle, when tenesmus is severe, an opiate injection may be safely administered; for, while the vital powers are in a state of depression, there is no danger of transferring undue excitement to the brain until re-action has been established, and the circulation and excitability have been restored. As soon as these favourable results take place, a few grains of rhubarb and magnesia may be given every three or four hours; and, after the heat of the skin has been raised above the natural standard, should there be present considerable discharge of blood, with pain and tenderness of the abdomen, local depletion, to a limited extent, may be advantageously adopted.

For the chronic remittent and intermitting dysentery, the small doses of sulphate of magnesia, which I have before mentioned, repeated three or four times a-day, will constitute the only remedies

required to effect a cure, unless the disease should be complicated with ulceration of the bowels, or with tubercles or chronic inflammation, or specific disease in the mesentery. I have not met with any cases of chronic dysentery in children, which have resisted this treatment. Should any such occur in the practice of others, I should recommend a few grains of hydrargyrum cum cretâ, the eighth of a grain of ipecacuanha, and one grain of rhubarb, every night; and, if these should fail, after a trial of ten or fourteen days, one grain of sulphate of iron, with a very small dose of opium, twice or three times a-day, which practice I have found successful in adults.

The most formidable complications, are epilepsy and opisthotonos, both of which are most liable to occur to very young infants, which is owing to their comparatively greater susceptibility for receiving impressions on the nervous system than is found in children and adults. Robust and plethoric infants are most obnoxious to epilepsy at the commencement of inflammatory dysentery. Such infants are subject to the same attacks from any sudden excitement in the circulation, as from small-pox, pneumonia, &c. Epilepsy, under such circumstances, is much less alarming than when it takes place at the decline of the disease. Convulsions of any kind are indeed generally fatal after a long or severe illness, when the brain has been deprived of the supply of blood requisite for the performance of its functions. I have never seen convulsions in the congestive form of dysentery, nor re-action taking place sufficient to produce any sudden vascular excitement. The treatment should consist of the application of a few leeches to the temples; a lotion composed of one part of rectified spirit, and three parts water, to the head; and a persevering internal exhibition of sulphate of magnesia, in the doses before mentioned, once in three or four hours, until the pain has entirely ceased. Should the patient be very young, and of an excitable, nervous constitution, and of spare habit, and the epileptic convulsions of short duration, it would be advisable to omit the leeches, and to wait the effect of the medicine; as such children are liable to convulsions from pain only, without experiencing any decided antecedent vascular turgescence. On the other hand, when plethoric children are in a state of impending suffocation, and black in the face, from a suspension of the action of the muscles of inspiration, one of the jugular veins should be opened without delay, to remove the alarming effects of the sudden interruption to the circulation in the brain; and cold water should be dashed on the cheek and face and the soles of the feet, to excite the respiratory nerves, and give an impulse to the suspended process of inspiration. With the

same intention, sal volatile or sesquicarbonate of ammonia may be applied to the nostrils.

Opisthotonos, as I have stated before, occurs chiefly to very young infants, when dysentery is confined to the rectum and lower part of the colon. Its immediate cause appears to be the severe pain and distress occasioned by the tenesmus. In addition to the use of the warm bath, five grains of chloride of mercury should be immediately administered. In this dose the medicine acts speedily and effectually in removing the tenesmus, together with the spasm or continued convulsion of the muscles of the back; and such a dose may be safely given to an infant a few months old, under these urgent circumstances. In short, no time should be lost in affording relief to so exhausting and rapidly fatal a disease.

REMITTENT FEVER.

This is one of the most frequent terminations of chronic dysentery, especially when the latter is allowed to run its natural course. It is also found to be frequently the sequel of other diseases, attended with inflammation of the intestinal mucous membrane, as measles, scarlatina, &c., by which its natural secretions are interrupted, and nutrition suspended. In its most unfavourable shape it is found to proceed from malaria, and from the effluvia of those labouring under typhus in its contagious form.

"This disease appears in children from the age of six months to that of ten or twelve years. It is first observable by a gradual loss of appetite and strength, by an inaptitude for exertion, an irregularity in the bowels, and a wasting of the whole body. After these symptoms have continued for some time, the patient has several accessions of slight fever, more particularly towards evening, during which he evinces a strong propensity to sleep, seeks a recumbent posture, and is exceedingly peevish. The tongue at this period has seldom an unhealthy appearance, because digestion is not yet completely suspended. The pulse is 100, or more, in a minute.

"In this situation the patient will sometimes continue during several weeks, and, at others, will be suddenly attacked towards evening with a more violent paroxysm of fever, which is frequently considered by the parents to be the commencement of his disease. It is generally preceded by a shivering fit and vomiting, but seldom terminates with perspiration, the skin being remarkably dry through nearly the whole course of the complaint. The pulse, during the paroxysm, beats from 130 to 160 in a minute; and the

respiration is performed with corresponding velocity. The cheeks are flushed, and the sleepiness is increased to an extreme degree, but is frequently interrupted with starts, expressions of pain about the belly, slight delirium, and sometimes with convulsions. A cough is noticed at this time, which generally continues through the whole of the illness, together with an almost constant picking of the skin about the eyes, nose, lips, and fingers.

" The duration of the febrile paroxysm is usually one or two hours, but in some instances will extend through the whole night, after which a remission takes place, and the patient becomes more wakeful, and inclined for amusement; or it will sometimes terminate in sleep of a refreshing nature. The pulse now beats from 120 to 130.

" The return of these exacerbations is uncertain; most commonly there is one in the forenoon, one in the afternoon, and one in the night. The last is usually the longest and most violent. When the fever runs very high, we have much difficulty in observing any distinct remissions.

" There is much variation in the temperature of the body; the head, belly, and palms of the hands being more hot than any other parts on the surface."*

In some instances, the " head is more affected, even to a degree of raving, and one or other of the excretions is always remarkably increased. After this, the patient becomes quieter than usual, says little, complains of nothing, and is not disposed to answer questions. He seldoms asks for any thing, but in general takes his food or drink when it is offered him. The trunk of his body keeps to one posture, and he rarely moves his lower limbs; but his arms and hands are almost constantly in motion when he is awake. Sometimes he is flinging about his arms; sometimes he lies with his hands stretched down on the lower part of his belly, and his knees drawn up. At other times, he is much employed in picking, not only his nose and lips, but even his tongue, eyes, and other parts of his face, till they become sore and chopped; and he gapes that he may reach his tongue, for he has not the power of putting it out of his mouth. At last, his indifference as to answering questions ends in an impossibility of giving answers, for he is deprived both of speech and voice; and his jaws, in some cases, are so locked, that nothing but liquids can be got into his mouth, and these with a good deal of difficulty. At this period, which seems to be the height of the disease, he slumbers, and is most composed, as usual, during the exacerbations; and, in the

* " A Practical Treatise on the Remittent Fever of Infants," by J. M. Coley. 1813.

remissions, he performs the same gesticulations. From the time that there are settled symptoms of lowness, his eyes are reddish, dull, and inattentive; his countenance is marked with distress; his tongue, gums, teeth, and lips, are covered with a blackish fur; he is particularly uneasy before stools, or great explosions of wind; his urine and stools are involuntary, and yet he is quite sensible. The state of the belly is uncertain, but the stools are always unnatural, either as to their colour, consistence, contents, or smell. Most commonly they are morbid in all these respects, for they are either whiter or darker than natural; they are always more offensive; are seldom without a great deal of slime; and sometimes consist of nothing but slime."*

"Digestion seems perfectly at a stand, for the food which is taken into the stomach will often be brought up unaltered, though it shall have remained down a considerable time. The intestines also seem to be in a manner paralysed; they exert no action on the food; for it passes off like a mass of putrid vegetable and animal matter, which has been some time subjected to heat and moisture, without its having the smallest resemblance, either in appearance or smell, to those fæces where the powers of digestion have been exerted.

"When the disease has continued some time, the appetite is so totally destroyed, that, for six or eight days together, I have known the whole nourishment consist of about half-a-pint of toast and water in the twenty-four hours."†

"I have frequently known that the patient has taken nothing but water, excepting his medicines, for four or five weeks together, and yet has ultimately recovered.

"In the above account are comprised the symptoms usually met with in this complaint, but I have remarked others, which I believe have not been noticed by preceding writers. These are, the appearance of petechiæ in an advanced period of the disease; and a discoloration and separation of the epidermis. Though dangerous, they are not considered by me as fatal symptoms.

"Dr. Pemberton has described a scaly separation of the cuticle peculiar to enlargement of the mesenteric glands. In the cases of remittent fever in which I have witnessed this appearance, there has been either a total absence of disease in the glands of the mesentery; or, when any has been present, it has also been accompanied with the former complaint, and with evident disorder in

* "Treatise on the Infantile Remittent Fever," by W. Butter, M.D. Callow, London.

† "A Practical Treatise on Various Diseases of the Abdominal Viscera," by C. R. Pemberton, M.D., 1806. G. and W. Nicol, London.

the secretions of the liver and intestinal canal; and the latter has always been the most conspicuous and urgent malady. This appearance on the skin has therefore, in my practice, not been confined to enlargement of the mesenteric glands, but been present in both diseases; and I think there is much reason to believe that it proceeds from the heat and dryness of the skin, which in both is intense after the fever has been of long continuance and become violent. A desquamation of the epidermis, of a similar nature, but without discoloration, manifests itself in scarlatina, when it is on the decline, and in erysipelas; in which complaints the skin is intensely hot and dry. It is probably a death or destruction of the cuticle, in consequence of too great heat, and of a defective secretion of the unctuous fluid, which, in a state of health, is found over the surface of the whole body, and designed to prevent undue evaporation. The functions of the sebaceous glands are thus impaired in many other cutaneous affections.

"The remittent fever often, without having exhibited any previous symptoms of visceral derangement, immediately succeeds scarlet fever, measles, and other acute diseases. When it happens to accompany the hooping cough, the latter is always protracted by it, and increased in violence.

"Worms are sometimes discovered in this disease, and are commonly considered by the friends of the patient as its principal cause. I have uniformly remarked that in these cases the fever is of longer duration, and the emaciation and debility are greater, than in any other, which will be explained in another part of this treatise.*"

"When the fever is on the decline, the exacerbations grow milder and shorter, and at last disappear one after another; the appetite returns by degrees, and in time becomes very craving; the patient has long and refreshing sleeps, attended with a general moisture of the skin, more or less copious; the skin continues soft, and in general moist at other times; the pulse loses of its frequency from day to day, till it becomes quite natural; the urine breaks, and deposits a copious gross sediment, leaving the body of a straw-colour; the sediment becomes afterwards more digested, being of a polished smoothness, with gross covering; at length the sediment gradually diminishes, till the urine is left absolutely colourless, and without contents; and, finally, the stools approach more and more to a natural state, till they become as in health.

"This is the order in which the several functions of the body return to a state of health. In some cases, however, the pulse

* "Coley on Remittent Fever," p. 8, 9, 10, 11.

continues quick after all other symptoms of disease are gone, and till the patient has perfectly acquired his usual strength.

"The ordinary duration of the fever is from eight or ten days to a fortnight or three weeks. Some few cases last longer."*

"I have known the fever continue two months in several instances, and in most, if the derangement in the bowels has been very great, it will be found to last from a month to six weeks."†

The principal diseases with which remittent fever is liable to be confounded, are, hydrocephalus internus, and chronic inflammation, and enlargement of the glands in the mesentery. The symptoms denoting hydrocephalus internus may be confounded with remittent fever, both before and after effusion has taken place. In the former, the pain in the head is acute, and expressed by a sharp, shrill noise; while the cries of a child ill with remittent fever, are like the silly, inarticulate ejaculations of a paralytic person, whose faculties have been impaired by his disease. In hydrocephalus, the patient directs his hands towards his head during every paroxysm of pain; in remittent fever, he tosses his arms about the bed, and, generally, at the same time draws up his legs, and stretches them across the bed like his arms. When effusion has commenced in the brain, it is denoted by squinting, interrupted or stertorous breathing, paralysis, and insensibility to external stimuli. On the contrary, in remittent fever, the patient has a vacant expression, and is easily roused, appearing sore when rudely handled.

Remittent fever may be distinguished from chronic inflammation of the mesenteric glands, by the accession of fever occurring in the latter, generally in the evening only; by the child being more restless at that time, instead of being inclined to sleep; by the intestinal evacuations having but little alteration from their natural appearance; by a peculiar mark of distress in the countenance; by the sleep in mesenteric disease, after the paroxysm of pain has subsided, being for the most part undisturbed; and by the length of time the complaint has existed. The fever accompanying the disease in the mesenteric glands is of a hectic nature, and always periodical, gradually terminates with profuse perspiration, and is free from delirium.

With respect to prognosis, the most favourable symptoms are a healthy appearance in the stools, a return of appetite, the intervals between the febrile paroxysms becoming longer, a subsidence of the abdomen, and the temper becoming more tranquil. The most unfavourable, are the accessions of fever being incessant,

* "Butter." † See "Coley on Remittent Fever."

the abdomen becoming greatly enlarged or tympanitic, the appearance of petechiæ, and the stools being of a dark green colour, mixed with blood, which indicate such an extreme deficiency of fibrine in that fluid, as to render it no longer proper for the purposes of the animal economy. The state of the pulse will often be a guide in the formation of our prognosis. When it is irregular, intermitting at every sixth or seventh stroke, great danger is at hand. If this should proceed from effusion on the brain, death will almost uniformly follow; when from debility alone, considerable hopes may be entertained of recovery, by the employment of proper remedies. When the pulse is slower than the natural standard, according to the age of the patient, the danger will be greater than if it should be much accelerated.

It was the opinion of Dr. Pemberton,* who paid considerable attention to infantile remittent fever, that it arises from simple derangement in the intestines.

In this opinion he was supported, as far as remittent fever, proceeding from simple intestinal irritation, is concerned, by a post-mortem examination he had an opportunity of witnessing. He found the intestines exceedingly distended, and the mesenteric glands a little enlarged; but no inflammation was detected either in the bowels, peritoneum, or any of the viscera, nor was there any effusion into the abdomen. When the disease can be traced to malaria or animal effluvium, and the patient has been confined to a small and ill-ventilated apartment, I have repeatedly observed that some of the attendants have been attacked with contagious typhus, which has proceeded from the inhalation of an animal poison thus generated. In France, remittent fever is attributed to gastro-enteritis alone; and there is no doubt many cases, as I have observed before when speaking of it as a sequel to dysentery, may be traced to this cause.

Treatment.—The simple form of remittent fever will only require a proper purgative every second morning, for the purpose of removing the undigested food and vicious secretions from the bowels. This object will be best obtained by chloride of mercury and jalap, in the dose of one part of the former and three of the latter. Of this composition, a child one year old may take four grains; two years old, eight grains; three years old, twelve grains; and four years, and upwards, fifteen or sixteen grains. Twice or three times, on the intermediate days, a small dose of sulphate of magnesia, dissolved in infusion of roses, will be found useful to keep up a regular action in the bowels. This treatment must be persisted in

* "A Treatise on the Diseases of the Abdominal Viscera," by C. R. Pemberton, M.D.

till the intestinal discharges have become healthy, after which the natural peristaltic action of the bowels will be found sufficient, with an occasional dose of sulphate of magnesia, to maintain an open state of the bowels, without any farther interference. In some of the most severe cases of this kind, the colon will be found so distended with an accumulation of successive deposits of fæcal matter, as to require the most persevering use of purgatives. In some instances, I have witnessed an astonishing quantity of solid, offensive fæces thus forced away, with manifest relief to all the symptoms. In such cases, castor-oil may be substituted for the powder occasionally, with advantage. The following case will illustrate the good effects of the purgative treatment:—

Case.—August 6, 1844.—Master C. W., eight years old, had been ill with remittent fever three weeks before I was called in to meet the medical gentleman in attendance. I found the disease began with dysentery, which was suspended by some opiate medicine and generous diet; and I was informed that during three days at that period he took two bottles of port wine. The cessation of the dysentery and this stimulating treatment were followed by stupor and retention of urine, for which the catheter was required twice daily during two days. The bladder being then allowed to become over-distended, relieved itself by an involuntary discharge of urine, which continued when I saw him. He answered questions, when roused, like a person suffering from concussion of the brain, and he retained the faculty of deglutition. He displayed the characteristic symptoms of picking the nose and lips, and every now and then throwing his arms across the bed, and alternately drawing his legs up and down. He was extremely emaciated, and had several large ulcers on the back between the shoulders and near the nates, from pressure and constant decumbiture. During the febrile exacerbations the heat of the skin was intense. He had great abdominal swelling from intestinal tympany. I directed him to take three grains of chloride of mercury and nine of jalap every second morning, and a small dose of sulphate of magnesia and infusion of roses once in four hours. On the eighth the discharge of urine became voluntary. The stools were dark and offensive. The heat of the skin and the picking of the lips and nose were less. He had more consciousness, and answered questions better. On the tenth, the bowels being confined, I prescribed repeated doses of castor oil, which relieved the peevishness and irritability, and reduced the abdominal swelling. The calomel and jalap were repeated the next day, and on the twelfth I found, on examination, a collection of serum within the abdomen, and an increase of the tympanites. The stools remained

offensive, smelling like rotten cheese. He had perfect consciousness, but still employed himself with picking his lips and nose. He was able to take milk, and coffee diluted with it. On the fourteenth, from the continued use of purgatives, a large quantity of stale, offensive, solid stools, nearly filling a chamber-pot, was discharged. This was followed by evident relief to the swelling and tenderness of the abdomen, and the fever and irritability of the patient disappeared. On the sixteenth, the calomel and jalap and castor oil having been continued on alternate days, I found him able to take food voraciously, and rapidly recovering his flesh and natural appearance.

When tympanites commences, castor oil will be found the most suitable aperient, and saline purgatives should be omitted on account of their tendency to generate gas in the intestines. The young physician must not be deterred from the use of castor oil by the presence of tympany, as he will find no other remedy except a proper purgative or aperient will afford any relief to this symptom. He will find the flatulent distension of the colon will regularly subside in proportion as the solid contents of the bowel are discharged by means of the castor oil. Castor oil will also be found the best remedy for pain in the bowels, which is apt to occur at times, and is best relieved by a proper purgative. Dr. Robertson recommended opium for this symptom, to which practice I have a decided objection on account of its tendency to disturb the functions of the brain, and the fear I entertain of the induction of hydrocephalus, which, as a concomitant of this disease, is uniformly fatal. Should petechiæ, or bloody evacuations occur, disulphate of quina with diluted sulphuric acid must be administered in some proper vehicle. In many cases the involuntary discharge of urine, which is a disagreeable and troublesome symptom to the attendants, may be prevented by the timely and regular use of the catheter once in eight hours during the continuance of the paralytic state of the bladder; and the physician should from time to time examine the hypogastric region to ascertain the state of the bladder and afford an opportunity for the adoption of the precautionary measure I have mentioned. When from extreme emaciation, or the neglect of the attendants, excoriation is apprehended, undiluted liquor plumbi diacetatis is a very useful application. It has the effect of hardening the skin, and will often prevent ulceration; and in this state of the integuments, before sloughing commences, it has a great advantage over the plasters usually applied. The water-bed will also be found a very useful remedy.

In addition to the essential parts of the treatment, much auxi-

liary relief may be afforded by the kind attentions of the physician. For instance, when the hot stage of the fever is at its height, and the patient is excessively restless, great comfort may be conferred by the application of tepid water to the face and hands by means of a sponge, which in a few minutes, by the evaporation that takes place, will have the effect of modifying the feverish heat and of restoring comfort and tranquillity.

After the fever has subsided, the appetite, which had been entirely suspended, returns in full vigour, and the patient feels disposed to take food almost every hour. This propensity for food must not be allowed to be fully gratified, as the stomach may be over-loaded and become again disordered.

With respect to diet, it is seldom the patient can be induced to take any thing except water during the continuance of the fever. On its decline, arrow-jelly, broth, and other nutritious food should be given to restore the patient's strength.

The other forms of remittent fever may require some modification in the treatment. When symptoms of a sub-acute inflammatory character are present, as shooting pains in the head or in the muscles of the abdomen, at the commencement, the severity and duration of the subsequent fever will be greatly mitigated by local bleedings as in inflammatory typhus; and the same practice should be adopted when gastric or gastro-enteritic inflammation is the precursory disease.

When remittent fever arises from the contagion of typhus, the same regular exhibition of purgative medicines will be required as when the disease proceeds in the first instance from gastric and intestinal irritation, the mucous membrane of the alimentary canal undergoing the same morbid condition after the disease has been established, to which circumstances the remittent character of the fever is probably owing. In those cases proceeding from animal poison inhaled into the lungs, the vital powers are much more reduced than in other species, and therefore more circumspection will be necessary with respect to the continuance of the purging system, which should be omitted or suspended as soon as a relaxation of the vessels of the skin takes place; otherwise there will be danger of effusion into the cellular membrane of the lower extremities, or into the ventricles of the brain, producing hydrocephalus or convulsions, either of which would be certainly fatal. In these cases, and at this crisis, small doses of disulphate of quina and diluted sulphuric acid, together with a moderate allowance of wine and water, or weak beer, should be administered to the patient at proper intervals, and the bowels relieved, when necessary, by a small dose of castor oil, or sulphate of magnesia.

In the latter stage of severe attacks of remittent fever, the voice is sometimes imperfect or completely lost; and I have known three months elapse before perfect articulation has been restored. For this infirmity no particular remedy will be requisite, for the voice will be restored as perfectly as ever after the bodily strength has been replenished.

For more minute information on this disease the reader is referred to my "Treatise on Remittent Fever of Infants," 1813.

ACUTE MUCO-ENTERITIS, OR DIARRHŒA.

The symptoms of this disease are a fulness of the abdomen, followed by a frequent and copious discharge of acrid serum from the bowels, often excoriating and inflaming the skin adjoining the anus; remittent fever, denoted by shivering alternating with great heat of the skin: a white fur on the tongue; thirst; sudden debility; slight tenderness of the abdomen, felt only from strong pressure; and a frequent pulse. At the commencement the alvine discharges are yellow or green. The former colour is owing to the presence of bile in the intestines before the attack, and the latter to the accidental admixture of acid, or the exhibition of some preparation of mercury. After the disease has continued a few days, the stools become white in consequence of the rapidity with which the intestines hurry away their contents, the suspension of the biliary secretion, and the admixture of flakes of lymph, the product of the inflammation of the mucous coat. In some cases the intestinal discharges continue limpid and serous. The pain attending this disease is of a sub-acute character, and sometimes the patient is entirely free from pain. When the disease is protracted it is apt to terminate in the remittent fever of infants, or marasmus; but when it terminates fatally, vomiting often occurs, the skin becomes cold, the face is contracted and presents a cadaverous aspect, the extremities are discoloured in patches, some of which are of a pink and others of a light purple colour, while the superficial veins, ceasing to circulate the blood, become more obvious than in health from the unresisted pressure of their stagnant contents. In some fatal cases the alvine discharges are bloody.

The morbid appearances found after death are a softened and friable state of the mucous membrane in some portions of the small intestines or ascending branch of the colon, accompanied with marks of inflammation in the adjoining villous structure, and a congested state of the vessels in the corresponding intestinal

serous membrane. This pale coloured softening may be distinguished from that which is the result of long continued atrophy and enervation by the presence of decided marks of accompanying inflammation, and by the disorganised structure being uniform and continuous, instead of its being interspersed with portions of sound membrane of the natural colour. Sometimes the mucous membrane at the seat of the disease is of a deep red colour, soft and friable, and permitting the blood to escape on the least touch.

Muco-enteritis may be distinguished from dysentery by the absence of violent pain, tenesmus, and mucous or bloody stools. It must, however, be observed, that bloody stools sometimes appear towards the fatal termination of muco-enteritis when the mucous coat is in a state of disorganization.

The nature of this disease is the same as that of cholera, the only difference consisting in their respective localities. In cholera, the stomach and duodenum are the principal seats of the serous effusion. In diarrhœa, the disease is chiefly seated in some part of the jejunum or ileum. It may be distinguished from the chronic form of muco-enteritis by the absence of muco-purulent, or purulent evacuations.

Treatment.—The best treatment at the commencement of the disease consists in the exhibition of small doses of opium, in conjunction with a diaphoretic. The following will be found an useful and agreeable formula for a child about ten years old:—

R—Pulv. Contrajervæ Comp. . . . . ℥j
Liquoris Ammon. Acet. . . . . ℥ij.
Syrupi Simplicis . . . . . ℥ss.
Tinct. Opii . . . . . m. xl.
Aquæ Menthæ Pip. . . . . ℥iijss.—M.
Capiat cochl. j. largum 4is. horis.

The patient should be confined to bed, and encouraged to take frequently a draught of warm tea or barley-water with gum arabic, for the purpose of promoting perspiration. When this treatment is adopted sufficiently early, the diarrhœa soon subsides, the rigors gradually cease, and either a continued fever follows, which may last about twenty-four hours, and terminate in profuse perspiration, or this latter symptom of approaching recovery takes place without the intervention of the continued febrile state. The disease, when thus treated, will very rarely proceed in an unfavourable course. Should the diarrhœa continue, and tenderness and pain be felt in the abdomen when deep pressure is used externally, a few leeches should be applied on the abdominal surface, and two or three grains of hydrarg. cum cretâ, or one grain of chloride

of mercury, should be given in conjunction with two grains of compound powder of ipecacuanha, once in four hours, until the purging and tenderness have subsided, or the mouth, which is rarely the case, becomes affected by the mercury.

As long as the inflammation in the mucous membrane continues, an entire loss of appetite will exist. It will therefore be improper and injurious to urge the patient to take food; and the stomach, as though conscious that unassimilated aliment would be offensive to the villi of the intestines, while engaged with inflammation instead of their proper secreting and absorbing functions, suspends its office. As soon, however, as the inner surface of the intestines is restored to its natural state, the stomach resumes its peculiar secretions, and the appetite is restored. Broth and animal and vegetable jellies may now be provided for, and taken by, the patient with advantage. Milk, thickened with arrow-powder or fine flour, would also be a very fit and nutritive article of diet; and during a considerable time after recovery, care should be taken to prevent a relapse by avoiding exposure to cold; and, if the season should be changeable, by the application of flannel to the abdominal surface.

The soreness and excoriation about the anus, which arise from the acrid, serous discharges, and sometimes extend down the thighs, and produce, when neglected, an erysipelatous inflammation, may be relieved by the frequent application of undiluted liquor plumbi diacetatis.

During this disease the urine has been observed, by most writers on the subject, to be remarkably deficient. The cause of this may be readily explained, without the necessity of attributing any supposed or mysterious defect in the kidneys. The same occurrence takes place in acute rheumatism, in meningitis, in cholera, and in other inflammatory or exhausting diseases, which either disturb the equilibrium of the circulation, or drain the supply of the organic nervous centres.

Medical writers enumerate other species of diarrhœa, as bilious, variolous, morbillous, &c., which it would be useless for me to notice in this place, as they are only symptomatic of other diseases. I may, however, observe that purging, which happens to concur with dentition, has no necessary connection with that process. I have already explained, under the head of "Dentition," the effect produced upon the alimentary canal by the growth and production of the primary teeth, which is the very opposite to that of excitement. When dentition happens to be proceeding with any remarkable activity, particularly in delicate children, the processes of digestion, chylification, and even the peristaltic action of

the bowels are interrupted in the same ratio, and the whole chylopoietic system rendered torpid. Hence, instead of purging, we shall always find a state of constipation prevailing, together with inaction of the liver, until the deciduous teeth are unfolded, and the delicate animo-chemical process of depositing the enamel, which requires so much organic influence, has been completed. When, therefore, mucous, muco-purulent, or purulent diarrhœa occurs during dentition, it may always be traced to chronic inflammation in the mucous follicles or the villi, produced by cold, as will be explained in the next chapter. Another striking proof that diarrhœa, and other inflammatory diseases in the bowels of infants and children, under two years of age, do not proceed from the excitement of dentition, is the fact, that whenever such diseases do occur, the process of dentition is interrupted as long as such diseases continue; as may be observed by the defective construction of the primary teeth, which happen to be forming at the time, and particularly the deposit of enamel, which, after remittent fever, severe diarrhœa, or marasmus, will be found as soon as the teeth have completely emerged from the gums by the subsequent growth of the fangs, disfigured with defects in the enamel, consisting of its total absence in transverse patches corresponding in extent with the duration and severity of the contemporaneous intestinal disease. Notwithstanding these obvious facts, writers on the diseases of children, both British and Foreign, concur in labouring to prove the correctness of their mistaken views and inverted pathology, by contending that the mucous follicles during infancy undergo rapid development in the intestines, and that they supply the sudden and immense secretion of serous fluid occurring in diarrhœa, and thus act as a salutary check to the excitement of dentition. These pathologists, in their desire to blame the teeth for every disease appearing during the earlier periods of life, quite forget that inflammatory diarrhœa and dysentery attack individuals at all ages, even those who have shed their secondary as well as their primary teeth; and that in all the same disorganizations are discovered after death as those, which are met with in children, who happen to die before primary dentition is completed.

MARASMUS, OR CHRONIC MUCO-ENTERITIS.

The intestinal mucous membrane is subject to the same laws, which influence other mucous textures. When the conjunctive membrane of the eye is exposed to cold, as in catarrhal ophthalmy, the minute vessels on its free surface first secrete a copious dis-

charge of serum mixed with the natural mucous secretion of the part, and as the inflammation proceeds and the blood is propelled with greater force, the minute vessels on the surface become more and more enlarged and prominent, and injected with red blood; the membrane loses its natural white colour and smooth appearance, and becomes rough, red, and granular, and pus globules are poured out in great abundance. The capillary arteries, which secrete the mucous fluid in a state of health, too minute to be visible by the naked eye, when thus enlarged by inflammation, appear first projecting like the piles of coarse scarlet velvet, and afterwards assume a granular shape and aspect. Thus muco-enteritis, or acute inflammation in the mucous coat of the intestines, often terminates in a chronic inflammation in the villi, which extends to the isolated mucous follicle, and gives rise to a protracted and sometimes fatal emaciation, which has acquired the name of waste, marasmus, or consumption of the bowels. This disease, which is in most instances the result of neglected dysentery or muco-enteritis, first attracts attention by the rapid and progressive emaciation which accompanies it. The state of the intestinal canal is either entirely overlooked, or treated on a false pathology. Hence the diet and treatment usually recommended are decidedly obnoxious, particularly when the primary disease is snpposed to proceed from dentition, and valuable time is permitted to pass away, with the vain expectation that it will subside at the termination of that tedious process. This vulgar error is the more to be lamented, because the age at which marasmus is commonly discovered is from three months to two years. It will be found, on inquiry, that the discharges from the bowels are unhealthy, and generally too frequent, conisting either of muco-purulent or purulent matter alternating with more solid fæces, composed of food entirely undigested. The motions have an unnatural smell, which is not so offensive as those discharged during remittent fever. When the child's food consists of bread, or any other farinaceous substance, the particles of it will be found discharged from the bowels in the crude state in which they were swallowed; and when meat or potatoes are given, these will be seen evacuated nearly in the same undigested condition in which they were swallowed. In some cases the stomach rejects the food soon after it has been taken; in all, whether the food be retained on the stomach or not, emaciation proceeds with rapid strides; the absorbents imbibing every particle of fat formerly deposited in the adipose membrane in different parts of the body. An obscure fever of the remittent or hectic character attends. When the latter is well marked by periodical perspiration, an abundant dis-

charge of pus will be found to take place from the intestinal canal. When little or no pus is observable, the skin will continue constantly dry, and subject to paroxysms of increased heat, until recovery begins, which is first observable by a moist state of the surface. At length the child becomes as it were a living skeleton, the skin literally adhering to the bones, dry and withered and discoloured, and the eyes sunk within their hollow orbits. The muscles undergo also an extraordinary emaciation, being reduced to mere strings by the absorption of all their intervening adipose membrane. At last the miserable patient, deprived of all nutrition, and robbed by his own restless absorbents of every particle which nature could spare of his withered frame, sinks into an untimely grave.

The cause of the emaciation which is the prominent symptom of marasmus, is the morbid condition of the intestinal mucous surface, which prevents the process of assimilation and the nutrition of the body. When speaking of muco-enteritis, I explained the cause of the loss of appetite and the suspension of the proper gastric function. The same cause exists in the disease under consideration. The villi, which are designed in a state of health to pour out a secretion intended to complete the assimilative process, and to select and imbibe by their delicate lacteal orifices the nutritive particles for the purpose of supporting the growth of the child, are occupied by inflammation, and diverted from their legitimate duties. The vicious products of this chronic disease, consisting of viscid mucus or pus, or a muco-purulent secretion, presents also a mechanical obstacle to the absorption of chyle, even if that existed, by the obstruction it presents to the mouths of the lacteal absorbents; and this is sometimes much increased by the morbid thickening and exfoliation of large portions of the epidermis, presenting to a superficial observer when discharged, the appearance of a part of one of the small intestines. These morbid tubular productions, which resemble portions of macerated jejunum or ileum, as well as the cryptogamous vegetable intestine denominated by botanists, *Ulva intestinalis*,* is formed by the inflammation of the epidermis. This portion of the mucous membrane, in its natural state, is invisible even with the aid of a microscope; but when inflamed by disease, it becomes so

* This singular vegetable product, which exactly resembles an intestine, and, when found filled with sand, may be said to appear like a pig's pudding, is met with in stagnant sea and river water. The description of it given by Dillenius is so accurate, that I am induced to transcribe it. It is a simple membranaceous vegetable tube, "varying greatly in size, simple or branched, from the thickness of a quill to that of a walking-stick, and an ell or two in length; hollow, very unequal on the surface, yellowish when young."—DILLENIUS, 47.

astonishingly thickened by deposit of mucus as, when exfoliated and discharged in a tubular form, to present a resemblance to the intestine, from the inner surface of which it has been detached. This enteroid mass, as long as the chronic inflammation continues, is liable to be reproduced and to perpetuate the obstruction to the natural action of the secernent and lacteal absorbent vessels seated beneath it. Nutrition is thus entirely suspended, and as long as the inflammation remains in the intestinal mucous membrane, and its proper functions are impeded, the gastric secretion continues imperfect, and digestion consequently incomplete.

The constant absorption which occurs in this disease, like that which takes place in diabetes, occasions unremitting thirst, which induces the child to ask for repeated supplies of water, which he swallows with avidity.

The morbid appearances presented on inspecting the intestines are the false membranes, which I have described, adhering to the free surface of the mucous coat, ulcerations of the mucous follicles, and frequently a peculiar softening or decay. When the epidermis is not in a state of separation, it may be seen much thickened; and the mucous membrane beneath has a general, tumid appearance, being itself greatly hypertrophied. This softening of the villous coat differs from that which is the result of acute inflammation. It appears in patches, not in one uniform mass, the villi being in the intestines in their natural state. This species of ramollissement is supposed to be occasioned by the extreme atrophy, which occurs in the last stage of marasmus, being a partial decay, or death of the membrane from the want of a supply of blood. Another morbid condition will be found, when the discharge of purulent matter has been very great during life, which is a granular state of the free surface of the membrane; the villi having lost their primary, vermiform appearance, and undergone the same change which we see taking place in the mucous membrane of the eye, after it has been exposed to chronic inflammation.

During the whole progress of this disease much irritability exists, denoted by peevishness; and in scrophulous children, who have naturally a dark complexion and dark blue eyes, the eyelashes will be found of an extraordinary length. Whatever may have been originally the colour of the cuticle, when marasmus is established the outer skin has always a dark, brown colour and withered aspect.

Treatment.—There is no disease, in which cures may be performed by medicine, under such unpromising circumstances, as this. It has been so much the custom to consider all children

irrecoverably advanced in this disease, when the emaciation is excessive, and the skin arid and closely adhering to the bones, that it is difficult to induce the most anxious and affectionate parents to believe recovery possible. Infants and children may, however, often be restored from the most advanced stage of the disease by a steady perseverance in the treatment I am about to detail, and by regular attention, which is necessary on the part of the medical practitioner to retain the confidence of the friends of the patient, and insure the proper administration of remedies. I have already explained, and endeavoured to explode the fallacious opinions entertained respecting the connexion of dentition with inflammatory and disorganising diseases in the alimentary canal; and therefore it will be superfluous to revert to that subject, except to recommend in all cases prompt attention to cholera, dysentery, and diarrhœa in infants and children, either of which may be soon removed by proper treatment. From the views I have unfolded of the nature of marasmus, it must be obviously of the utmost importance to adopt some means without delay to restore to a healthy condition that extensive, internal surface from which the elements of growth and vigour are imbibed. All astringents and opiates must be avoided; the former interrupting nature in her efforts to cast off false membranes or other vicious products of inflammation, and the latter having the effect of restraining all the natural secretions. From half a grain to one or two grains of chloride of mercury, and from a grain and a half to six grains of jalap, according to the age of the child, must be given him every third morning, and on every intermediate day from half a drachm to a drachm of castor oil should also be administered. This treatment should be steadily pursued until the discharge of purulent matter and the purging or the offensive and unassimilated discharges from the bowels have ceased. The accomplishment of these objects may occupy several months; nevertheless every dose of purgative medicine will be found to diminish the quantity of pus and of undigested evacuations, and the child will progressively improve in appetite, temper, and appearance. Those who may not have witnessed the effect of proper purgatives in removing the vicious secretions in this disease, and the chronic inflammation by which they are produced, need only omit the treatment during a few days or a week, when they will find an astonishing increase in the quantity of purulent or mucopurulent matter discharged, and a corresponding increase of emaciation and other symptoms. When false membranes happen to be detached and expelled by the continued repetition of purgatives, recovery will be found afterwards to proceed at a more rapid

rate, the villi of the intestines being relieved from their obstruction, and enabled to assimilate and absorb some nutriment to replenish the wasting system. In some cases the duodenum is implicated in the diseased state of the mucous membrane, when spasm of the glottis or epilepsy will occur about half an hour or an hour after a fuller meal than usual. This is occasioned by the irritation, which crude, undigested food produces in the duodenal, which is the most sentient portion of the intestinal, mucous surface, and which rouses into activity the excito-motory system of nerves, whereby various muscles are thrown into irregular, involuntary, and convulsive movements, continuing or recurring until the aliment has passed into the jejunum. As recovery proceeds, the quantity of urine is augmented, the skin acquires a more soft and natural feel, and gradually loses its morbid colour, the temper improves, and the muscles begin to unfold themselves, and to acquire a degree of firmness as well as substance; and, when the heat on the skin has been much exalted, the epidermis exfoliates and is succeeded by a new cuticle.

When the stomach rejects all food, the best remedy is sulphate of quina, which should be given in the dose of one-fourth, or half a grain three times a day, until the bowels have been reduced to a healthy condition.

The most proper diet will consist of milk, broth, arrow or tapioca pudding, or arrow-jelly. After the appetite and digestion have been restored, solid animal food may be given with advantage. Water will be found the best beverage.

The following case is an instance of the success of the practice I have recommended:—

Case.—1826. Mr. B.'s infant, aged 9 months, had a severe attack of dysentery, when only three months old. She had then no primary teeth. The medical gentleman who attended the infant, declined to interfere with the dysentery, stating that it was produced by dentition, although no teeth were approaching. The bowel complaint having been thus neglected, terminated in marasmus, as might have been expected; and when the child was brought to me for advice six months afterwards, she was a most miserable and frightful object. The natural complexion of the child had been fair. It was now gypsy-coloured. The skin was dry as if burnt, and closely contracted upon the bones of the face, cranium, and every part of the body, except where the shrivelled muscles intervened. She vomited almost every thing she swallowed. She was fed on panada, which appeared like bread and water quite unaltered, after it had escaped from the bowels. The stools were one day costive, and on another relaxed,

and consisting of little except pus or muco-purulent matter. I prescribed half a grain of chloride of mercury and a grain and a half of jalap every third morning, and on each intermediate morning half a tea spoonful of castor oil. I also prescribed a mixture, each dose of which contained one-fourth of a grain of disulphate of quina. From the time this treatment was commenced, a gradual improvement took place; but nearly six months elapsed before a cure was completed. After recovery took place, this child, as I have observed others, became remarkably fat, and continues at this time in good health, although long since arrived at maturity. Whenever the purging medicines were omitted by the nurse, who frequently interfered in my absence, from an apprehension that the operation of the powders or oil would exhaust the patient, the stools became more offensive, more liquid, and contained a large quantity of purulent matter. The vomiting never returned to any troublesome extent after the quina was exhibited.

When the disease is complicated with spasm of the glottis or epilepsy, the prognosis is not so favourable. Notwithstanding this, I have often succeeded by a similar treatment, although one of these complicated cases was so urgent as to require my daily attention nearly nine months, on account of the continual recurrence of epilepsy or cerebral croup, about half an hour or an hour after a full meal. In such cases as these the most minute care will be required in preparing and administering food to young infants. The most innocuous diet will be found to consist of gruel prepared from grits or good oatmeal, and afterwards strained through a fine hair sieve. This food ought to be prepared every day to prevent the danger of fermentation or acidity. Milk, bread, and biscuit, and all kind of solid food must be strictly forbidden, until the healthy secretions in the stomach and bowels and the liver are restored, which will be known by the homogeneous appearance and bright yellow colour of the intestinal evacuations. During the marasmus the fæcal discharges have neither the smell, colour, nor consistency of healthy motions.

SOFTENING OF THE MUCOUS MEMBRANE OF THE BOWELS.

(See "Cholera and Marasmus.")

TENESMUS AND PROLAPSUS ANI.

When dysentery assumes a chronic character, tenesmus is generally one of its prominent symptoms. This consists of a forcing down of the lower bowel after every intestinal evacuation,

which will be found to occur more frequently than in a state of health. Some uneasiness is felt before every motion, but this is apt to escape observation; and the child from long habit becomes so accustomed to it that he ceases to complain of any thing except the straining. When this disease is urgent it will be found on inquiry that the child has a sudden and irresistible inclination to evacuate the bowels after every meal, especially after breakfast; and that the inclination is preceded by a rumbling and pain in the bowels in the situation of the arch of the colon. On examining the stools they will be found either white or cream-coloured, or tinged with blood and mixed with mucus. The white colour is occasioned by the restless state of the intestines which exists during chronic as well as acute dysentery, and hurries onwards the contents of the duodenum, so that neither a due proportion of bile can be blended with them, nor a proper portion of chyle imbibed from them by the lacteal absorbents. Hence a slow but certain emaciation is present, and a soft feel and relaxed and feeble state of the voluntary muscles are perceptible. The child is thirsty, and his skin feels dry and contracted.

Treatment.—The following draught must first be given, and the mixture should be commenced the following day :—

R—Magnesiæ Sulphatis . . . . . ℥j.
Tinct. Gentianæ C. . . . m. 10.
Aquæ ℥iij. M. fiant haustus.

This is a proper dose for an infant from six to twelve months old. A child two years old may take two drachms, and a child five or six years old three drachms of the sulphate of magnesia, dissolved in five or six drachms of water.

R—Magnesiæ Sulphatis . . . . ℥j.
Tinct. Cinnam. C. . . . . ℥iv.
Infusi Rosæi q. s. ut fiant ℨviij.

An infant one year old may take a dessert spoonful, and a child from two to four years old a table spoonful, and a child ten years old three dessert spoonfuls of this mixture three times a-day during ten days.

PROLAPSUS ANI.

The frequent forcing down of the rectum has the double effect of producing a thickening of the mucous coat and a preternatural dilatation of the internal and external sphincter muscles; and

these effects are sometimes so extreme as to produce a permanent prolapse, presenting the appearance of a dark red or purple tumour surrounding the orifice of the anus. The temporary displacement of the internal membrane of the rectum should be reduced by gentle pressure after every evacuation, till the medicines prescribed for tenesmus have effected a cure. When this reduction is found to be difficult, the plan recommended by Dr. Blundell should be adopted. This consists in pushing up the prolapsed parts, while the patient forces the bowel outwards. By this proceeding the sphincters are relaxed by the voluntary efforts of the patient, and the impediment to the replacement of the projecting parts removed.* It sometimes, however, happens that the relaxation of the sphincters is so extreme as to cause them to lose altogether their power to retain the prolapsed part after it has been replaced. In this case loose folds of integument covering the external sphincter must be cut off by a pair of scissors in five or six places at equal distances, each fold being about one-third of an inch in diameter. This is the operation which was practised by Langenback and Dupuytren, and I have repeatedly performed it with uniform success. It is unnecessary to make use of any application to the wounds occasioned by the scissors, and the contraction consequent on their healing is sufficient to reduce the orifice to its natural dimension. There is no risk in this operation, and very little blood escapes. Dr. Schwartz states that extract of nux vomica is a specific for prolapsus, but of this I have had no experience. He directs one or two grains to be dissolved in two drachms of water, and says the dose of this solution for an adult is from six to ten drops once in four hours.†

When the descent of the mucous membrane of the bowel is permanent and irreducible, it presents an appearance resembling a circular portion of dark red flesh, the surface of which is sometimes ulcerated or excoriated. This membrane at the lower end of the rectum is naturally thick; but in this disease the constant compression which the vessels undergo has the effect of producing a remarkable hypertrophy of the protruded parts, which renders excision of any part of it dangerous on account of the hemorrhage which is found to follow. Hence the actual cautery and nitric acid have been employed; the former by Dr. Houlston, and the latter by others as well as himself.‡ The proceeding I adopt for the cure of this infirmity consists of the application of five or six

* "Lancet," vol. xvi. p. 291. † Ibid, No. 614, p. 336.

‡ "Dublin Journal of Med. Science," March 1843, pp. 95, 119; and September 1844, pp. 32, 49; and "Lancet," New Series, vol. ii. p. 327.

ligatures in succession. In old people all these ligatures may be safely employed at one operation, their sensation being more imperfect, and their disposition to inflammation less than in infants and children. In the latter, therefore, I find the safest plan is to make use of only one ligature at each operation, which is introduced by means of a curved needle passed first through the outside of the prolapsus, and then from the inside outwards, including about one-sixth portion of the protruded ring. The needle being removed, the ligature must be tightened firmly, and tied with a double knot. On the third or fourth day another ligature must be introduced through the tracts of the needle, and again drawn firmly and tied. At the end of a week the part included within the ligature will be completely separated, when a second adjoining portion of the prolapsed part may be included in another ligature. Should the symptoms be mild after the first operation, two portions may be included at the second operation. Care, however, must be taken not to include the whole substance with ligatures at one operation, as symptoms of strangulated hernia have been observed to follow an extensive strangulation of the mucous membrane. M. Salmon transfixes the protruding parts with pins before he operates, and cuts off only the mucous membrane and integuments.* As soon as all the prolapsed parts have become detached, the disease will be found to be cured, and no dressing or external application will be required. The bowels should be kept in a regular state, if required, by means of rhubarb or castor oil, both during the cure and after its completion.

TUBERCULAR MUCO-ENTERITIS.

In tubercular or cachectic constitutions, inflammation in the mucous membrane of the bowels is liable to produce the development of tubercles, which pass through their different stages of growth, and destroy the patient with hectic fever and atrophy. The disease, like common diarrhœa, begins with purging. This is succeeded by pain in the bowels, which more or less assumes a periodical character. Emaciation is rapid. The pulse is never under 102 after the pain commences, and it ultimately increases to 140. When the specific disease extends to the peritoneal surface, some degree of ascites may succeed. The skin is burning hot and dry during the day, and as the complaint advances, in a state of copious perspiration during the night. The tongue is covered with a white fur. This specific affection of the internal

* "Med. Chir. Rev.," vol. xviii. p. 373.

coat of the bowels is apt to produce extensive disorganization by its encroachment on the normal structure, carrying destruction with it as far as it extends. It may be distinguished from the simple muco-enteritis by the severe pain and hectic fever accompanying it, by the periodical increase of pain which takes place in the evening during the hot stage of the fever, and by the rapid and extreme emaciation.

Treatment.—In tubercular diseases in the intestines, as in other parts, treatment will be found of little avail. The constant cries of the patient may be relieved by opium; but as we possess no specific means at present of preventing that modification of inflammatory disease, which proceeds from congenital constitutional causes, there will be little chance of our removing it after it is unfolded. As, however, nothing should be left untried in so fatal a disease, iodide of potass and mercury may be combined with the opium. At the same time I must confess that the only form of disease in which tubercular deposit has occurred in my practice, and which I have found curable by iodide or biniodide of mercury, is infiltration of tubercular matter producing hypertrophy, or induration, before softening has commenced, which will be more fully explained in the chapter on "Scrophula, or Tuberculization."

Case.—1819, Jan. 1. Master L., aged seven years, was attacked with diarrhœa, accompanied with pain in the bowels without tenesmus. He had been ill about a week. The pulse was at 102, and the tongue coated with a white fur. Great emaciation. On the 13th the pain in the bowels began to increase every night, and was followed by perspiration. The skin during the day very hot and dry. On the 24th slight delirium commenced, which continued at times till Feb. 22, when he died. The purging continued throughout the illness, and the discharges, which contained but little proper fæces, consisted of offensive matter resembling broken down pus. About a fortnight before his death the abdomen became distended with fluid. No remedy had any effect in retarding the progress of the disease, but opium afforded the patient great comfort.

On the following day I examined the body, and found the whole of the intestines involved in tubercles, some firm, others soft, and others in a state of scrophulous ulceration, especially on the inner surfaces; so that it was impossible to trace any regular passage, the intestines being rendered in many portions of the canal impervious by the crowded and offensive mass. All traces of villi had entirely disappeared, the inner coat, as far as it could be distinguished, being converted into an irregular tubercular

mass. The colon was much less affected with the disease than the small intestines. A large quantity of sero-purulent matter escaped from the bag of the peritoneum, which in some parts was amazingly thickened by coagulable lymph, connecting it to the omentum and the intestines in several places.

SERO-ENTERITIS, OR ACUTE INFLAMMATION OF THE PERITONEAL OR SEROUS COAT OF THE INTESTINES.

Although this disease is not so frequently met with in children as adults, it will be necessary to point out its symptoms and treatment in a work designed to comprehend the diseases to which children are liable.

It commences with severe pain in the bowels, which is increased at intervals, and accompanied with extreme tenderness, to relieve which the patient lies on his back with his knees constantly bent. The attack is preceded by chilliness, and sometimes by diarrhœa, or inflammation of the mucous coat, which has been improperly treated by astringents. The tongue is coated with a thick white fur, unquenchable thirst is constant and urgent, and constipation of the bowels is present.

The pain, which is constantly severe, is, as I have before said, increased at intervals, when the countenance becomes suddenly pale, and the patient instinctively bends forward to obtain some mitigation of his augmented suffering. These paroxysms of more acute suffering arise from the peristaltic action of the bowels, which forces their inflamed surfaces to rub against each other, or against the inflamed omentum or abdominal peritoneum. In favourable cases the skin is hot, and the pulse quick and sharp; in those connected with symptoms of collapse it is cool, being rather below the natural temperature, and attended from the first with a small, feeble, and frequent pulse, and some confusion of the mind. As the acute form of the disease advances, the abdomen becomes tense and swollen, hiccup supervenes, and the patient becomes restless, and throws his arms about, complaining of heat, while the extremities become cold, and delirium soon follows. Mortification has now taken place, and the patient falling into fatal collapse, during which the circulation of the blood and the supply of nervous energy in the parts affected have ceased, believes he is recovering, having lost all pain and sensation. In this last stage of the disease the pulse is found sinking and fluttering, and sometimes lost, the heart struggling in vain to restore the circulation as long as its expiring vitality remains.

When the inflammation has been severe, and has terminated

in recovery, and opportunity is afforded at any future time to examine the parts concerned in the disease, effusion of lymph will be found to have taken place, connecting the inflamed surfaces which had been in contact; thus uniting either portions of intestine to each other, or to the omentum or peritoneum.

In children of scrophulous constitutions, intestinal or general peritonitis is apt to produce tubercular deposits or development, which will be described under the head, "Tubercular Diseases in the Bowels and Peritoneum."

Acute intestinal peritonitis, when not having immigrated from the mucous surface of the bowels, is occasioned by exposure to cold, either by wearing damp clothes, or sitting in wet shoes, whereby the cutaneous perspiration is suddenly suppressed. The constipated state of the bowels, which accompanies this inflammation, is occasioned by the circulation and excitability being suddenly diverted from the mucous to the serous membrane, whereby the functions of the former are suspended.

Treatment.—Our first object should be to reduce, as suddenly as possible, the force of the heart and arteries, and thus afford relief to the inflamed texture, by lessening the impetus of the blood in the extreme vessels. The modus operandi of bleeding, which is the remedy I allude to, is visibly illustrated in conjunctival inflammation, which, as soon as collapse is artificially induced in the sanguiferous system, is suddenly removed, the blood retiring with the general current from the distended vessels of the conjunctiva, and the heart and arteries, subdued by the lancet, being unable to recover their propelling power sufficiently to inject again the small and distant capillaries. The patient, if of sufficient age to bear general bleeding, should be bled at the arm, in the sitting posture, until the pain is removed, or fainting is induced. He should then be laid in the horizontal position, and, as soon as he has recovered from the temporary syncope, the bowels should be copiously purged with salts and senna. Should an infant be the subject of this disease, leeches must be applied over the abdomen in sufficient number to afford relief to the pain, and the same purging treatment as that just recommended must be adopted. Should any necessity exist for the suppression of the bleeding from the leech-bites, on account of the difficulty of applying adequate pressure on the abdominal parietes, the reader is referred to an article in this work on that subject.

After the evacuation of the bowels, and timely loss of blood, the inflammation will frequently disappear; but, should the pain and tenderness increase or return, the bleeding must be repeated as often as these symptoms are urgent, unless approaching collapse

of the vital power should forbid its repetition. In all severe attacks, when the first bleeding is found ineffectual, and after the bowels have been freely opened, a grain or two of chloride of mercury, according to the patient's age, should be given him once in four hours, in conjunction with a small dose of opium, with the view of exciting on the gums the sensible effects of the former medicine. In inflammations of most serous membranes, the peritoneal in particular, mercury acts in a most beneficial manner, and often renders repeated bleedings unnecessary. It will not be requisite, nor advisable, to trouble the patient with any other medicines; but, should the bowels be confined by the opium, the salts and senna may be occasionally repeated. A large tepid bread and water evaporating poultice will afford relief, when its weight can be borne by the patient; and, when the disease has been reduced to the sub-acute or chronic form, and bleeding has been carried to as great an extent as may be consistent with safety, an ample blister laid on the surface of the abdomen will remove the lingering inflammation.

As long as any inflammatory action, and a white fur on the tongue, remain, every kind of animal food and stimulants must be avoided. Water, soda-water, barley-water, lemonade, or imperial,* will be the best beverage, until the inflammation is subdued; after which mutton or veal broth, milk, thickened with arrow-powder, and sago or tapioca pudding, or custard pudding, will afford sufficient nutrition, until the patient should be in a fit state to take solid animal food.

The congestive form of the disease to which very delicate children are liable, must be treated on the same principle as in other mixed cases, which are modified by the constitution of the patient; but the young practitioner must be cautious in the management of such a case, which will require close attention and nice discrimination. The patient is cold, has some disturbance of the sensorium, is faint, and complains of sudden and indescribable weakness, while his countenance is pallid and contracted, and his pulse feeble and sinking, and every attack of pain adds to these appearances of approaching death. In such a case as this, bleeding would be followed by irrecoverable asphyxy. We must therefore reverse the treatment recommended for the more common form of the disease, by first administering chloride of mercury with opium, placing the patient in a bath at 100 degrees of heat, and repeatedly giving him

* Imperial is made by mixing a quart of boiling water with a quarter of an ounce of supertartrate of potash, to which a slice or two of lemon, from which the peel has not been removed, should be added.

moderate quantities of warm wine and water, for the purpose of exciting the dormant circulation, and unfolding or dispersing the insidious inflammation. The first dose of opium should be large, as in the treatment of cholera. This decided and energetic practice will remove the collapse of the vascular and nervous centres, and, by restoring the equilibrium of the circulation and excitability, presently re-animate the patient, or simplify the case, by disarming it of its distressing and dangerous complication. When re-action is thus established, should acute inflammation unfold itself in the serous membrane, it must be treated by bleeding, and other antiphlogistic remedies, to the same extent as if it had not been interrupted by the intervention of the nervous collapse; for it must be borne in mind that these sensations of debility and exhaustion, concurring at the onset of the attack, are only temporary, and should be regarded as indicating oppression more than actual weakness.

SUB-ACUTE OR CHRONIC SERO-ENTERITIS.

A sub-acute or chronic inflammation of the serous tunic of the intestines may follow the acute form, or occur as an original disease, or may migrate from the mucous coat, in consequence of the improper use of astringents for the treatment of diarrhœa or inflammatory dysentery. From whatever source it proceeds, the symptoms will be found to consist of frequent attacks of pain in the abdomen, attended with tenderness on pressure, and with distention of the abdominal parietes, which progressively increases, until, on percussion, fluctuation becomes distinct. This, which constitutes a serous or dropsical effusion, commonly called ascites, is the termination of the sub-acute inflammation of the peritoneal surface, the inflammation being of a lower degree than that of the acute form, which ends in the deposit of lymph. The pain, in this sub-acute form, is neither so severe nor so constant as in acute peritonitis. It is readily excited by any sudden motion of the body, and by the peristaltic action of the intestines. Hence, children afflicted with it, especially while effusion is proceeding, avoid running, and walk with caution, and become uneasy from the slightest abdominal percussion. In proportion as the dropsical effusion advances, the face becomes wrinkled, thin, and pale, and the extremities emaciated. The pulse is never below 102 to 108. The tongue is coated with a white fur, and thirst is present. The patient also wastes in his flesh. This disease is most common in children from the sixth to the fifteenth year.

The prognosis is always favourable, except when the disease is

connected with tubercles. The simple may be distinguished from the tubercular variety, by the pulse being less rapid, and by the absence of hectic fever.

Treatment.—When this is unconnected with tubercular disease, its treatment will be generally successful. Blood, in small quantity, must be taken from the arm, or from the surface of the abdomen, by leeches, once or twice a-week; the bowels kept in a state of relaxation, the gums inflamed by mercury, and the kidneys acted upon by a diuretic. The blood will be found to be buffed, and in most cases slightly cupped at the edges. A child, ten years old, may take the following draught every morning and evening, the dose of the aperients being varied according to their effect, and the digitalis being carefully watched:—

R—Magnesiæ Sulphatis . . . . . ℥ ss.
Magnesiæ Carbon. . . . . gr. v.
Tinct. Digitalis . . . . . m. v.
Aquæ Men. Pip. . . . . ℥ vi.
M. fiant haustus bis die sumendus.

Inflammation in the gums may be excited by the following powder, taken with each dose of the mixture; or half a drachm of ung. hydrargyri may be rubbed every night on the inner surface of one of the thighs:—

R—Hyd. Chlorid. . . . . gr. j.
Sacchari Albi. . . . . gr. v.
M. et fiant pulvis mane et nocte sumendus.

By increasing the secretion of the kidneys, and that of the salivary glands, and by stimulating the mucous coat, a diversion from the outer or serous coat is provoked. Independently of the local action of mercury on the gums, it also operates beneficially on membraneous inflammation, by establishing an artificial vascular excitement, which, being universal, materially assists in operating a cure, by giving temporary activity, and restoring contractile power to the minute arteries, oppressed by a partial determination and remora of the blood.

In proportion as the inflammation subsides, the swelling and tenderness of the abdomen disappear, and the bleeding should be discontinued as soon as these good effects have been produced; but it must not be persisted in with the expectation of finding the inflammatory appearance of the blood removed, while the patient is under the influence of mercury, for that mineral alone will produce a buffed aud cupped state of the crassamentum, as completely as inflammation excited by natural causes. When the inflammation has only existed a short time, and ascites, or dropsical effusion into

the bag of the peritoneum has not yet taken place, it will be unnecessary to prescribe digitalis; but when dropsy exists, although ever so extreme, uncomplicated with specific disease, the combined remedies I have enumerated will, with a few rare exceptions, completely remove it, without the assistance of any surgical operation. Those cases which resist this treatment, may however be subdued by the use of elaterium, which has the effect of producing a sudden and decided metastasis of vascular action from the serous to the mucous intestinal surface, and a consequent copious exhalation and discharge of serous fluid. The following case will illustrate the good effects of this practice:—

Case: 1843, April 23.—Mr. P.'s daughter, aged six years, had an attack of ascites to an extreme degree, which was preceded by muco-enteritis. The dropsical swelling was immense. Pulse 110. Great tenderness of the abdomen, and frequent attacks of pain. Great emaciation of the face and extremities were also present. I directed the patient to be bled to the amount of six ounces, and to take one grain of digitalis, and one of chloride of mercury, three times a-day. On the 4th of May, finding that the soreness and pain had ceased, and that the abdominal dropsy continued as before, I prescribed half a grain of elaterium, and three grains of chloride of mercury. She took only two doses, at the interval of a week between each, after which the ascites began rapidly to subside, and, on the 30th of June, I found it had entirely disappeared.

TUBERCULAR SERO-ENTERITIS.

The symptoms of this fatal disease vary but little from those of tubercular muco-enteritis, except that it is more painful; as either perforation or inflammation of the mucous coat usually appear during its progress. This comparative increase of pain arises from the higher degree of sensibility with which the peritoneal, like other serous membranes, is endowed. In this disease, the hurried pulse, rapid atrophy and loss of strength, pain and tenderness of the abdomen, resisting all remedies, and the hectic fever, characteristic of tubercular disease in a state of progressive activity, sufficiently distinguish it from simple inflammation of the peritoneal coat of the intestines.

Treatment.—Opium is the principal medicine which is calculated to furnish any relief or comfort to the patient. A small dose, an eighth or a sixth of a grain, of iodide of mercury, may be tried, in combination with some opiate preparation; but, as I remarked with respect to tubercular muco-enteritis, I must acknowledge that I have never discovered any means whereby the ravages

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membrane, that it is unnecessary to devote any further space to these subjects; and the same remark will apply to tubercular peritonitis, which I have never seen without a corresponding disease in the serous investment of the intestines.

TUBERCULAR PERITONITIS.

(See "Tubercular Sero-Enteritis.")

ASCITES.

(See "Chronic Sero-Enteritis.")

OBSTRUCTION FROM FOREIGN BODIES IN THE APPENDIX VERMIFORMIS CÆCI.

(See "Substances Swallowed.")

CONSTIPATION.

Some children, until they are two years of age, or until all the deciduous teeth have been protruded, are much inconvenienced by habitual costiveness. The young infant, in a state of health, should have two evacuations daily from the bowels, and this is usually the case until he is three or four years old, when the vicious custom, prevailing among nurses, of giving him food too solid and indigestible for his tender age, commences, even before maternal lactation has been discontinued. Arrow-powder, biscuit, or bread, clumsily prepared with milk or water, are forced into the stomach, until they are rejected with disgust, as if the receptacle of the food in the infant were a stone-bottle. A very small portion of this solid mass can ever be digested or regularly discharged; and, therefore, after exciting all the pain and misery of indigestion and flatulence, it accumulates in the lower bowel, sometimes in such masses as to obstruct the passage, and produce troublesome tenesmus. At other times, the milk of a delicate mother, or stale nurse, may not contain all the elements adapted for the nutrition and perfect health of the infant. It may not contain sugar, albumen, and oil, in proper proportion, and thus the natural peristaltic action of the bowels may be retarded, from defect of nutrition. Another cause of constipation will be found in the process of dentition, which occupies a period from the end of the first six months till the end of the second year, with a few exceptions. During this period the peristaltic action of the bowels in feeble children,

whether suckled or dry-nursed, will be more or less interrupted, unless they happen to be exposed to cold, when dysentery or diarrhœa may be induced.

Treatment.—When constipation is brought on by food too solid for infantile digestion, its use should be forbidden, and lactation alone prescribed, until the upper and lower incisive teeth of the infant have made their appearance. If a proper nurse cannot be provided, the food should consist of barley-water, or thin gruel, prepared from grits. Nothing is more pernicious than thick food, until some degree of mastication can be performed; and, of all the preparations made for the food of infants, nothing is so improper as arrow-powder to be intrusted to the culinary management of injudicious nurses, as I have repeatedly discovered it not only badly cooked, but collected in the bowels in such solid masses as to require powerful purges to dislodge it. The manner too in which biscuits and bread are commonly fabricated into food for infants, render these articles almost equally objectionable with arrow-powder, as, like that, they are liable to form concretions in the rectum. For the dislodgement of these obstructions, a tea-spoonful of castor-oil should be given to the infant, and repeated, once in four hours, until it operates. When medicine is of no avail, and constant tenesmus occurs, the only mode of affording relief consists in the introduction of the handle of a tea-spoon, or the small end of a marrow-spoon, into the rectum, by means of which the medical attendant may effectually empty the over-loaded intestine. To prevent this accumulation, a tea-cup full of warm water or gruel may be injected into the rectum every morning, while the costive habit continues; but it must be understood that this habit is superinduced by bad management, except during dentition, which, as I have before explained, has the effect in feeble infants of inducing costiveness, by diverting the organic nervous influence from the abdominal viscera. When medicine is unavoidable, a teaspoonful of castor-oil will be found the most safe and efficient. The common practice of giving infants carbonate of magnesia for this purpose is highly dangerous, fatal concretions of that substance having been discovered in the bowels after death.

SPASM IN THE INTESTINE, OR COLIC.

Infants are subject to sudden and severe pain in the bowels, during which they alternately draw up their knees and throw themselves backward, as in a state of opisthotonos. The pain is unremitting and expressed by violent screams. This disease consists of a contraction in the fibrous coat of the intestine, occa-

sioned by some indigestible substance, as orange-peel, a portion of a hard-boiled egg, a collection of carbonate of magnesia, or some other substance which irritates the mucous coat. The pain is sometimes so violent as to exhaust the living principle, and produce death. On examining the body after death, some portion of the intestines, generally the colon, whence the name of colic is derived, is found closely contracted in one or more places. Dr. Parish, physician to the hospital at Pennsylvania, on examining the body of an infant who died of this disease, found more than half of the small intestines irregularly contracted; in some parts reduced to the diameter of a goose-quill, and in others obliterated, as if a ligature had been applied.*

Treatment.—The infant should be immersed in a warm bath, and take a full dose of castor oil without delay. Should the castor oil be rejected, half a drop of croton oil, mixed with sugar, should be given. As soon as the bowels have become relaxed, the pain will entirely cease, and no farther medicine will be required.

TYMPANITES.

A tense, elastic, indolent, flatulent intumescence of the abdomen constitutes this disease, which has been divided by nosologists into abdominal and intestinal tympany. I much doubt whether it is ever idiopathic; and many writers are of opinion that the abdominal species, in which the air is contained within the bag of the peritoneum, never really exists. Hirster,† Lieutand,‡ and Bell,§ who were all accurate observers, have, however, recorded cases of abdominal tympanites; and my father met with a case in which the distension was so enormous and distressing, that he was induced to perform the operation of paracentesis abdominis for its relief.‖ When the distension of the intestines is very great, I do not think we can distinguish with accuracy whether the air is confined within the intestines alone, or within those and the peritoneal cavity. Intestinal tympany is not an uncommon symptom of other diseases, as strangulated hernia, stricture in the colon or rectum of long standing, or any permanent obstruction in the bowels, in remittent fever, &c. In short, any cause which may produce an impediment to the passage of the contents of the alimentary canal, may occasion the intestinal tympany, as the tem-

* "North American Medical and Physical Journal," Jan., 1827.
† "Wahrnehrunargen," 1 Art., 15.
‡ "Hist. Anat.," v. p. 432.
§ "On Ulcers and Tumours," vol. ii.
‖ "Med. and Phys. Journ.," vol. vii., p. 223.

porary obliteration of the upper portion of the rectum, in cases of distorted pelvis, requiring the Cæsarian section.

The immediate cause of the extraordinary collection of air in the intestines, appears to be the extrication of gases arising from the decomposition of the contents of the lower portions of the alimentary tube; and the case of remarkable flatulent distension of the abdomen, recorded in the "Edinburgh Medical Essays," by Professor Monro,* supports this opinion. In this case, a spontaneous cure was effected by the expulsion of offensive flatus; and there appears to me, from the description of the case, that the disease was produced by an irregular action of the fibres of the colon, disturbing the natural peristaltic motion, and producing temporary strictures in the colon, which was preternaturally distended at times in particular portions, resembling round balls, as in hysteria.

It is not so easy to account for the collection of flatus in the general cavity of the peritoneum. Mr. Hunter's belief, that it results from secretion requires further proof than mere conjecture.

Treatment.—The most successful treatment of the intestinal, which is the common form in which this disease is found in children, consists in the steady administration of castor oil, which should be repeated every morning or every second morning, until the abdominal fulness has subsided. I have also found oil of turpentine, when it can be taken, an useful auxiliary, on account of its property of promoting contraction in the stomach and bowels, when oppressed with occasional flatulence and troublesome borborygmi; spices are also beneficial on the same principle, as cinnamon, pepper, and capsicum; and when the bowels have been well purged, and all their stale contents discharged by repeated doses of castor oil, the generation of superfluous carbonic acid gas may be prevented by the regular use of liquor potassæ, in a dose of twenty minims, three or four times a-day in a little water. Flatulent purgatives, as the neutral salts, should be avoided; and when castor oil disagrees, or is strongly objected to by the patient, compound decoction of aloes may be substituted.

TABES MESENTERICA.

Chronic inflammation and enlargement, generally of a scrophulous character, in the glands of the mesentery, attended with emaciation, pain, irregular bowels, and hectic fever, are the principal symptoms of this disease. It attacks children of both sexes,

* "Edin. Med. Essays," vol. i., Art. 31.

from the age of six months to that of ten or twelve years, and commences with sharp pain in the region of the mesentery, recurring at intervals. The bowels are in some cases obstinately costive, in others in a relaxed state, discharging a cream-coloured offensive fluid. This light colour of the stools was formerly supposed to depend on the presence of chyle, which the lacteal absorbents had refused to imbibe; but it is now believed to consist, in a great measure, of lime, probably phosphate of lime, which, in a state of health, is separated by the assimilative process and conveyed into the circulation for the purpose of supporting the solid fabric of the body. It is probable that the addition of bile, which in these cases is little, if at all, secreted, is essential, in the healthy state, to the complete elaboration of the chyle, and its subsequent absorption. After a while the abdomen becomes tumid, while the rest of the body, thus deprived of its nutrition, rapidly wastes; a circumstance which is almost sufficiently characteristic of the disease, and remarkably obvious when the child is undressed. The skin becomes darker coloured and wrinkled, and the face presents a thoughtful, serious, emaciated, and withered expression. There is also generally a dark mark under the eyes, which are sunk in their orbits. The tongue is sometimes, but not always furred, and the appetite is voracious or perverse; the patient, in the latter case, longing for acids or calcareous substances. This desire for chalk, or other earthy particles, may arise from defective absorption of phosphate of lime for the growth and support of the bony structure, and accounts also for the avidity with which the patient devours cooked potatoes, the inorganic principle of which consists chiefly, according to Liebeg,* of phosphate of magnesia and ammonia. This defect in the action of the lacteal absorbents does not proceed from the mechanical obstruction of the mesenteric glands, as the lymph vessels have been found on dissection to continue pervious; but from want of energy in the nerves, proceeding from the abdominal ganglionic system, which preside over the functions of secretion and absorption. The pulse is always quick, and towards night, when a quotidian paroxysm of fever, preceded by chilliness, comes on, is much increased in velocity. During this febrile paroxysm, which lasts several hours, the abdominal pain is much augmented, and the child becomes more peevish and restless. On its decline, a profuse perspiration follows, which continues till morning. This hectic fever recurs thus periodically with as much regularity as an intermittent. During the period intervening between the febrile paroxysms there is no

* "Chemistry of Agriculture and Physiology," p. 205, 206.

proper apyrexy, which distinguishes it from an intermittent. The arid state of the skin, which is generally present, especially during the burning stage of the hectic, terminates during recovery in destruction and exfoliation of the cuticle, which exposes a new and fairer epidermis. The child is dull and inanimate, his attention being constantly engaged in some uneasy sensations, which render his temper irritable, his disposition perverse, and his feelings unsociable. Hence he refuses to amuse himself and to be amused by others. When the wasting of the body has become extreme, and the tympanitic state of the bowels, which accompanies those cases, attended with constipation, is not present, an enlargement of the mesenteric glands may be readily perceived by applying the hand on the abdomen with a little firmness. When these glands are enlarged, the situation, at which they will be perceptible to the touch, is within the umbilical region. It must be observed, however, that one or more of the glands of the mesentery may become greatly enlarged by scrophula without producing the symptoms of tabes mesenterica. Sauvages, in his "Nosographie," p. 301, relates the case of an infant, in whose mesentery a steatomatous tumour was discovered, weighing eighteen pounds; and one of my patients, a female, has had two similar tumours in the mesentery, of large dimensions, during more than thirty years, without sustaining any other symptoms than those of dyspepsia. While the mesenteric inflammation is proceeding, the urine is deficient in quantity, and found to contain, like the liquid stools, an excess of phosphates. After suppuration in the glands has taken place, the matter has been found to make its escape by an abscess, which burst at the umbilicus, and was ultimately cured by adhesive plaster.* The pain and abdominal tenderness do not always correspond with the appearance of the mesenteric glands.

"Nous venons de voir tout à l'heure que chez un malade la tumeur abdominale était douloureuse au toucher; cependant les ganglions mésenteriques n'offraient aucune trace d'inflammation."†

Some of the effects of this disease are the following: compression on the intestinal canal; perforation of one of the intestines; pressure on the nerves, producing cramp; dilatation of the veins of the lower extremities, and front and lower part of the abdomen; œdema, anasarca, and ascites.

The duration of this mesenteric disease is dependent on the presence or absence of concomitant peritonitis, or presence or absence of suppuration. When inflammation of the peritoneum

* "Sir A. P. Cooper."

† "Traité des Maladies des Enfans par Rilliet et Barthez," tom. 3, p. 414.

is connected with it, the patient may experience a very short and fatal attack; or the peritonitis, if sub-acute, may terminate in effusion of serum, constituting abdominal dropsy. When the glands rapidly pass into a state of softening, and hectic fever has been long developed, the disease will much more speedily assume a serious and fatal character. Uncomplicated with other internal diseases, as it is frequently found in this country, following dysentery, it is slow in its progress, and may generally be conducted to a favourable termination. In such cases a periodical attack of severe pain, fever, and purging of white stools, will be found to take place every morning, sometimes early after midnight; and this state may continue three or four months before the hectic character of the fever may be detected.

Tabes mesenterica is said by Rilliet and Barthez to have been, under their observation, almost always connected with intestinal, peritoneal, bronchial, or pulmonary phthysis; which diseases have been the first to attract their attention.

"Dans presque tous les cas que nous avons observés, la phthisie mésentérique compliquait une phthisie pulmonaire, bronchique, intestinale, ou péritoneale; et c'etaient les symptômes des ces maladies qui avaient d'abord attiré l'attention."*

Mesenteric disease is usually attributed, and I think with justice, to a damp, unwholesome, and crowded residence, and exposure to cold, and want of proper clothing and nutriment. Nevertheless I can say with truth, that I never met with the disease except in children descended from scrophulous parents.

The diagnosis of chronic inflammation, or tuberculization of the mesenteric glands, is sometimes rendered obscure by the resemblance of some of its symptoms to dysentery, tubercular peritonitis, remittent fever, and marasmus. The intermiscence of its principal symptoms, pain, fever, and purging, when purging exists, are peculiar to this disease, and distinguish it from dysentery, which, although frequently occurring periodically after periodical meals, with which it is connected, never disturbs the patient at a regular hour in the night, and is always recognizable by the rumbling in the bowels preceding every evacution. The pain, too, of inflammation in the mesenteric glands, is constant during the nightly paroxysms; in dysentery it is remittent, and the fæces in the former are free from the mucus and blood designating the intestinal discharge in the latter. Tubercular peritonitis is accompanied with almost constant pain and with purging, which returns every day at irregular periods, and the discharges from the bowels are more thin, and generally more offensive than those which appear in the disease under considera-

tion. In remittent fever irritation prevails more than inflammation, and the fever observes no regular intermission. There are also present an entire loss of appetite, and more or less disturbance of the sensorium, neither of which are met with in mesenteric disease. To this may be added, that the evacuations from the bowels in remittent fever are slimy, dark coloured, and offensive. Tabes mesenterica may be discerned from marasmus by its periodical pain, diarrhœa, and fever, by the marks of scrophula in the countenance, and by the intumescence of the mesenteric glands, when they are discoverable.

The morbid appearances observed after death, consist of enlargement of the mesenteric glands, occasioned by the deposit of tubercular matter in their central parts, the circumference being sound, and retaining the lymphatic apparatus in a state of integrity. Coagulable lymph consolidating the surface of the mesentery with some other portion of the peritoneal membrane is also occasionally met with, or ascites arising from a minor degree of inflammation in the abdominal serous tunics. In some cases the glands are in a state of softening, their contents resembling those of chronic abscesses. Some writers divide mesenteric diseases into those which are, and those which are not, inflammatory. I am, however, of opinion that tubercular or scrophulous enlargement of these glands is always produced by inflammation in the first instance, either originating in the mesenteric envelope, or the internal or external tunic of the intestines in scrophulous constitutions. Such has been the manner in which tubercular disease in the mesentery has unfolded itself within my own observation; and I am inclined to believe that all scrophulous diseases have a similar origin. Most cases will, I think, be found to commence in dysentery or diarrhœa, which have either been unusually severe or neglected, a scrophulous cachexy having been previously acquired by, or being congenital in, the patient. The hectic character of the fever is not, in my opinion, a positive indication of the existence of purulent or tubercular deposition, as is generally supposed, but symptomatic of inflammation of a sub-acute nature, occurring in children suffering enervation, and hence its curability after this fever has long existed. Were hectic always dependent on purulent secretion, the remedies so beneficial in the disease would be improper. As I consider incipient tuberculization an inflammatory process existing in a morbid constitution, I attribute the salutary effects of mercury and iodine to their action on the inflammation, and not to any power they may be supposed to possess in promoting absorption.

Treatment.—There is no disease in which early diagnosis and

treatment are so essential to the recovery of the patient as this; for after remedies are delayed till disorganization of the glands, or softening or suppuration occurs, there will be little chance for the patient. The preliminary or curative stage of the complaint is so slow and insidious, that it not unfrequently continues from three to six months; thus affording ample time for a discriminating medical practitioner to attack it with vigour and good effect. We should keep in view that the disease is essentially inflammatory, and the patient constitutionally weak. Hence we must adopt such means as are calculated to subdue sub-acute or chronic inflammatory action, without reducing the animal strength. The remedy best adapted for this purpose is the strong mercurial ointment, a scruple of which should be well rubbed during half an hour over the abdomen every night. The patient should also take every night from two to four grains of pulv. ipeca. comp., and three or four grains of hydrarg. cum cretâ. Every second or third morning a teaspoonful of castor-oil should be given, or a powder containing one grain of chloride of mercury and three or four of rhubarb. The dose of these medicines must be proportioned to the age and constitution of the child, as only gentle purging is admissible. This treatment will require a steady perseverance, which must not be laid aside on account of occasional variations in the pain or purging; but when the gums become tender from the mercury it should be suspended. It must, however, be renewed and continued from time to time till the pain, purging, and fever have ceased, and the child begins to resume a more healthy appearance. When inflammation in any part of the peritoneal surface co-exists, a few leeches may with advantage be applied on the abdomen over the painful and tender part. The purging usually attending chronic inflammation, or progressive enlargement of the glands in the mesentery, proceeds from a concomitant muco-enterite. Such cases will seldom, if ever, require the abstraction of blood. The form of the disease requiring local bleeding, is that which is accompanied with constipation, in which it will be found that the more acute pain and the abdominal tendernesss and distention, by which this variety is discoverable, proceed from contemporaneous inflammation of the serous investment of the mesentery or intestines. In such cases the mercurial ointment must be had recourse to as well as the local abstraction of blood, and the bowels must be relaxed every morning by half an ounce or an ounce of compound infusion of senna, which will act with more certainty and relief to the patient than any other aperient. All saline purges must be avoided, as they excite too much irritation and flatulence.

Since the introduction of iodine into the practice of medicine, it has become customary to exhibit some preparation of it in this disease, with the expectation that it may promote the absorption of tubercular matter. The treatment I have recommended is designed to obviate or modify tubercular deposits, on the principle of removing the inflammatory action by which tuberculization is developed. We should, therefore, abstain from the use of iodine, until the vascular excitement has subsided, or we are satisfied the antiphlogistic treatment has failed to prevent or arrest the development of specific disease. At this crisis such a stimulant may be tried either in the form of iodide of potash, or in conjunction with hydrargyrum cum cretâ. The biniodide or iodide of mercury, is too active a medicine in this condition of the patient; but the ioduret of lead, which has been often administered with safety, may be tried.

During convalescence some tonic medicine may be prescribed in conformity with custom; but it must be observed that the best tonic is that which removes diseased action, and when repletion is required that is best effected by proper food and exercise.

The best diet for the patient will be milk. Should this be objected to, arrow-jelly prepared with milk or water may be substituted, or gruel, or beef tea. All fermented liquors must be forbidden, as well as solid food, until the pain and hectic fever have disappeared; and after recovery warm clothing and change of air may be recommended and adopted with advantage.

Case.—1815. The infant daughter of Mr. ——, nine months old, had an attack of diarrhœa, or muco-enteritis, which was treated by astringents. When I was consulted I found the child had been attacked every morning at three o'clock during three months with severe pain in the abdomen, accompanied with purging and hectic fever. The stools were white and very liquid. The patient was much emaciated. Her grandfather, father, and brother had been afflicted with scrophula. I prescribed the inunction of a scruple of ung. hydrarg. every night, and three grains of hydrarg. cum cretâ twice a-day. This treatment had so good an effect that in less than three weeks every symptom of the mesenteric disease had disappeared.

Case.—1825, Nov. 24. Master O——, aged ten years, had diarrhœa from inflammation in the mucous coat of the small intestines, which was translated to their serous coat and the glands of the mesentery. I was informed his disease began with purging, which at the end of a week ceased, and was succeeded by severe pain and swelling in the abdomen. He had a dark colour under the eyes, and his expression indicated peritoneal inflammation.

The purging had lately returned every morning from one to two o'clock with perfect regularity, accompanied with great increase of pain and hectic fever; the pulse, during the paroxysm, being 166. The evacuations from the bowels were white. The case was complicated with ascites. I prescribed a grain of chloride of mercury with half an ounce of infusion of digitalis twice a day, and a few leeches to the abdomen. On the tenth day after I saw him the dropsy and pain had disappeared, and the bowels became confined; but the hectic fever remained, and the pulse was only reduced to 140. The gums were sore, wherefore the mercury was omitted, as well as the digitalis. As soon as the mouth became well the pain and purging continued at the same hour in the morning, and the emaciation increased. The mercury was therefore repeated, in conjunction with a small dose of opium, and this plan was continued, without the mouth being sensibly affected, till the 9th day of January, 1826, when a very slight ptyalism was observable. The mercury was continued occasionally till the 20th, when he lost all symptoms of disease, and rapidly recovered.

INTESTINAL WORMS.

The worms which most commonly inhabit the intestines of children are the Ascaris lumbricoides, the Ascaris vermicularis, the Trichocephalus dispar, and the Tænia solium and T. lata. The genera Ascaris and Trichocephalus are arranged by Cuvier in the Echinodermata and Order Intestina, and the Genus Tænia in the same class, and the Order Parenchymata.

1. *Ascaris lumbricoides*, or Common Round Worm.—This worm is from five to six inches to a foot in length, and pointed at each extremity. Its colour is dirty yellow or reddish, and a dark line or superficial groove may be observed passing along each side. It is covered with thick-set circular striæ, disposed in a transverse direction. Under the integument, which, as in all the entozoa, is devoid of epidermis, the muscular system consists of two layers, one transverse and the other longitudinal, both connected with the dermis. The digestive tube is straight and of a greenish brown colour. The mouth is three-sided, and surrounded by three tubercles, and the œsophagus ends in a tube of greater dimensions, which appears to perform the office of a stomach, and then contracting, is succeeded by a straight narrow intestine, whose out-let is near the tail. Numerous lateral branches extend from the in-

testine, forming culs-de-sac, which are probably designed to answer the purpose of valvulæ conniventes. Through the transparent integument in the female the genital apparatus is observable, occupying, in the form of white spiral tubes interwoven with each other, a principal portion of the interior of the entozoon. These white tubes, which proceed from the two cornua of the uterus, are of great length, and perform the office of ovaries. The orifice leading to the uterus is situated about one-third of the length of the animal from the head, and may be discovered by observing a circular contraction, almost like a joint. These ovarian tubes, which are each eight or ten feet long, as well as the uterus, are often found full of ova, the worm being oviparous. In the male the vas deferens, and a seminal reservoir, as well as other parts distinguishing its sex, are also discoverable. The lines, which are paralell with the animals, one of which on each side is white on the dorsal, and the other a little coloured on the abdominal, surface, are supposed to constitute the nervous and vascular systems: the former I believe being, from its knotty structure, analagous to the abdominal ganglions in the more perfect animals, and the latter by oscillating, or an alternate motion backwards and forwards, performing the office of the sanguineous circulation. For a more minute anatomical description of this worm the reader may consult Cloquet, Werner, Rudolphi, Lacnec, and Hooper; also Curling's Lectures in the "Medical Gazette," No. 519, p. 638, and No. 53, p. 712

The usual habitation of these worms is the small intestines, where they imbibe and feed upon the chyle; and as they possess no apparatus for penetrating the bowels, when they are found after death to have made their escape into the cavity of the peritoneum, their exit has been effected through perforations the result of disease. When they crawl into the stomach, they excite a tickling cough, with nausea and retching, and are thus forced up the œsophagus and through the mouth or nose. They occasionally creep up the œsophagus without producing sickness, and are seen making their exit through the mouth. They seldom continue long in the colon, for when they have migrated there they are propelled downwards with the fæces out at the anus. Their migrations sometimes extend to the biliary or pancreatic ducts, or the vermiform appendage of the cæcum. We seldom meet with more than one or two expelled at a time; but marvellous accounts have been published by authors, as Hooper, Guersent, Marteau de Grandvilliers, &c., of hundreds having been discharged by individual patients. They have been discovered in other passages as well as the alimentary; as in the frontal sinuses, the trachea, and

the bronchial tubes, where they had doubtless travelled from the œsophagus.* In short, many writers have related cases of these worms having been discharged from abscesses in the abdominal parieties;† in all which cases they must have passed through openings, the result of antecedent ulcerations in the intestines, and excited inflammation and abscess by their peregrinations in the cellular membrane. A remarkable case of this kind occurred to an infant, who discharged from a fistulous opening at the navel no less than ninety-six worms.‡ In such abscesses fistulous openings continue until all the worms have made their escape.

Although the oral apparatus of the worm may, from its construction, admit of its adhesion to the parieties of the intestine, after the manner of a leech, it does not appear that the A. lumbricoides has ever been found so adhering. On the contrary, it is always met with lying involved in viscid mucus, and the mucous membrane uninjured, except that it is occasionally a little red at those parts in which the animals may have lodged in a large mass, which by its bulk and rotations may have excited some irritation on the villi. In some singular instances, as in one related by Brettoneau, the mucous membrane has been destroyed by the attrition of worms.

Symptoms of strangulation have, according to Wedekind, been produced by an accumulation of worms in one part of the intestinal canal, which has had the effect of obstructing the passage and producing inflammation of the ileum. In an essay on this subject the author makes use of the following expression:—

"Les vers, en s'accumulant dans le canal digestif, peuvent donner lieu au misérére ou bien au vomissement de matériels stercorales."§

The effects produced upon the brain and nervous system by the irritation of worms in the intestines is well known. and a case related by Gaultier de Claubry satisfactorily proves that convulsions are thus excited. His patient was a girl eight years old, who had symptoms of worms during several days, followed by four violent attacks of epilepsy, which were removed by castor oil; a great number of worms being discharged by the operation of that medicine, and the patient remaining afterwards perfectly cured.‖

* Arvonsshon mem. sur l'introduction des vers dans les voies acriennes. Archer, 1836, 2nd series, tom. x., p. 44.

† "Rilliet et Barthez," tom. iii., p. 604; and "Med. Chir. Review," vol. xxi., p. 168.

‡ "Bulletin de Fensace," 1831, tom. xxv., p. 340.

§ "Compendium de Medicine," tom. —, p. 337.

‖ "Rec. Period. de la Loi de Med. de Paris," Juin, 1818.

The irritation excited in the intestinal mucous coat by worms in the small intestines, when translated to the brain, is apt to produce a temporary congestion in the cerebral vessels, having some resemblance to the acute hydrocephalus after effusion has taken place. Hence this sympathetic affection of the brain has been described by continental writers as a *pseudo-meningitis*. The symptomatic may be distinguished from the idiopathic meningite by an extreme dilatation of the pupils, by the silly unmeaning stare of the patient, by the frequent and semi-voluntary extension of the upper, and alternate contraction and extension of the lower, extremities, which are very different to the convulsions of hydro cephalus; by the moaning, muttering, or shouting, which also differ from the shrill cries in the first, and the stertorous breathing in the last stage of the latter, disease; and by the absence of hemiplegia, dysphagia, and convulsions. In fact, the suspension of the sensation arising from the impression of external stimuli, and the interruption of the mental functions resemble more a state of hysteria than any of the symptoms of meningeal inflammation. I have not mentioned involuntary evacuations, which are common to both diseases, because they are liable to occur from any cause which produces a prolonged interruption in the functions of the nerves of sensation. These cases of spurious meningite have often occurred in my practice, and always terminated in a favourable manner. Those who wish to consult other authorities for instances of pseudo-meningitis are referred to "Archives," tom. i., p. 480, an. 1838; "Une Observation par Viguier en Journ. Gener. des Hôp.," an. 12, p. 387, 1829; "Ménard," Rev. Med., 1829, p. 226; "Pièrquin," Journal des Progrès, 2nd séries, 1830, tom. ii., p. 270.

The symptoms, denoting the existence of ascaris lumbricoides, are a sickly and emaciated appearance, a peculiar pale blue colour of the sclerotic coat of the eye, muscular debility and atrophy, picking of the nose, swelling of the upper lip, startings in the sleep, and loss of, or erratic, appetite. This group of symptoms, however, equally denotes irritation in the mucous coat of the small intestines from other causes, and, therefore, is not special. When these worms are found in a patient liable to attacks of epilepsy, which have commenced and concurred with them, there will be greater reason to presume that the convulsive disease has been excited by worms than that it is dependant on derangement of the intestinal secretions without such a complication.

Zoologists are at present undecided in their opinions as to the origin of this worm; some believing it to be hereditary or

connate, while others, among whom I may enumerate Bremser,* suppose it is the product of spontaneous generation.

In support of the latter hypothesis I may adduce this fact, that the first indication of the presence of worms is the existence of a condition of the alimentary canal, which appears to me to be always associated with them, and peculiarly calculated to promote their growth if not their generation,—I allude to the existence of imperfect digestion, a slow action of the bowels, and a conglomeration of viscid mucus and undigested food, in a state of eremacausis or decomposition, a condition favourable to the spontaneous production of animal life. The spontaneous evolution of the *volvox globator*, from the dead petals of the damask rose in a state of decay, produced by exposing them to the decomposing influence of stagnant water and a temperature of 80 degrees of heat during a few days, may be observed by any one disposed to make the experiment. This infusorial animalcule may be viewed with a compound reflecting microscope making its destined movements with wonderful agility; and the same result will follow, whether the stagnant water may have been derived from distillation or some natural source. The torpidity of the bowels which prevails in this morbid state, contributes its aid in producing a stagnation in the natural current of their contents, and affords the process of decay an opportunity of proceeding uncontrolled in converting the undigested and unassimilated food into new elements. The enervation of the alimentary canal, which is the origin of the defective action in the gastric and intestinal villi and the muscular fibres, deprives the lacteal absorbents also of their natural energy and instinctive appetite for selecting and appropriating the nutriment necessary for the wants of the economy. Hence the abdomen becomes large, and the muscular structure of the body and extremities decline in strength and solidity, and the multiplication of the entozootic inmates proceeds; and hence, whenever the ascaris lumbricoides escapes externally, and we are thereby certified of its having existed within the patient, we shall find, on proper investigation, that there is at the same time a disordered state of the organs designed for the digestion and assimilation of the food. With respect to the theory, which attributes the origin of this worm to an hereditary disposition or a congenital existence, I think its non-appearance before the third year, which is the earliest age at which it is usually found in the human body, affords a strong presumption that it is not congenital.

Treatment.—A powder, composed of chloride of mercury one

* "Traité Zoologique et Physiologique des Vers Intestineaux de l'Homme."

part, and jalap three parts, adapted to the age of the child, should be taken every third morning, and three times on each of the intermediate days from five to ten minims of rectified oil of turpentine, suspended in peppermint-water by means of a little powder or mucilage of acacia, the mixture being previously agitated. As soon as the general health is restored, the medicines should be discontinued, for a state of perfect health is inconsistent with the presence of this worm. The patient may take, during a few weeks afterwards, from five to ten minims of diluted sulphuric acid; or a grain or two of bichloride of potash, properly diluted in any convenient vehicle, may be given three times a-day, both of these medicines possessing the faculty of resisting animal decomposition.

2. *Ascaris vermicularis:* Short thread-worm, or maw-worm.—This worm is of a pale yellow colour, the male being about two lines and the female about half an inch long, with a tail very sharp and thin. This, as well as some other species of ascaris, is distinguished by a small membrane on each side of the head,* which is a little obtuse. The body is round and transparent, and hence, by the assistance of a good microscope, we may perceive the convulated, filiform, ovarian structure. This animal is oviparous, and its ova, like those of the other entozoa, are of an oval shape. These minute animals have no power, like the zoophites, of reproducing any portion which may be removed. Their activity and faculty of leaping entitles them very properly to the name of ascaris, which in the Greek language signifies a leaping worm. The A. vermicularis inhabits the rectum, where it is found in large quantities, sometimes quiescent, at others, especially when near the anus, by their jumping or crawling motions exciting most tormenting itching and general irritability in the patient. Children are mostly subject to its visitations, but it is frequently met with in adults, and in those who are far advanced in life, in whom, as well as in children, its troublesome irritation may always be produced in a short time by eating unripe and indigestible fruit, as young gooseberries, apples, and nuts. This worm has been found in the urethra and vagina, where it had wandered from its proper abode; and it sometimes finds its way into the colon, the small intestines, and the stomach, in which last situation it is said to produce much uneasiness; and as the stomach is vulgarly called the maw, it is thence by the common people denominated the *mawworm*. Large families of this worm will often collect themselves together, so as to form considerable balls, which may be

* "Cuvier."

expelled *en masse* with the fæces to the great relief of the patient. The presence of these worms is not ascertainable by any alteration in the general health, nor by any symptom except the itching at the anus; but, generally speaking, children and adults, whose digestion is feeble and imperfect, and whose bowels are torpid, are most liable to their invasion, and some persons are exposed to their attacks through a long life without sustaining any injury. No apprehensions must therefore be entertained respecting these parasitical animals, as, like the rest of the entozoa, having no teeth, neither calcareous nor corneous, they cannot make use of their oral apparatus for any other purpose than suction, which is effected by the alternate contraction and dilatation of the fibres connected with the dermis compressing and dilating their straight alimentary tube after the manner of the leech. The distressing irritation, therefore, of which the patient complains, is not occasioned by the operation of any prehensile organ, but by the tickling and stinging from the finely pointed lower extremity perceived by the inner coat of the rectum during the locomotion of the animal, and felt at the anus.

Treatment.—The bowels must be kept in an open state by the exhibition of rhubarb, the dose of which must be regulated by the age of the patient. All fruit and pastry must be forbidden, and when the irritation is troublesome, from four to eight ounces or more of camomile-tea, or some other bitter infusion, should be injected into the rectum by means of a pipe and bladder, or an enema apparatus. When the distress is urgent, cold water may be substituted for the infusion; and this operation may be repeated every night, which is the time when the animals are most tormenting, until they are all brought away, or so reduced in quantity, as no longer to be perceived by the patient.

When the disease remains obstinate, it may be more speedily relieved by the treatment recommended for the A. lumbricoides in co-operation with the injection.

3. *Trichocephalus dispar, trichuris*, or Long thread-worm.—The body of this worm is round and thick behind, and slender in front, almost like a thread. At the termination of the slender part is a round orifice, which is the mouth of the animal. The worm is two inches in length, the thicker portion occupying only one-third. This portion in the male is convoluted in a spiral form, and has the generative appendage situated near the tail. In the female this thicker part is straight, and simply pierced at the extremity. It is said to be one of the most common worms in the large intestines in the human subject. As far as my own experience extends, I cannot admit that statement as a fact; on

the contrary, I have found it by far the most rare of the human intestinal entozoa. The colour of this worm is white, and, according to Pallas, the animal adheres to the villous coat of the bowel by its mouth, while its tail moves about through the fæces. One of my patients, who was afflicted with epilepsy and amaurosis, discharged a worm of this kind, and afterwards took several large doses of oil of turpentine without discovering any more; when I apprehend that it is sometimes solitary.

Treatment.—From two drachms to half an ounce, or six drachms, of rectified oil of turpentine, may be given before breakfast, and repeated on the third or fourth day. The turpentine is exhibited most pleasantly undiluted, care being taken to swallow immediately afterwards a little gruel or water.

4. *Tænia solium:* Tape-worm.—The etymology of the words tænia and solium appears to me to have been misunderstood by nosologists; and even the learned, medical philologist, Dr. Mason Good, has overlooked the proper signification of *solium*, which he has inserted in his "Nosology" as signifying solitary, without any comment. Tænia, derived from τείνω, to extend, signifies a tape, a ribbon; and solium, a seat, was used by the ancients synonymously with sedes and alvus, which is properly an adjective derived from alvus. Hence "Alveus de solio balneari." Herens. iv., 10, et Cœl. 28; and "nonnullas (apes) minimas gracilesque et alvei." Colum. ix., 3, 2. Edit. Gesner. The word alvus, which, as I have before said, is synonymous with solium, was used by Celsus and Pliny to express what is vulgarly called the paunch, or belly; whence the words tænia solium mean the bowel tape. It is quite absurd to suppose that solium was intended to signify solitary, which would, in that case, have been written sola, or solitaria.

The body of this worm is elongated, extending from four to ten feet or more in length, and flat. It is composed of articulations, called cucurbitulæ, all of which, except the anterior one, are flat, each having a lateral pore placed alternately on opposite sides. The narrowest part of this tænia is that which is called the head, which is square, and hollowed with four small suckers. This worm is sometimes solitary, and sometimes gregarious. The animal possesses the power of altering its form by contracting or dilating its articulations in various ways. I have met with a variety, having a pore on each side every articulation. Each of the cucurbitalæ is dove-tailed into the one below it, the anterior edge of which is plain and a little rounded, while the posterior margin is fringed and more spacious; and every succeeding link in the chain is more loosely connected as they approach the infe-

rior termination of the animal. This slighter attachment of the lower portion of the worm explains the reason of its being so commonly broken off and discharged with the fæces. The marginal apertures are supposed to be the external organs of generation. The motions of the tape-worm are very lively, and its chain-like structure wonderfully adapted for its habitation in a tortuous canal like that, which is formed by the human intestines. Its short and innumerable articulations, too, like so many fulcra, afford it immense power, with the aid of its strong, subcutaneous fibres, in contracting and extending itself, as its instinct may direct. It is by this astonishing power that it is enabled to attach itself so firmly to the inner coat of the small intestines, its proper residence, by means of its suckers, as rather to allow its articulations to be separated by external force than loose its hold. From microscopical observations, it appears that the infant tænia, as soon as it can be discovered after its escape from the ovum, is perfectly formed, and that its subsequent extension is only a full development of the original germ, and not the product of successive and additional prolongations. It is the opinion of some physicians, that the tœnia solium is of external origin, being imbibed with impure water, and afterwards cultivated within the small intestines. As it has been found to be congenital, that would be a sufficient and fatal objection, were there no other, to such an opinion.

The symptoms of tænia solium are emaciation, loss of colour in the face, vertigo, head-ache, gnawing pain in the stomach, and sometimes epilepsy. I have met with several cases of obstinate epilepsy thus produced. In one young gentleman, epilepsy, followed by incurable amaurosis, appeared to occur, in consequence of this worm. It attacks children as well as adults of all ages.

Treatment.—The only medicine which can be relied upon for the expulsion of this mischievous animal, is oil of turpentine. It should be taken undiluted in a full dose, varying from two teaspoonfuls to an ounce, according to the age of the patient. I may, observe, that an adult may take from two to three ounces. As soon as it has been taken, a draught of gruel or water should be drunk, and the patient should lie down until it has operated on the bowels, which will generally happen in less than an hour. Should the medicine not pass away within this time, a suitable dose of castor oil should be given. The first effect of the turpentine is vertigo; the patient feeling as though he were intoxicated. When the purging commences, the stools must be carefully inspected; and should the worm be expelled, it must be washed with clean water in order that the head or first articulation may be found, which will be recognised by its angular shape and smaller dimen-

sion than that of the others. In case this portion of the worm should be left behind, the turpentine should be repeated once in three or four days, until the symptoms I have mentioned have been removed.

5. *Tænia lata*, or *T. vulgaris*.—The articulations of this worm are broad and short, and a double pore is seated in the middle of each lateral face. Its length has been known to extend to 100 feet, and its breadth to an inch; but its head is always very small and oblong. The articulations are very short near the head, and gradually increase in length towards the lower end. This species differs in other respects from the T. solium, especially in the formation of the head, which has only one instead of four suckers, and in the comparative thinness of the articulations. The colour of this tænia, is dirty white, and its locality is the smaller intestines. It is seldom met with in this country, although common in Russia, Poland, and Switzerland.

Treatment.—The same as for T. solium.

For a more minute description and extended bibliography of the intestinal worms, the reader may consult Bremser's "Traité Zoologique et Physiolique des Vers Intestinaux de l'Homme." p. 553 to 574.

DISEASES OF THE RESPIRATORY ORGANS.

NASAL CATARRH.

Every part of the air passages is lined with a mucous membrane, continued from the external skin, whose office is to lubricate them with mucus, for the purpose of preventing dryness and unnecessary evaporation during the process of respiration. Some infants, when exposed to cold, are subject to a chronic catarrh in the nose, consisting of an excessive secretion of this mucus, mixed occasionally with pus. This disease is analagous to the snuffles in young horses; and when the nasal membrane is examined, it will be found of a deep red colour, with pus and mucus adhering to some parts, and flowing copiously from others, externally through the nostrils. This disease has a disagreeable appearance, and is exceedingly annoying to the infant, especially when attempting to supply himself with food from his mother's breast. He is also during the night almost constantly threatened with suffocation, making a snoring noise, and awaking from his sleep. This incon-

venience is increased by the habit prevailing among infants, of breathing almost entirely through the nostrils Until relief is afforded by a proper remedy, the muco-purulent discharge will continue many months.

Treatment.—The indication we have to fulfil, is to restore tone to the mucous membrane, which may be effected by the following mixture :

R—Cupri Sulphatis	gr. iv.
Quinæ Disulphatis	gr. vi.
Acidi Sulph. dil.	m. iij.
Aquæ Distillatæ	ʒ iij.

M.—Capiat cochl. i minimum bis die.

Should the discharge not be diminished within a few days, the dose of the sulphate of copper must be increased gradually, until slight sickness is produced. The modus operandi of the copper, to which I attribute the principal benefit of this mixture, is that of restraining the mucous secretion from the follicles of the stomach. By continuous sympathy, this astringent operation of the medicine is extended to the Schneiderean membrane, which rapidly reduces its mucous and purulent discharges. This effect of sulphate of copper on the Schneiderean membrane of the horse, is still more rapid and remarkable ; as any one may observe by exhibiting one drachm every day to that animal, afflicted with the most chronic inflammation in, and muco-purulent discharge from, the nostrils, uncombined with glanders. He will find in the course of a week, the mucous membrane of the nose, lose its dark red, inflamed appearance, and resume its natural grey colour, which favourable change will be accompanied with a total cessation of the morbid discharge.

Case.—1833, July 26, Mr. H——'s infant, aged six months, had been suffering almost from birth much annoyance and loss of sleep, from a constant discharge of pus and mucus from the nose, the inner membrane of which was much inflamed.

I prescribed one-sixth of a grain of sulphate of copper, and half a grain of sulphate of quina, twice a day. On the 28th, the discharge was nearly gone, and the medicine was discontinued after a few days. On the 14th of the next month, from exposure to the cold air, a slight return of the mucous discharge took place, accompanied with loud snoring and frequent interruption to sleep. I now increased the dose of the sulphate of copper to one-fourth of a grain. At the end of five days afterwards, the medicine excited vomiting and much purging, but the disease in the nose was completely cured and never returned.

It will be necessary to observe, that this membrane after being

long exposed to inflammation, will be for a considerable time susceptible of cold from indiscreet exposure to a cold wind or a moist atmosphere, unless the head is properly covered.

ULCERATION OF THE SCHNEIDEREAN MEMBRANE.

This membrane is subject to chronic ulceration, which, for the most part, appears in scrophulous children. The seat of the ulcers is sometimes on the side of the vomer, or the central cartilage; at others, on the opposite side of the nostrils. The itching and snuffling they occasion, induce the child, if he can reach it with his finger, to pick off the scab which forms on the ulcerated surface, and thus the ulceration is constantly protracted.

Treatment.—A small quantity of ung. hydrargyri nitratis, previously melted by holding it near a fire or candle, must be applied to the diseased part every night.

POLYPUS OF THE NOSE.

The kind of nasal polype to which children are subject, is that which is called *benign*. It consists of a relaxation of the mucous membrane lining the nose, which by degrees becomes elongated and filled with a serous infiltration. The first symptoms are, an obstruction to the respiration of air through the affected nostril, and a snoring noise made by the child during sleep. The disease may affect one or both nostrils. After these precursory signs have existed some time, a grey semi-transparent tumour presents itself near the lower part of the nostril; and when many polypi exist, the external form of the nose is disfigured by their pressure and extension. The usual figure of nasal polypi, is pyriform, and the attachment to the nasal bones readily lacerable. This disease varies according to the state of the atmosphere, being more large and prominent in moist than in dry weather; and this variation is often so great, that during a dry season the polypi retire, and cease to afford any annoyance.

Treatment.—When the polypi present themselves to view, the surgeon must cautiously introduce a pair of nasal forceps as near to the neck of the most prominent one as he can, and quickly extract it. He must repeat this operation until he has removed all the polypi within reach, or until the patient can breathe through the nostril, which he must keep in view is the real object for which his assistance will be required. The best forceps for this purpose is Mr. Liston's. Whenever the nostrils are obstructed by a return of the polypi, which, sooner or later, almost invariably happens, this operation must be repeated.

HEMORRHAGE FROM THE NOSE.

The extreme vascularity of the Schneiderean membrane exposes it to frequent attacks of hemorrhage. In some cases this appears to be a wise precaution of nature, to afford an outlet for the over distended vessels of the brain, when that organ is in a state of oppression from vascular congestion. All medical writers concur in believing that there are two opposite conditions of the sanguineous circulation, on which hemorrhage is dependant: the one a state of plethora or inflammation, and the other of inanition or enervation. In both it will be found that there exists a correspondence between the blood and the vessels by which it is circulated. Hence we find when the pulse is full, slow, or intermitting, and at the same time imparting a vigorous impulse, some important organ is suffering with active congestion and impending inflammation. The blood of such a patient will be found to contain an undue proportion of crassamentum, which may be noticed both as it flows from the vein, and after the serum has separated from it, by its dark purple colour and by its excess of fibrine. There may commonly also be observable on its upper surface a partial or general tegument, resembling buff leather, and consisting of fibro-albumen, which has been separated from the blood by some cause disturbing its elements, and which seems intended to assist the subsequent inflammation in the formation of new membrane or morbid deposit. When succeeding inflammation is established, this excess of fibrine in the blood is still more remarkable, from the firmness of the coagulum; while the presence of inflammation will be further denoted by the fibro-albuminous coating on the surface of the crassamentum being more or less contracted at its edges, according to the intensity and the seat of the phlogistic action. This deposit of fibro-albumen and contraction of its edges after coagulation, accompany pregnancy and ptyalism. In the former case the formative process, prevailing during the growth of the fœtus, may require an excess of fibrine and albumen to be conveyed to the uterine sinuses, for exposure to the inosculation of the placental vascular prolongations which there freely immerse themselves in the maternal blood. With respect to salivation excited by mercury, there is abundant evidence of local inflammation to explain the presence of those appearances in the blood which accompany other inflammatory diseases. Where acute inflammation exists, we shall find the pulse not only firm and hard, but also accelerated in proportion to the vitality of

the part attacked. On the contrary, during passive or venous congestion, and during a state of anæmia, the action of the heart and arteries is feeble, and the blood is deficient in fibrine and red globules; and when allowed to separate into serum and crassamentum, the latter is found defective in quantity, deprived of its due share of fibrine, and free from the inflammatory fibro-albuminous coating. Notwithstanding these changes in the blood effected by defective assimilation and consequent enervation, it will be found to coagulate like other blood,* although in the progress of an extreme case of anæmia the globules may be so far deprived of their hœmatosine, as to become as pale as serum.†

During inflammation the arteries feel under the finger firm, thickened, or indurated, almost like whipcord. This arises from the tonic and contractile state of their fibrous coats, excited by the stimulus of the blood actively engaged in a new process of membranous formation. In anæmia, purpura hæmorrhagica, petechial typhus, or scurvy, on the contrary, the blood, whose elements have been disturbed by the abstraction of most of its fibrine, and part of its red globules, is no longer adapted to supply the natural stimulus to the heart and arteries, which already enervated by the general innutrition prevailing, passively permit their degenerate contents to proceed almost as though they consisted of inanimate membranous tubes, not possessing any proper contractility. In this atonic state of the system and degraded vitality of the blood, the radial artery at the wrist will be felt pulsating feebly, and imparting to the finger the same sensation of tenuity as a superficial vein, and as though it were entirely deprived of its muscular or fibrous coat. This consentaneousness existing between the heart and arteries, and their contents, which evinces the design of nature in adapting its appropriate stimulus to every living organ, is aptly illustrated by the heart refusing to contract upon air introduced through the jugular vein. The moment the air is conveyed to the heart this vital organ ceases to contract, and the animal instantly dies. This morbid condition of the circulation, which I have before, when speaking on purpura hæmorrhagica, stated to be produced by defective assimilation, not only affects the action, but also the texture of the capillary vessels, whose coats, deprived of their proper share of vitality, become soft and friable, and readily permit their contents to escape through lacerations effected by the slightest abrasion or increased impulse. I have

* "Dubois." † "Zeitschrift für natur und Heilkunde."

been induced to be thus minute in pointing out and explaining the marked difference which exists between the two opposite conditions of the blood and the blood-vessels, as the propriety and success of our treatment of hemorrhage must be altogether dependant on a correct diagnosis. A spontaneous flow of blood from the nose may, for instance, be salutary in one state and to one patient, and dangerous and even fatal to another in an opposite condition. In children a common cause of epistaxis is some external injury, as a fall or a blow, or violent exercise, or a paroxysm of hooping cough. In all these cases the blood-vessels are mechanically ruptured. The disease also sometimes arises from some febrile attack, when it is salutary, and may obviate epilepsy or apoplexy. The most alarming discharges of blood from the nose are those which occur from the anæmic or atonic diseases included under the titles of purpura, scurvy, and petechial fever, from the causes I have mentioned, namely, the deficiency of fibrine in the blood, and the atony of the capillary vessels which furnish the hemorrhage.

Treatment.—The bleeding from the nose which follows any accident to a child previously in health, will require no particular attention; as, in such cases, a moderate loss of blood may be beneficial, by modifying subsequent inflammation. When it occurs from hooping cough, it may also be considered a fortunate event; for when the paroxysm is unusually long and violent, especially in infants, the brain is exposed to such a degree of venous compression as to occasion, in some cases, fatal convulsions, or apoplexy. A spontaneous epistaxis in such cases speedily unloads the congested vessels, and saves the patient's life. When the hemorrhage accompanies the commencement of one of the exanthems, as scarlatina, rubeola, &c., it need not be interrupted; but when it occurs in the course of a chronic disease in the assimilative organs, which may have had the effect of inducing a state of anæmia, means must be taken to arrest it. These consist of such internal remedies as the nature of the disease may require; as sulphuric acid, disulphate of quina, and generous diet, &c. There is no internal treatment so efficacious in purpura and scorbutus as these medicines, in conjunction with a purging dose of chloride of mercury and jalap every third morning. Some of these cases are complicated with worms, particularly the ascaris lumbricoides, which by remote sympathy excite an irritation in the nasal mucous membrane, and a consequent determination of blood, followed by rupture of the distended and feeble vessels. Such a complication of diseases is most successfully combated, by the exhibition of one or two grains of sulphate of

iron twice a day, in addition to the remedies I have just mentioned. The iron in such cases has the effect of increasing the hœmatosine in the blood, and rapidly improving the animal vigour, probably by exciting the dormant energy of the ganglionic system, whereby the assimilation of the food is rendered more perfect.

From the experiments of Dupuytren, Mager, and Dupuy on the eighth pair of nerves, I am inclined to think that healthy secretions may be incited in the chylopoietic viscera by electricity or galvanism, when enervation is extreme, and that thus the proper function of the ganglionic nerves may be restored indirectly through the consequent improved nutrition. Should alarming hemorrhage take place before these general remedies have had time to improve the condition of the blood, and to restore the natural tone of the small arterial tubes, local means must be adopted. In these cases attempts to promote coagulation by external cold will not be of so much avail as in other cases, in consequence of the elements of the blood being altered and the contractile power of the vessels suspended by disease. We must therefore have recourse to pressure, which may be effectually applied by means of a soft bougie, a ligature, and a small piece of sponge. It should first be ascertained whether the bleeding proceeds from one or both of the nostrils. When both nostrils bleed, two pieces of sponge will be required. The patient being seated with his head held backwards, the surgeon should fasten one end of the ligature to the bougie near its smaller extremity. The bougie must then be introduced along the floor of the nostril in a horizontal direction, carrying one end of the ligature with it, till its point is visible in the fauces behind the soft palate. The bougie being gently pushed towards the back of the fauces, the ligature may be seized by a pair of common forceps and brought out through the mouth, when it should be cut away from the bougie, which should be withdrawn. The end of the ligature which has been brought through the mouth must now be formed into a noose, into which the sponge should be fixed. Lastly, the other end of the ligature left hanging out at the nostril must be drawn tight, so as to bring the sponge in close contact with the posterior opening, and tied firmly to a roll of linen placed in front of the nostril. If the sponge is well adapted to the size of the posterior aperture in the fauces, the bleeding will immediately cease after the ligature is fastened. The same process must be adopted at the other nostril when the hemorrhage arises from both. The sponge should be removed on the third or fourth day by quietly pushing it into view by means of a bougie, and taking hold of it

with the forceps; care being taken to prevent its slipping into the pharynx by retaining the ligature in the other hand during its return through the mouth. This operation is much more easy of execution both to the patient and surgeon than the common and ineffectual practice of stuffing the nostrils with lint.* An injection of alum, two drachms or more to half a pint of water, or a saturated solution may be tried. I have not found such injections of any permanent use in these cases, and should therefore not allow much time to be consumed by any trial with them when the bleeding is profuse and alarming. I have, however, witnessed excellent effects from the internal use of alum and kino, which may be exhibited in the proportion of eight grains of the former to four of the latter, in an ounce of compound infusion of roses, once in four hours. These astringents act on the gastric mucous membrane on the same principle as sulphate of copper in the cure of nasal catarrh.

Those cases of nasal hemorrhage which are connected with an inflammatory state of the blood must be treated by bleeding and by nauseating doses of the potassio-tartrate of antimony. Cold water should also be constantly applied to the nose by means of a sponge, or the cold shower-bath to the head. Digitalis has been much extolled by some eminent practitioners. I think it proper, however, to caution the young practitioner against the use of so dangerous a medicine, unless he is in constant attendance to watch its effects, which are apt to accumulate and unexpectedly operate as a poison.

OZÆNA.

This is denoted by a discharge of a thick offensive matter from the nose. The disease may be seated in the lining membrane or in the bones of the nose, and it may proceed from scrophula or syphilis. When the Schneiderean membrane is the seat of the disease, it will be found to be in a state of ulceration. In this case no alteration in the external appearance of the nose will be observable. When the ossa nasi are diseased, a swelling and redness of the integuments which cover them will generally be observable. The scrophulous form of the disease seldom appears until the child is five or six years old. It may be discovered by its history and progress, and by the concurrence of a scrophulous diathesis, as, hypertrophy of the upper lip, enlarged lymphatic glands, and a tumid abdomen. Whether the disease consist of membranous or osseous ulceration, the nostrils will be more or less

* See "Alcock on Hemorrhage," "Lancet," No 121, p. 443.

obstructed, and the child will be unable to articulate without discovering a defect in the nasal pronunciation. The osseous form of the disease is very tedious, on account of the repeated exfoliations of carious bony laminæ.

The venereal species appears during early infancy, being in them a congenital disease, and accompanied with other marks of syphilis, as eruptions on the skin, excoriations or ulcerations about the anus, a dirty or copper colour of the skin, and great emaciation.

Treatment.—The scrophulous species should be treated by five or ten grains of jalap-powder, and fifteen of supertartrate of potash, given every or every second morning, so that the bowels may be kept in a state of free relaxation every day. The local remedies must consist of one of the following lotions, applied by means of lint introduced into each of the nostrils twice or three times a-day:

℞—Tinct. Myrrhæ . . . . . ʒj.
Liq. Calcis, ʒv. M. et fiant lotio:
vel,
℞—Argenti Nitratis . . . . . gr. v.
Aquæ Distillatæ . . . . . ℥j. M.

The syphilitic species will require the internal use of mercury. From two to four grains of hydrargyrum cum cretâ may be given the infant every night and morning until all symptoms of syphilis have disappeared. This is by far the more manageable form of ozæna to contend with; and after the venereal poison has been eradicated, the infant will become healthy, and generally very fat.

EXTRANEOUS SUBSTANCES IN THE NOSE.

When children are allowed to amuse themselves with peas, glass beads, or cherry-stones, or other small round substances, they are apt to introduce them within the nostrils. As soon as the accident occurs the foreign substances ought to be removed without delay, especially if it happens to be a pea, or any soft vegetable liable to swell from contact with moisture. When the substance is so situated near the bottom of the nostril as to admit of the passage of a silver director, that instrument should be carefully introduced over the upper part of it, with the concave surface downwards. Then the surgeon should elevate the handle of the instrument, and keeping its point against the posterior part of the foreign body, should extract it without delay, using the director in the manner of a lever. When the substance is situated too far within the nostril to admit of this proceeding, it may be removed by first introducing a director beneath it along the floor of the

nostril, and, that being held securely, by afterwards passing another director over the foreign body parallel with the first. A finger being then placed betwee the two directors to prevent their points from expanding within the nostril, they must be extracted together with the substance, the operator compressing their farther extremities all the time by placing his fingers and thumb between the fulcrum made by the other finger and the nose. A piece of wood of sufficient diameter may be placed and tied between the directors instead of the finger; but an expert surgeon may succeed without any fulcrum, provided he passes the instruments sufficiently far beyond the foreign body, and he takes care to apply his pressure and extracting force upon it to prevent the possibility of its receding and escaping from their grasp. Before any operation is attempted, it will be proper to try the expulsive efforts of the child, who is sometimes able to dislodge the intruder by smartly blowing down the nose after taking a full inspiration through, and then closing the mouth.

In some persons there is a disposition in the nasal mucous membrane to deposit phosphate of lime upon small substances accidentally lodged within the nostril.

Case.—C. B. had for two years been subject to a constant pain in the left side of the nose, accompanied by sneezing, coryza, mucous discharge, and subsequent ulcerations round the nostrils. These symptoms having continued some time, the left nasal meatus became completely obstructed, and its parietes began to swell in such a manner as to compress the lachrymal duct, in consequence of which the tears flowed over the cheeks, and the skin was extensively excoriated. At length, by blowing through the nose, she felt something moveable in it, and this encouraged her to persevere, until she succeeded in expelling a calculous concretion of considerable size, which, on being divided, was found to consist of a cherry-stone, around which the concretion was deposited in concentric layers of various colours.*

CEREBRAL CROUP, LARYNGISMUS STRIDULUS, OR SPASM OF THE GLOTTIS.

This disease was minutely described by Dr. John Clarke, in his Commentaries on the Diseases of Children; and his description is so accurate, that I am induced to extract it verbatim:—

* "Graefe's Journal," 1829.

"This convulsive affection occurs by paroxysms, with longer or shorter intervals between them, and of longer or shorter duration in different cases, and in the same case at different times.

"It consists in a peculiar mode of respiration, which it is difficult accurately to describe.

"The child having had no apparent warning, is suddenly seized with a spasmodic inspiration, consisting of distinct attempts to fill the chest, between each of which a squeaking noise is often made; the eyes stare, and the child is evidently in great distress; the face and the extremities, if the paroxysm continue long, become purple, the head is thrown backward, and the spine is often bent, as in opisthotonos: at length a strong respiration takes place, a fit of crying generally succeeds, and the child, evidently much exhausted, often falls asleep.

"In one of these attacks a child sometimes, but not frequently, dies.

"They usually occur many times in the course of the day, and are often brought on by straining, by exercise, and by fretting, and sometimes they come on from no apparent cause.

"They very commonly take place after a full meal, and they often occur immediately upon waking from sleep, though before the time of waking the child had been lying in a most tranquil state. As the breathing is affected by these paroxysms, the complaint is generally referred to the organs of respiration, and it has been sometimes called chronic croup, and is altogether of a convulsive character, arising from the same causes, and is relieved by the same remedies as other convulsive affections.

"Accompanying these symptoms, a bending of the toes downwards, clenching of the fists, and the insertion of the thumbs in the palm of the hands, and bending the fingers upon them, is sometimes found, not only during the paroxysm, but at other times.

"Clenching the fist with the thumb inserted into the palm of the hand, often exists for a long time in children without being much observed, yet it is always to be considered as an unfavourable symptom, and frequently is a forerunner of convulsive disorder, being itself a spasmodic affection."*

This disease seldom appears before the third month, or after the third year. This may be accounted for partly by the gradual increase in the aperture of the glottis, which continues to proceed until puberty. It is a frequent consequence of dysentery, and concomitant with marasmus, especially in children who are dry-nursed. Dr. Clarke, in his above description of this disease, has

* "Commentaries on the Diseases of Children," by John Clarke, Esq., M.D., p. 86—89.

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centres. That cases, however, will be found to originate in the last cause Dr. M. Hall has enumerated, we have abundant proof every day; and I hope to be able to show that it is almost invariably the cause of the disease. In a fatal case, which occurred in my own family, the only morbid appearance found on dissection was a large exostosis growing on the inner surface of the occiput, which compressed the cerebellum and produced chronic inflammation of the dura mater. In this patient no disease was discoverable either in the cervical or thoracic glands. In another fatal case, also in my own family, in which the spasm was almost continual before death, the only morbid appearance found on examination was inflammation in the left phrenic nerve, as it passed over the pericardium. With respect to dentition, I have never found the disease in any manner connected with that process. In one patient the gums had been lanced most unmercifully, down to the alveolar processes, by the practitioner in attendance, and salivation had been induced without any relief having been afforded; and as the case is full of interest, and tends to confirm the view I have long taken of the general cause of spasm of the glottis, I will presently relate the particulars of it. There is no doubt that certain infants are liable to this disease from various causes; but most of the cases, except the two fatal ones I have mentioned, which have occurred in my practice, have arisen from an excited state of the laryngeal nerves, produced by the pressure of undigested food in the stomach or duodenum, or some portion of the other small intestines. In these cases, when the stomach has been the original seat of the disease, the paroxysm has always occurred almost immediately after a meal; when the duodenum or the other small intestines have been its seat, the fit has not taken place in less than an hour after taking food, when it has always been immediately followed by epilepsy. The morbid condition of the stomach has been preceded by imperfectly cured remittent fever, or by a neglected state of the bowels; and on examining the intestinal discharges, after the operation of opening medicine, they have been found undigested, no alteration having been made in the appearance of the food during its passage along the alimentary tube. Hence, when panada has been the food given to the child, the evacuations will be found to consist of the bread with which it was made, perfectly unaltered. In these cases, I apprehend there is a deficiency of gastric juice and mucus in the stomach, which is from that cause rendered irritable by the presence of food, for which it is not properly prepared; and when the crude aliment is propelled into the duodenum, and the natural secretions of that bowel, and the

discharges from the liver and pancreas are either absent or defective, it appears that its mucous coat is impatient of its contents, and the nerves with which it is supplied excite the distant muscles of the larynx into spasm, on the same principle that the morbid secretions in cholera, irritating the mucous surface lower down the canal, excite the muscles of the legs and abdomen into spasmodic action; and the successful practice of Hackmann, in the administration of musk and oxyde of zinc in chronic cases, appears to illustrate this analogy. As soon as the digested food has passed from a healthy stomach into the duodenum, the pancreas and the biliary ducts pour out their tributary streams, which unite with the chyme and the mucous secretion of that intestine effused from its numerous follicles. When the concurrence of these secretions is prevented by any cause, the symptoms which have occured to my observation, when I had reason to suppose the food had arrived at the duodenum, have led me to believe that the inner surface of that intestine had in such cases acquired a morbid sensibility, which had deranged the healthy functions of the paria vaga and the nervous centres.

As far back as the year 1723, Richa,* and 1726, Verduis,† described this disease, and referred its cause to hypertrophy of the thymus gland. In 1830, Kopp‡ published a memoir on this subject; and as he also considered the thymus gland to be in fault, the affection was called after him, "the thymic asthma of Kopp." Frank also asserted that anatomists often found the thymus and bronchial glands tumefied. In 1836, Dr. Hugh Lee, to whom I have before referred, published an essay on this disease, which he denominated, laryngismus stridulus. He adopted the same view with respect to the pressure, which he supposed was exercised by enlarged glandular structures on the laryngeal nerves in every instance; and he endeavoured to account for the crowing inspiration, by supposing that the pressure of the enlarged cervical glands, &c., produced paralysis in the nerves in question. Dr. S. Merriman also appears to have entertained a belief that the disease is occasioned by the pressure of glandular swellings.§ On the contrary, Dr. Kerr‖ denies that pressure on the nerves, or dentition, has any effect in producing the complaint; and Dr. Marshall Hall, one of the best physiologists of the day, thus expresses himself:—

"It has been recently attempted to found the pathology of

* "Constitutiones Epidemicæ Taurinenses."
† "Dissertatio de Asthmate Puerorum."
‡ "Denkwardigkeiten in der Acteylichen Praxis."
§ "Underwood on the Diseases of Children," ninth edition, p. 142.
‖ "Edinburgh Med. and Surg. Journal," vol. lviii., pp. 334 to 335.

this interesting disease upon observations such as that adduced by Dr. Merriman, but I think unsuccessfully.

"In the first place, as far as my memory and judgment serve me, the cases adduced to support this view are not cases in point, but, in reality, cases of other diseases.

"Secondly, supposing pressure upon the par vagum to exist, it would induce totally different phenomena from those actually observed in this disease, and it would not explain the *series* of phenomena which actually occur in it; for,

"1. Such pressure would induce simple *paralysis*.

"This would, in the first place, affect the recurrent nerve and the dilator muscles of the larynx; it would induce a partial but *constant* closure of that orifice,—a permanent state of dyspnœa, such as occurred in the experiments of Legallois, or such as is observed to be excited in horses affected with the '*cornage*,' or *roaring*.

"Secondly, it would induce paralysis of the inferior portion of the pneumogastric nerve, with congestion in the lung or lungs, and the well known effects upon the stomach of the division of this nerve.

"2. The disease in question, on the contrary, variously designated, 'peculiar convulsion,' 'spasm of the glottis,' &c., &c., is obviously a *part* of a more general *spasmodic* affection, and frequently induced, most frequently comes on in the midst of the first *sleep*, in the most *sudden* manner, receding equally *suddenly*, to return perhaps, as before, after various intervals of days, weeks, or even months. Very unlike paralysis, from *any* cause!

"3. It not unfrequently involves, or accompanies, as I have said, *other* affections, indisputably *spasmodic*, as distortion of the face, strabismus, contraction of the thumbs to the palms of the hands; of the wrists, feet, toes; general convulsions! sudden dissolution! a series of phenomena totally unallied to paralysis.

"4. Indeed, the larynx is sometimes absolutely *closed*, an effect which *paralysis* of the recurrent nerve, and of its dilator muscles, *cannot* effect.

"5. Paralysis, from the pressure of diseased glands, would be a far *less curable* disease, a far *less variable* disease, a far *less suddenly fatal* disease, than the croup-like convulsion.

"Thirdly. Almost all recent cases are at once relieved by attention to three or four things, viz.:—the state, 1, of the *teeth*; 2, of the diet; 3, of the bowels; and 4, by change of *air*. They are as obviously produced or reproduced by the agency of errors in one or more of them.

"Fourthly. In fact, the croup-like convulsion is a *spasmodic* disease, excited by causes situated in the nervous centres, or eccentrically from them. In a case of spina bifida, a croupy and con-

vulsive inspiration was produced by gentle pressure on the spinal tumour. In cases from teething, the attack has been produced and removed many times, by teething, and by freely *lancing* the teeth, by crudities, and by emetics and purgatives, by change of air, &c.

" Fifthly. There is a series of facts which prove the connection of this disease with other forms of convulsions in children, and with epilepsy in the adult subject.

" Sixthly. In protracted cases, congestion and effusion within the head occur, as *effects* of this disease.

" Lastly. Innumerable cases of undoubted croup-like convulsions have occurred, in which no enlarged glands would be detected in any part of the course of the pneumogastric nerve."*

These arguments of Dr Marshall Hall appear to me perfectly conclusive, in opposition to the theory of Dr. Hugh Ley; and I believe all observant and scientific practitioners of the present time concur in believing that the theory of Dr. Hugh Ley is totally unsupported. The simple facts of the disease only occurring at uncertain intervals, while the tumours are fixed and unvarying, and of a cure occurring spontaneously, or by a judicious use of purgative medicines, are sufficient to satisfy any unprejudiced person that the sudden attacks of croup-like inspiration cannot be owing to any *permanent pressure* on nerves, which are only excited at intervals from other remote and occasional causes. Caspari, Pagenstecher, Roesch, and Hackmann, are of opinion that the closure of the glottis in the disease under consideration is produced by spasm in the muscles; and Dr. Marshall Hall, and the majority of English physicians, concur in this opinion. The sudden nature of the paroxysm, and the relief or cure afforded by remedies which can have no effect upon *paralysis*, must I think leave no doubt of the correctness of this opinion.

The French physicians appear to have paid but little attention to this disease, probably from want of opportunities, which I conclude may arise from the more spare and liquid diet of the children, compared with the system of cramming them with too solid, which is so prevalent in England, and probably in Germany, if I may judge from the frequency of the disease in that country. The infrequency of this disease in France may perhaps be better explained by the custom, almost universally prevailing among the women in the middle class of society, of sending their children to be suckled by foster-mothers, instead of having them dry-nursed. Amongst the various causes of stridulus laryngismus in Great Britain, the most frequent is that of over-feeding, which is prac-

* " Underwood on the Diseases of Children," ninth Edition, pp. 145 to 147.

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Treatment.—When the patient is florid and plethoric, especially when general convulsions have followed the attack, and the head is hot, a few leeches must be applied to one of the temples, and a purging dose of chloride of mercury and jalap should be given every second or third day, according to the severity and frequency of the paroxysms. The proper proportion of the chloride will be one grain to four of jalap for an infant one year old, the dose being double that strength for the second, and treble for the third year. The evacuations must be examined, when they will be found to contain undigested food, and probably a quantity of highly offensive, dark coloured mucus. Although I have never seen any benefit from lancing the gums, yet should they be prominent and inflamed, from the pressure of the subjacent deciduous teeth, they may be lanced. It must, however, be borne in mind, that when the gums are tumefied and inflamed, the relief to be expected from their incision will be diminished in proportion as the child is advanced in age. In performing this operation, all that is required will be to divide the gums crucially down to the teeth, which should always be distinctly perceived by the touch to be near the surface previously to the operation. If the child is dry-nursed, a wet-nurse should be provided; or if this cannot be done, the food should consist only of barley-water, or thin gruel prepared from grits, and passed through a fine sieve. When the child is three or four months old, a wine-glassful of this food will be sufficient about once in two hours during the day. No animal food, nor rusks, nor bread, nor milk, should be allowed such an infant, until all his primary incisive teeth have advanced through the gums, when, if the disease has subsided, he may take some of those articles of diet. He should be taken into the fresh air every fine day, and not confined to a hot apartment. His head must be kept cool, and if he has not sufficient hair to enable him to dispense with his cap, one as thin as possible should be worn. I have often known severe paroxysms brought on by a heated room and by too much clothing about the head. Especial care must be taken to avoid mental pain or excitement, as the attacks of croupy inspiration are very apt to be induced by sudden passion.

The opposite variety of the disease,—that which appears in delicate, pale, and sickly infants,—never requires bleeding. The powder, composed of chloride of mercury and jalap, must be administered every second or third morning, and on the intermediate mornings a tea-spoonful of castor oil. This plan must be pursued until the stools become natural in smell and appearance; for as long as they consist of crude, undigested materials, or pre-

sent the vicious, offensive mucous secretions peculiar to this disease, which I have described as resembling undiluted white-lead paint, the fits of crowing inspiration will not fail, from time to time, to occur. So long, too, as these alvine discharges continue, emaciation will proceed, and the muscles will remain soft and flaccid. Such patients, when the state of the intestinal secretions and discharges are neglected, and appropriate treatment is not adopted, soon become afflicted with marasmus; the paroxysms increase in frequency and severity, and epilepsy following, every attack in a short time exhausts, and ultimately destroys, life. These feeble and pallid infants receive no relief from lancing of the gums, nor, as I have said before, from other local bleedings; on the contrary, each successive loss of blood increases the malady; and, when the seat of the disease and the proper treatment are overlooked, such infants become miserable objects, having one or both hands and feet hanging down, and distorted with a continued contraction of the flexor muscles; anxious, irritable, and appearing every moment to expect a fit, which each time threatens to destroy life. As soon as the morbid secretion of mucus has disappeared, the chloride of mercury and jalap must be discontinued, and the castor oil should be regularly repeated, either every or every second morning, to obviate costiveness, and thereby prevent a recurrence of the attacks. At this period, great benefit will be derived from pure air; and, if the child should live in the town, he should be removed into a warm and dry situation in the country. The diet suitable for this variety will consist of barley-water or thin gruel, strained, till the first eight front teeth have escaped through the gums, when he may be allowed, with advantage, mutton or veal broth, and the yolk of an egg, boiled two minutes, once every day. In the feeble children subject to this disease, the process of dentition begins prematurely; and this is one cause of the appearance of the symptoms. The determination or relatively increased flow of blood to the alveolar processes and dental capsules, necessary for the development of the teeth and the deposit of enamel, being, in these weak and irritable children, an exhausting effort of the vital principle, which deprives the alimentary canal of its due and accustomed share of nervous energy, the secretions in the chylopoietic viscera and the peristaltic action of the stomach and intestines are diminished, and indigestion and costiveness are the result. The vital processes of chylification and sanguification are thus diminished in girls of feeble constitution, during the development of the ovaries preparatory to the process of menstruation. In these the excitement in the reproductive organs, necessary for their rapid growth and

maturity at the destined period alluded to, attracts to those organs a temporary excess of the vital principle at the expense of the organs of supply; in consequence of which the natural action of the bowels is retarded, the various secretions necessary for nutrition are interrupted, the blood is ultimately deprived of its due portion of fibrine, and red globules, and the condition of the sanguiferous circulation, called, anæmia, is established. The same principle will be found to operate in pathology, as well as in the natural development of particular organs. In all those varieties of mania, which are of a remittent character, and in which a connection may be traced with the digestive organs, we find the bowels in so torpid a state, as to require the frequent or constant use of purgative medicines. So, also, in some, especially scrophulous, inflammations, to which the eye is subject, we find, during the continuance of the local excitement, such a torpid state of the alimentary canal, as requires a constant administration of purgatives.

In some scrophulous children, I apprehend a state of chronic inflammation in the muciparous glands and villous tunic of the small intestines, similar to what takes place from the mucous coat of the eye in purulent ophalmy, occurs, and is the source of the copious discharge of muco-purulent matter, which I have observed in some cases of protracted disease, accompanied with spasm of the glottis. Such cases require the same persevering use of castor oil, or other purgative, as I have recommended; and, when curable, do not admit of cure or relief from any other treatment. The stimulus of purgative medicines, in such cases, carries off these morbid secretions, and, at the same time, excites the secretory vessels into more healthy action.

Most of the cases I have seen, connected with epilepsy, have been preceded by intertrigo behind the ears, which has receded after the attack has commenced. In such cases, I think it would be good practice to apply a blister behind each ear, for the purpose of counteracting the cerebral irritation. I have afforded manifest benefit in these cases, by recommending the friction of ten or fifteen doses of croton oil on the head, over the anterior fontanel. A few applications, at intervals of four or six hours, will be sufficient to produce a copious eruption of small vesicles, which is followed by a decided relief to the epileptic attacks. Sometimes, instead of vesicles large pustules make their appearance, the discharge and irritation from which have always appeared to act most beneficially on the convulsions.

The following case is adduced, to evince the fatal effects of bleeding, injudiciously employed in a protracted case of cerebral

croup, proceeding from intestinal irritation in a very pale and delicate infant:—

Case.—1836, March 7.—Master ——, sixteen months old, was attacked with spasm of the glottis. Had had several slight attacks during the last fortnight. Very pale. The flexor muscles of the hands and feet were left in a state of contraction after the fit. Is suckled and fed *on milk and rum.* Has no primary teeth.

Capiat Hyd. Chlorid. gr. iij, statim.

℞—Infusi Sennæ Comp. . . . ℥j
Magnesiæ Sulphatis . . . ʒij.

M. Capiat cochl. i minimum 2is horis.

8th.—No return of the fit. Stools like thick white paint, and intolerably offensive.

9th.—On awaking this morning had another attack.

℞—Hyd. Chlorid. . . . . gr. iss.
Pulv. Jalapæ . . . . . gr. ivss.

M. fiant Pulv. iij, capiat i 3is diebus.

Capiat cochl. i minim. Misturæ Sennæ et Magnesiæ Sulphatis bis die.

25th.—Took milk last night for supper, and this morning had an attack of cerebral croup, followed by epilepsy.

Rep. Hyd. Chlorid. et Magnes. Sulph. et Senna.

To leave off milk and take only gruel.

As soon as the bowels were well relaxed all the symptoms subsided.

29th.—From some error in diet another attack of spasm of the glottis occurred. Face very pale. Stools as offensive as ever. Head perfectly cool.

Rep. Magnes. Sul. et Senna, bis vel ter die.

April 4th.—Had no return of the disease since March 29th till this morning. The stools have been in the interim quite healthy. The fit this morning was followed by a contraction of the flexor muscles of the hand, and a tremulous, involuntary motion of the orbicularis palpebrarum.

Rep. Hyd. Chlorid. et Magnes. Sul. c. Sennâ.

5th.—A swelling has appeared on the back of the contracted hand, and has had an attack of cerebral croup every time

he has awoke from sleep. The stools have again the offensive smell, and the appearance resembling thick white paint. The head is still cool. Frequent crying and oppression in his breathing.

13th.—Had been recovering rapidly since the 5th. This morning having taken cold, had an attack of dysentery, and the stools again acquired a very disagreeable smell.

℞ Magnes. Sulph. cum Sennâ.

14th.—Constant tenesmus; eyes convulsively rotated. He is so sore and peevish, that he cannot bear the least movement.

℞—Magnes. Sulphatis . . . . . ℥iss.
Infusi Rosæ Comp. . . . . ℥j.
M. Capiat cochleare i minimum 4is horis.

20th. Perfectly well.

May 7th.—A few days ago had a return of contraction in the flexor tendons of one hand and foot. To-day was attacked again with spasm of the glottis, followed by epilepsy; and I was unfortunately engaged at a distance from home. During my absence, a young practitioner attended, and applied leeches to one of the temples, while the child remained in an exhausted state, with a pale and cadaverous countenance. The bleeding from the leeches afforded no relief to the cerebral croup nor the epilepsy, but produced a state of collapse, which continued increasing through the day, and on the following morning the child died.

The following case is brought forward to prove the advantage of abstaining from loss of blood, in pale, emaciated children, in whom the disease has originated in dysentery, or some other derangement in the bowels:—

Case.—1834, Mr. ——'s infant, 7 months old; had slight attacks of spasm of the glottis; has no teeth; stools resemble bread in some parts, in others white paint, and have a putrid smell. The food has consisted of panada.

Sumat Hyd. Chlorid. . . . . gr. ij.
℞—Magnes. Sul. . . . . ℥iss.
Inf. Rosæ C. . . . . ℥j.
M. Cap. cochl. i minim. ter die.

April 11th.—The disease after subsiding from the above treatment returned to-day. The paroxysm returned from violent passion. Sleep frequently disturbed by the attack, both during the day and the night.

Rep. Hyd. Chlorid. and Magnes. Sulph. et Senna.

12th.—Stools like white paint, and very offensive; no return of spasm.

29th.—No relapse till to-day, when epilepsy followed by spasm.

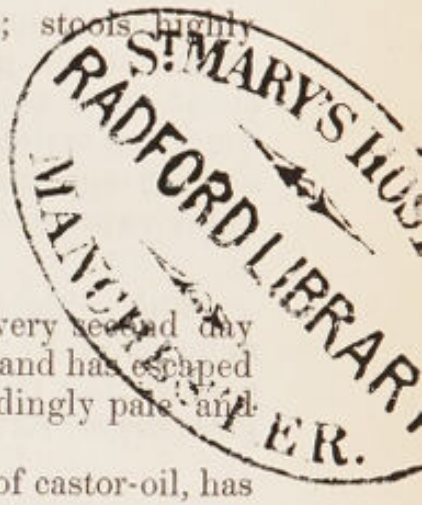
Rep. Hydr. Chlorid. et Magn. Sul. et Senna.

May 1st.—No return of spasm nor epilepsy; stools highly offensive and still like white paint.

Capiat Ol. Ricini ʒj., manè quotidie.

5th.—Return of the spasm.

Rep. Ol. Ricini. alternis diebus.



July 1st.—Has regularly taken the castor-oil every second day or every day, according to the state of the bowels; and has escaped an attack since the last date, but remains exceedingly pale and emaciated; has now cut two incisive teeth.

Dec. 29th.—In consequence of the regular use of castor-oil, has had only two slight attacks of spasm since July 1st.

The following case, which has been before alluded to, is recorded for the purpose of proving the inutility of promiscuous lancing of the gums:—

Case.—1839, March 26th.—Mast. W., aged 16 months. Has had cerebral croup frequently since Christmas, preceded by several severe attacks of epilepsy. The flexor muscles of both hands and feet contracted, and the thumbs drawn into the palm of each hand. These contractions sometimes subside, but they are always renewed after every paroxysm, which is excited by mental irritation or sleep. He seldom sleeps soundly, being awoke by the spasm in the glottis at short intervals, or in a state of apprehension, expecting an attack. The eyes are almost always a little convulsed, and present a glossy or shiny appearance peculiar to the disease. The bowels are costive. Has been severely salivated, and his gums have been cut very deeply down to the alveolar processes in situations, where no teeth could be expected to be approaching. These incisions were in a state of ulceration, and so deep, that a small finger may have been passed into them. Has four incisive teeth already projecting through the gums; was suckled the first few months, but of late has been fed entirely with biscuits and arrow jelly; face very pale. I directed him to be fed moderately with thin gruel, and occasionally with milk and broth, and to take a teaspoonful and a half of castor-oil.

27th.—Had three stools having a most disagreeable smell, resembling rotten cheese; had a restless night, but all the symptoms

are effectually relieved; the croup-like sound much less severe; still had frequent convulsive movements of the eye-lids, and refuses to attend to any amusement, crying almost constantly in a piteous manner.

Rep. Ol. Ricini.

28th.—A much better night; fever, and more feeble attacks of spasm in the glottis; countenance more happy, and he looks about him, not avoiding strangers as he has done; has discontinued crying, and lost the convulsions of the eye-lids, and the shining appearance of the eyes; heat observable in the face and upper extremities.

Rep. Ol. Ricini bis die.

30th.—Slept all the night; stools still too firm, but they smell more naturally; he sits up and plays, and rarely has an attack; countenance much more healthy, his natural colour having in a great degree returned.

Capiat Ol. Ricini ʒ ii.

31st.—Has had no return of croupy inspiration; is lively and voracious in taking food. I desired that he may not have food oftener than once in three hours during the day, and none in the night.

Rep. Ol. Ricini.

April 1st.—Improved in every respect, and can open and close his hands, and can now wear shoes and walk, which on account of the spasmodic contractions of the flexor muscles of the toes, he had been many weeks unable to do; he very seldom has an attack of spasm in the glottis, and that only when annoyed; refuses the castor-oil, which now excites vomiting.

R—Pulveris Jalapæ,
Sacchari aa gr. vi.
M. et capiat manè quotidie.

3rd.—Not sufficiently purged.

Capiat Infusi Sennæ Comps. ℥ ss., pro re natâ.

7th.—Has had no return of the cerebral croup; hands and feet perfectly restored; bowels well purged. To take twice or three times a day senna-tea, with manna and prunes.

11th.—Perfectly well in every respect.

SUBMUCOUS LARYNGITIS, OR ŒDEMA OF THE GLOTTIS.

The œdematous inflammation in the glottis, consists of an effusion of serum within the cellular membrane beneath the adherent

surface of the mucous lining of the glottis; which produces extreme dyspnœa, by contracting the passage, and unless speedily relieved terminates in suffocation. The patient has aphonia, or loss of voice, and during every inspiration makes a hoarse whistling noise; his countenance expresses alarm and extreme distress; he has at one time an anxious look, at another is sleepy; the skin feels cold, especially on the extremities; and as the inspiration becomes more laborious, the face is first pale and afterwards purple, and the decarbonization of the blood in the lungs being interrupted from the want of a proper supply of atmospherical air, the child dies in a state of apoplexy. On inspecting the fauces during life, we shall find the soft palate, the uvula, and all the parts adjoining the rima glottidis pale, swollen, and sometimes wrinkled, or blistered. The pulse is at first very quick, but as the disease advances and apoplexy approaches, it becomes imperceptible. This disease is so rapid in its progress, that there is seldom time for it to extend itself into the trachea or bronchial passages. On examining the parts after death, a quantity of transparent serum will be seen to exude from the incisions made through the tumified mucous membrane of the glottis, epiglottis, the larynx, and the adjoining parts, and in some cases a little purulent matter will escape. In one instance, warty excrescences were found after death.*

Œdema of the glottis, is usually produced in children by the steam of boiling water, inhaled from a teakettle or teapot. Its symptoms present themselves immediately after the accident.

The disease occasionally supervenes on anasarca or phthysis, in their last stage.

Treatment.—Our principle reliance must be placed upon the early and rapid introduction of mercury, which, in those cases proceeding from scalding or from sudden exposure to cold, acts like a specific. A child, from a year to two years of age, may take two grains of chloride of mercury, every half hour, until relief is afforded. I have seen extraordinary effects produced by this treatment, and Dr. Wallace also strongly recommends its adoption.† Should the medical attendant visit the patient soon after the attack has commenced, and find him vigorous and plethoric, a few leeches may be applied to the upper and front part of the throat; but even local bleeding is rarely admissible on account of the rapid collapse which occurs from the interruption to the pulmonary circulation. The proposal of Dr. Marshall Hall, of scarifying the tumid membrane of the fauces, appears to be a remedy likely to

* Dr. Stoke's "Dublin Medical Journal." † "Lancet," No. 655, p. 959.

afford relief; but I have hitherto had no experience with it, having always succeeded with the rapid introduction of mercury.

When œdema invades the glottis, as a concomitant with cardiac and pulmonary diseases of a fatal character, art will be found of no avail; for even bronchotomy can only be expected to afford a temporary postponement of impending and certain death. In those cases, however, which arise from accident or cold, when assistance has been delayed too long to admit of a cure by other means, this operation may be found beneficial by affording time for the mercurial treatment, which should be continued as if it had not been performed, until complete relief of the symptoms has followed. For a description of the operation of bronchotomy, see Dyphtherite.

When the disease has not extended below the larynx, the operation of laryngotomy may be found preferable to that of making an opening with the trachea. It is performed in the following manner:—

Laryngotomy.—The patient being placed on a tube, and his head thrown backwards, resting on a pillow, the surgeon must make a perpendicular incision about an inch and a half long through the integuments, and the phatysma myvides, and between the sterno-thyroidei, and sterno-hyoidei muscles. The divided vessels being secured, the knife must be pushed through the crico-thyroid membrane.

LARYNGITIS, OR CROUP.

The croup consists of an acute inflammation in the mucous lining of the larynx, terminating in the formation of a false membrane on its free surface. It appears in children from the age of one to that of seven or eight years. Before the end of the first year children are seldom exposed to the usual cause of this disease, *i. e.*, a sudden transition from a hot to a cold atmosphere; and after the eighth year the larynx undergoes such increase in its diameter as to permit a considerable inflammation in the mucous membrane to take place without producing the severe symptoms of croup. The disease generally commences suddenly during the first sleep, with a loud hoarse cough, a sense of suffocation, a whistling sound as the air passes through the larynx, a painful and hoarse articulation, or aphonia, pain in front of the larynx, intense heat of the skin, with other febrile symptoms, and extreme anxiety and apprehension. The tongue is coated with a thick white fur. The disease is sometimes preceded by a slight attack of hoarseness, cough, and remittent fever, which may continue a day or two before the acute laryngitis commences. As the inflam-

mation proceeds, the patient becomes sleepy at intervals, and at other times assumes the most anxious and terrified expression, as though he expected to die after every expiration. On applying the stethoscope to the larynx we may perceive a tremulous motion in the passage, as if a curtain were moved by the air passing and repassing. When this is discovered, we may be assured that a false membrane has been formed and is floating in the larynx, which may be considered a much more favourable symptom than if the sound were prolonged into the trachea and bronchial passages ;* for in the former case we may expect the fluttering membrane to be expectorated, but in the latter there would be little or no hope of such an event. This extension of the inflammatory action to the tracheal and bronchial tubes frequently occurs from a fresh exposure to cold, after the primary disease has been arrested, and disappoints our sanguine expectations of the patient's recovery. This extension of the disease into the bronchi is a frequent cause of death after the primitive laryngeal inflammation has been subdued. It is manifested by a distressing and almost constant rattling respiration, accompanied with frequent cough and ineffectual attempts to expectorate; and this is one of the most common causes of death when croup has assumed a chronic character, and has not terminated in recovery within twenty-four hours. As the inflammation in the larynx advances, the heat of the skin subsides, the extremities first becoming cold, and afterwards the rest of the body. At length the face assumes a cadaverous appearance; the lips become purple; stupor succeeds, alternating with a senseless stare, the pupils being much dilated. The face is afterwards more and more discoloured, until at last it acquires the same dark purple colour which is observable in a drowning person. The apoplexy increases rapidly, and death soon closes the miserable scene.

The symptoms, particularly the frequently recurring attacks of sudden dyspnœa, resembling suffocation, are more severe and alarming in children of delicate constitutions and nervous temperament; and are increased in irritable patients by the slightest paroxysm of passion, which produces a temporary spasm of the glottis, as in cerebral croup.

The nature of the expectoration may be ascertained by placing it in warm water. If it is composed of transparent flakes, which, on being removed from the water, become like membranous shreds, we may be certain that it is the product of croup †

* "Barth. Archiv. de Med. Juillet," 1838; et "Traité Pratique d'Auscultation," pp. 226 et 232.

† "Hegewisch. Rusts' Magazin." Bd. 32, Heft. 2.

The duration of this disease varies; it sometimes terminates fatally within ten or twelve hours, and at others death is delayed till the third or fourth day.

With respect to its cause, I have already said that it proceeds from a sudden transition from a very hot to a cold atmosphere. One of the most frequent transitions of this nature among the children of the poor is that which arises from their custom of alternately sitting near a fire in a small room, and running with their heads uncovered into the open air, while the wind is in the east and the thermometer below the freezing point. Hence, when the wind is in the east during the winter months, this pseudo-membraneous inflammation in the larynx appears like an epidemic. A much larger proportion of boys experience this disease than girls, which I attribute to their amusements, and other pursuits, exposing them more than the other sex to the frequent and sudden vicissitudes to which I have alluded. Of thirty patients whom Trousseau visited, twenty-two were boys;* and of twenty-five whom Janseco-wich attended, seventeen were males.†

Other causes besides sudden exposure to cold air may occasion inflammation and the formation of false membrane in the larynx. Valentine, in his publication on croup,‡ relates an instance of its occurrence in the infant of an apothecary from the inhalation of chlorine:—

"Le Docteur Palloni, secretaire de l'Academie Italienne à Livourne m' a mandé, qu'il a connu l'enfant d'un apothecaire attaqué d'une angine ayant tous les caractéres du croup, et dont il perit, pour avoir été exposé long temps au gaz-muriatique oxigéné L'ouverture du cadavre, dit il, fit découvrir dans l'interieur de la trachée-artère et d'une partie des bronches une fausse membrane blanche mais que l'on ne pouvait détachés que difficilement avec l'instrument."

The appearances found after death are false membranes lining the larynx, trachea, or bronchi. These are of a white or yellowish colour, and various density; sometimes we find soft granular bodies, which are either confluent or intersected by open spaces occupied by the mucous membrane. At other times small plates of the morbid deposit are seen occupying different parts of the larynx and trachea. In a more advanced state of the disease, long semi-cylindrical, membranous tubes are found lining the front and posterior surface of the passage, and extending to the smallest

* "Journal des Connoissances, Med. Chir. 2 année," p. 2.

† "Einige Bemerkungen über den Croup, de Œstereichische Jakbeicher," 23 Bd., 3 Heff., 1837, s. 443, 446.

‡ "Recherches Historiques," &c., p. 483.

ramifications of the bronchi. These extensive membranous formations are much more loosely adherent to the mucous coat than the smaller patches, and in consequence we often discover beneath the false membrane a muco-purulent deposit. Some of the small plates of this new membrane are so closely united with the subjacent mucous surface, that it is impossible to separate them; and those which are met with in the larynx are always more brittle than in the trachea. The adherent surface of the false membranes is smooth, and of the same colour as the free surface, and it is often covered with red points, resembling incipient vascularity. The mucous membrane of the pharynx is sometimes covered with false membranes, at the same time that we find them in the larynx; and when the bronchi are not so affected, they are found in a state of inflammation, presenting a red appearance, with or without softening, but generally loaded with acrid mucus. In many cases emphysema is met with, occasioned by the mechanical impediment to the expulsion of the air from the lungs, and the consequent rupture of some of the air-cells, as occurs in hooping-cough from the violent, continued, and forcible expiration of the air.

Treatment.—The sudden invasion and rapid progress of this disease require the most prompt attention and vigorous remedies. One or two grains of chloride of mercury must be given immediately, and repeated every hour, until the inflammation has subsided, or the mouth has become sensibly affected; and, as soon as they can be procured, a few leeches must be applied in front of the throat. In the interim, the patient may be put into a warm bath at 98 degrees of heat, during ten or fifteen minutes, which, by inviting the circulation to the surface, and exciting perspiration, sometimes affords present relief. Should not speedy amendment be produced by the leeches, an emetic should be administered, consisting of one part of ipecacuanha wine, and two vin. ant. potassio-tart. I prefer this combination to the antimonial wine alone, as it is more certain in its operation on the stomach. The good effects of emetic medicines in this disease depend upon the sudden depression they produce on the sanguiferous circulation, and not on any irritation they may excite in the intestinal mucous membrane. Some physicians recommend a combination of antimonial powder with the chloride of mercury, supposing that it may afford relief by its sudorific operation. The pulvis antimonialis is the most uncertain of all the preparations of antimony, and is therefore objectionable; but independently of this objection, I am of opinion, that the specific operation of mercury in arresting membranous inflammation, ought not to be interrupted by any addition, which

may have the effect of inciting the stomach or bowels to reject it; and from much experience in this disease, I can say with confidence, that when local bleeding and calomel are employed within a short time after the inflammation has commenced, a speedy, a certain cure will follow in almost every instance. After the leeches have been applied, and the child has recovered from the temporary collapse, which the loss of blood occasions, should the croupy inspiration return with severity, a large blister should be applied to the throat. As soon as vesication has occurred, the blister must be removed. By this active treatment, in the course of six or eight hours, complete relief will be afforded; but when the disease is allowed to proceed several hours without medical assistance, there will be great uncertainty as to the result of the most judicious measures. The formation of false membranes may have commenced in the larynx, and the inflammation may have extended to the trachea, and in defiance of all the aid which art can afford, a fatal effusion of muco-purulent matter into the bronchi may succeed. To prevent the last-mentioned result, all our resources must be actively and unceasingly applied; for it is a state from which few recover, connected as it always is with collapse of the sanguiferous and nervous systems. When assistance is unfortunately too long delayed, or when, from any other cause, the presence of false membranes is found from mediate or immediate auscultation to have taken place within the larynx, or when stupor commences, accompanied with purple colour of the lips and coldness of the extremities, the operation of tracheotomy or bronchotomy should be proposed. This operation has at times been brought into disrepute, in consequence of its having been performed after the inflammation had manifested itself by fatal effusion in the bronchial tubes. Under such circumstances the operation should never be proposed, as there would be no chance left for the patient. On the other hand, so long as the pseudo-membranous deposit is limited to the larynx, an opening into the trachea may afford a fair prospect of recovery, and really be the only means of averting almost immediate death; and in addition to the instant relief which it will confer upon the patient by restoring the pulmonary circulation, he will not be exposed to the exhaustion and irrecoverable collapse which accompany the protracted and irremediable extension of the disease into the bronchi.

A description of the operations of tracheotomy will be found in the chapter on dyphtherite.

After the patient has recovered, he should be removed to a warm locality, sheltered from the easterly winds, the soil of which

should be light and sandy. An exposed and elevated situation is as much to be dreaded as an argillaceous or malarious soil.

CHRONIC LARYNGITIS, OR SUB-ACUTE INFLAMMATION OF THE LARYNX.

The children of the poor, from eight to fourteen years of age, ill-clothed, especially about their feet, and exposed to the evening air in the streets and cold passages in towns, are most subject to this disease. It is distinguished by constant hoarseness and loss of voice, accompanied with a cough, which returns frequently during the day, and an expectoration of inspissated, tenacious mucus, resembling starch. When the disease is neglected, and permitted to continue unrelieved several months, ulceration in the mucous membrane of the larynx supervenes, which often terminates in pulmonary consumption. In scrophulous children the disease runs a more rapid course, in consequence of deposit of tubercular matter, and the early appearance of hectic fever and pulmonary disorganization. The disease at first consists of chronic inflammation, producing a thickening and induration of the mucous membrane of the larynx, which, in some cases, becomes almost as hard as cartilage. When dysphagia has existed, we find, after death, an inflammation in the epiglottis often attended with sub-mucous infiltration. We also sometimes find the laryngeal and tracheal membrane in a granular condition, like other mucous membranes after a long exposure to chronic inflammation. In such cases the expectoration is purulent. Ulcerations of the lining membrane of the larynx and trachea of various figure are also sometimes discovered, the existence of which during life may be suspected by the very thick pus expectorated, occasionally streaked with blood, or by repeated hemorrhages from the larynx. Ossification of the cartilages is another morbid appearance, the result of long-continued sub-acute laryngeal inflammation. In some instances tubercular disease unfolds itself subsequently to, and at others it is coeval with, the specific, laryngo-tracheal inflammation. In these cases hectic fever is an early and a prominent symptom.

Treatment.—The simple chronic inflammation of the larynx, when unattended with ulceration, may soon be removed by bichloride of mercury, one-tenth of a grain of which may be given to a child eight years old, and one-eighth or one-sixth to one twelve or fourteen years old, either in a pill with bread, or pulvis lini, or in a mixture, three times a-day. When ulceration has commenced, the plan of applying escharotis recommended by

Trosseau and Beloe, may be tried. A solution of nitrate of silver, in the proportion of one or two parts to four of distilled water, may be applied to the upper and inner surface of the larynx immediately beneath the epiglottis by depressing the patient's tongue, and while he elevates the larynx in the act of swallowing, introducing the solution on a piece of sponge fastened to whalebone. This excites much coughing and irritation in the larynx, but gives no pain. The operation may be repeated twice or three times a-day. Sulphate of copper may be used for this purpose, in the proportion of ten or twenty grains to the ounce. Alum, acetate of lead, trisnitrate of bismuth and nitrate of silver may also be tried in form of powder, or astringent injections may be used. External irritation must not be neglected in obstinate forms of the disease. The best mode of exciting this is the inunction every night, or twice a-day, of an ointment composed of two drachms of powdered potassio-tartrate of antimony to one ounce of lard. In some cases, in which no suspicion of syphilis existed, I have prescribed mercurial fumigation, with extraordinary success, for the cure of these obstinate and dangerous ulcerations. The fumigation may be readily applied once daily, by placing on a piece of heated iron half a drachm or a drachm of bisulphuret of mercury, and desiring the patient to inhale the fumes through a tin funnel, the pipe of which should be prolonged by a little brown paper, to prevent the vapour from entering the larynx in too heated a state. I have known chronic ulcerations in the larynx healed by three or four such fumigations. When, from the scrophulous appearance of the patient, the obstinate resistance of the disease, and an accelerated pulse, tubercular deposit is suspected on the laryngeal and tracheal membrane, iodide of potash should be combined with the mercurial treatment; but when pulmonary consumption and hectic fever are discovered, the case will be hopeless, and only admit of the usual palliative remedies. In these complicated cases percussion of the chest will be our best guide for the purpose of detecting the condition of the lungs; while the stethoscope applied to the larynx, by discovering to the practised ear the whistling, rough sound, and the sensation as though the current of air struck against an obstruction in its passage, characteristic of ulceration and muco-purulent or purulent secretion, will unfold to us the state of the laryngeal, mucous membrane.

FOREIGN SUBSTANCES IN THE LARYNX, TRACHEA, AND BRONCHI.

The distress occasioned by the temporary lodgment of foreign bodies in the glottis and larynx, is almost indescribable. In the

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point of a small silver catheter, with a little management succeeded in pushing the morsel into the mouth, immediate relief was the consequence."*

When foreign bodies, as pieces of coin, &c., lodge in the trachea, they may often be removed without a surgical operation, by holding the patient in an inverted position. Dr. James Duncan, surgeon to the Edinburgh Royal Infirmary, relates the case of a man who accidentally slipped a shilling into the larynx, which produced violent coughing and dyspnœa, and which was dislodged by the following proceeding :—

" The man was placed with his shoulders against the raised end of a pretty high sofa, and then being raised by three of the most powerful of those present by the loins and thighs, he was rapidly inverted, so as to bring the head into the dependent position, and after a shake or two, Dr. Simpson at the same time moving the larynx rapidly from side to side, the shilling passed into the mouth, and fell on the floor. Not the slightest cough nor dyspnœa was produced, and the patient immediately started up, delighted with the result. He was now perfectly free from uneasiness, and there was a marked change in the character of the voice. He had not the slightest subsequent bad symptom."†

In a case which lately fell under the care of Sir B. Brodie, in which half-a-sovereign slipped into one of the bronchi, this experiment was tried unsuccessfully, until an opening was made into the trachea. After this operation, the patient was again placed in an inverted position, when the piece of coin was soon expelled by the natural efforts.

Mr. Heath relates a case in which a plum-stone was inhaled into the trachea by a boy eleven years old, and which was expectorated after tracheotomy, without the expedient of inversion. Mr. Heath saw the boy two days afterwards.

" I found him," says Mr. Heath, " in a state of the utmost suffering, his lips blue, his eyes protruding, and the thorax labouring. In fact, he was struggling in the most violent state of excitement. Yet he could swallow without great difficulty, and there was no emphysema. Having laid him on a table, with a pillow under his neck, I proceeded to open the trachea, making my incision midway between the cricoid cartilage and top of the sternum. This operation, on a child in such a state of excitement, is by no means so easy as some, who never performed, may imagine. Having divided five rings of the trachea, I waited a few minutes,

* " Lancet," No. 590, p. 458.

† " Northern Journal of Medicine," Feb. 1845, p. 220.

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from the same cause, viz., an involuntary action of the muscles of the tongue and larynx, interrupting articulation. This defect is apt to be learnt by imitation, and I apprehend it is also congenital in some cases. I am acquainted with a gentleman and lady, who both stammer, and whose children also stammer, although one of them was sent from home at a very early age. Dr. Mac Cormack, of New York, supposes it to proceed from an attempt to speak during inspiration, and in 1828, in a publication on the subject, recommended his patients to practice speaking monysyllables, and afterwards polysyllables, and then words, and lastly sentences, during a single inspiration.* His method of cure is the following:—

"It consists in making the stammerer (if a child, for an adult can do it himself) take a deep inspiration, and repeat, with the whole force of the *expiration*, the different letters of the alphabet, numerals, monosyllables, *one by one*. This may be prefaced, or not, by several hours' practice of slow and deep breathing. As for the repetition of the monosyllabic pronunciation, it must be continued for hours, days, or weeks, according to the condition of the patient, such as his age, capacity, strength of lungs, or inveteracy of the impediment. The stammerer must next proceed to the utterance of polysyllables, *during one inspiration*, then short sentences, and, lastly, long sentences; thus reversing, in fact, the evil habit, until, at length, a new habit is acquired, and the cure effected. In some cases, this desirable object will be accomplished in a few hours; in others, it will require months. In general, a few days, or, at most, weeks, will be sufficient."

Since the publication of these views on the subject of stammering, Dr. Abercrombie, of Edinburgh, has communicated some observations on this impediment, and recommended a similar treatment.

A young physician, who cured himself at twenty years of age, says all that is required is "to bring and keep the expiration in a quiet, tranquil condition, such as we use in singing, or in declamation. If the person can but once effect this, he will no longer stammer."†

I recollect a school-fellow, who stammered in a most unfortunate manner, which excited the irresistible amusement of the whole school. This young man, though he inherited the defect, was cured of it, in the course of a few weeks, by a continuous course of reading English heroic verses every day, in a loud voice, and with a monotonous tone.

* "Lancet," vol. xiv., p. 352.
† "Med. Chir. Rev.," Oct. 1840, p. 489.

I cannot conclude this subject without adverting to the surgical operations which have been recommended and practised of late for the cure of stammering, since the division of contracted tendons has been so much in fashion. There are no less than twelve, which are reduced to eight, as follow:—

1. Simple transverse division of the muscular structure of the base of the tongue, performed by M. Dieffenbach, by two separate methods.

2. Transverse division, with excision of a portion of the base of the tongue, performed by the same surgeon.

3. Mr. Lucas's method, consisting of excision of a triangular portion of the bodies of the genio-glossi muscles.

4. Simple incision of the bodies of the genio-glossi muscles, by M. M. Amussat, Phillips, and Velpeau, though performed in a different manner by each.

5. Division of the attachment of the tendons of the genio-glossi muscles (and occasionally of the hyo-glossi muscles also) to the lower jaw, performed in different ways, by M. M. Baudens and Bennet.

6. Simple division of the mucous and subjacent tissue of the floor of the mouth, occasionally found sufficient, by Mr. Amussat.

7. Excision of a portion of the apex of the tongue, performed in one case by M. Velpeau.

8. Mr. Yearsley's method of snipping off a portion of the uvula, &c.*

I am of opinion that these operative proceedings, which it is admitted are not free from danger, will seldom, if ever, be found necessary, when the moral system of treatment I have explained has been properly practised.

BRONCHITIS, OR ACUTE INFLAMMATION OF THE BRONCHIAL TUBES.

Children of all ages are liable to bronchial catarrh, which commences with fever, slight sleepiness, discharge of mucus from the eyes, and frequent cough. Plethoric children are often attacked with epilepsy, when the fever commences. As the disease proceeds, mucous rattling in the bronchial ramifications becomes obvious, and may be heard at a considerable distance, particularly

* "Dublin Med. Press," April 14, 1841, p. 234.

before every paroxysm of coughing. The skin is now very hot and the pulse rapid. When the disease is complicated with pleuritis, the patient is in pain, and cries after every fit of coughing, and with expanded nostrils appears unable to make a full inspiration. The most frequent complication is that with pneumonia, which may be discovered by rapid respiration, and, as the pulmonary inflammation proceeds, by a dark colour of the lips, and by frequent moaning. While the patient is suffering with bronchial inflammation, simple or complicated, his sleep is frequently disturbed, and in severe cases it is entirely absent. When the disease terminates fatally, it sometimes runs its course in three or four days; but its duration for the most part varies from four to six days, except when recovery takes place, when it may be prolonged in the chronic or sub-acute form during many weeks or months. In fatal cases, the rattling respiration is uninterrupted and more crepitous, the pulse becomes feeble as well as more frequent, the skin and the extremities cold, the face pale and the lips blue. In favourable cases the rattling is not audible, except just before the return of the cough, and the patient is lively, and sleeps with little interruption from the catarrh; and as the disease declines, symptoms of intestinal inflammation, as, dysentery or diarrhœa, generally supervene. Sometimes the inflammatory disease in the intestinal mucous membrane, takes precedence of the bronchitis, and sometimes they concur. This sympathy between the respiratory and alimentary passages, arises from the identity of their natural structure, and the susceptibility of inflammatory action from exposure to cold, common to them both.

When scrophulous children are the subjects of bronchitis, their upper lips during the progress of the disease, are apt to acquire a remarkable hypertrophy, their skin becomes *intensely hot*, and when this state continues unabated and uninfluenced by remedies, hectic fever succeeds, and denotes the existence of fatal pulmonary tuberculization.

During bronchial inflammation infants may be observed never to expectorate. Nevertheless, as soon as the inflammation producing the excess of mucous secretion in the bronchial passages subsides, the redundant effusion is speedily absorbed, unless the disease should terminate in chronic bronchitis. Children of more advanced age, who have acquired the power and habit of unloading the air-passages, expectorate at first, a thin mucus, and afterwards a muco-purulent or purulent matter, the secretion of which constitutes the natural termination of the acute inflammatory process in healthy subjects.

The morbid appearances found after this disease, are a thin

and transparent state of the bronchial mucous membrane, which enables us to discover beneath it the red colour of the inflamed subjacent cellular tissue. On the free surface of the mucous membrane, we find small, red vessels, ramifying in different directions, being distinct in some parts and confluent in others. In some places we find the bronchial membrane thickened, opaque, and softened, and in others ulcerated; the subjacent cellular membrane constituting the bases of the ulcers. There is generally more or less abundance of mucous, or muco-purulent, secretion, and often portions of false membrane, which, in some cases, constitute the only morbid appearance, either in distinct patches, or filling all the bronchial ramifications, to which they are slightly adherent. The bronchial tubes are sometimes found remarkably dilated, either in their trunks or their ramifications, and this condition is usually accompanied with adjoining emphysema. Barthez and Rilliet believe this dilatation arises from the over distention of these tubes with their abundant secretions, which, I suppose, diminish their elasticity in the same manner as the air-cells are enlarged and lose their natural contractile power in humoral asthma. When this enlargement extends to the bronchial terminations, and the pulmonary structure is divided with the knife, we may discover on the cut surface, numerous, small, central, round, cavities, which are continuations of the bronchi, in a state of dilatation, containing the same morbid secretion as the larger ramifications. They sometimes extend almost to the surface of the lungs, where they produce slight, round projections, resembling tubercles, which on being pierced immediately subside. Barthez and Rilliet, have described, under the title of *vesicular bronchitis*, a pulmonary lesion, which Fauvel says is peculiar to acute bronchial inflammation. The outer surface of the affected lung is flabby and soft, and more or less sunk, according to the extent of the lesion. On being cut into, the divided parts present numerous granulations, about the size of millet seeds, of a grey or yellow colour. At first they appear like bloody miliary tubercles distributed in the lungs as we see them in some infants; but on examination, we find the two kinds of granulation differ greatly in their physical characters as well as their nature. Tubercles form nodules, which are full and solid; while the vesicular granules contain a fluid. Hence, when we make a cut into the morbid lung, the tubercles remain prominent, and the granules sink as soon as they are divided, and pour out a puriform fluid. On carefully opening one of these pulmonary granulations, and allowing the fluid contents to escape, we may, with some difficulty, discover a central point, which conducts to a delicate smooth canal of some

lines in length, being one of the bronchial ramifications, which had terminated in, and formed, the granulation. In several places we find many of these bronchial granules surrounded by pulmonary vesicles, and the parenchymatous tissue uniting them in a state of inflammation. This lobular mass on being divided, discovers the different structures of which it is composed. An emphysematous condition of the lungs is often met with when a very acute bronchial, is complicated with pulmonary, inflammation; the hurried and oppressed state of the respiratory functions, determining the rupture of the air-cells to a greater or less extent.*

Treatment.—When the patient is visited by the medical practitioner early in the disease, it is the general practice to prescribe an emetic, which not only unloads the stomach, but also the bronchi during the act of vomiting. It is only at this stage of the disease that this remedy is admissible. If there is observable any mucous rattling, bleeding, either general or local, must be had recourse to, and carried to an extent proportioned to the age of the patient. It must, however, be observed, that very young infants neither require nor bear large bleedings. For such patients, therefore, leeches must be applied to the upper part of the chest, from two to four, or more, according to the patient's age; and as soon as the face appears exsanguineous, and the pulse becomes feeble, they should be removed, and the bleeding arrested by the application of proper compresses. As soon as the circulation has recovered from the temporary depression, as large a dose as the patient can bear of potassio-tartrate of antimony should be given in conjunction with citrate of potash, or liquor ammon. acet. and a few minims of tincture of squill, once in four hours. The tolerance of the stomach with respect to antimony in this disease is remarkable, and is proportionate to the severity of the bronchial and pulmonary inflammation. An infant may take a sixth part of a grain, and a child eight or ten years old, from a quarter to a half grain of the potassio-tartrate in severe cases, without vomiting, and without experiencing more nausea than is necessary to control the hurried state of the circulation. This comparative indifference of the stomach to the operation of antimony, is occasioned by the sensibility of that organ being lowered, and the force of the sanguineous system diverted by the bronchial inflammation. The dose of this medicine, therefore, must be regulated by its effect on the stomach in the first instance, and the consequent depression produced on the activity and force of the heart and arteries, on which its salutary effects depend. In prescribing squill in conjunction with

* "Berthez," &c.

antimony, the practitioner must divest his mind of any directly expectorant properties which it may be supposed to possess. Its modus operandi in relieving bronchial and pulmonary diseases is dependant on its property of stimulating the kidneys and the mucous membrane of the intestines, and thus indirectly diminishing the determination of the blood to the respiratory organs. Should the bronchial mucous rattling increase, the bleeding must be repeated as long as the skin remains hot and dry, and the pulse retains its quickness, and hard, cord-like feel. On the contrary, as soon as the pulse becomes feeble, and the skin moist, and its temperature below the natural standard, all further bleeding must be strictly prohibited. Under these circumstances, should the natural state of the respiration be restored, recovery will speedily follow; but should the breathing continue hurried, and the rattling sound increase, and resemble the crepitation produced by pressing the cellular membrane when filled with air, there will remain little chance of recovery, as pulmonary emphysema or hepatization may be suspected. The approach of pneumonia is sometimes insidious, on account of the absence, or slight degree, of pain, which arises from the comparative insensibility of the cellular membrane of the lungs. It may always be apprehended by the obvious and uninterrupted hurry in the process of respiration, and should be treated with a small dose of chloride of mercury, once in four hours, in combination with the other medicines. It must, however, be confessed, that this is one of the most unfortunate diseases with which bronchitis may be associated in its advanced stage. After bleeding and other depressing remedies have been carried as far as they can with safety, should any prospect of recovery or chronic bronchitis remain, a blister may be applied over the sternum with marked advantage; care being taken, in all doubtful cases in which the vital powers have been greatly reduced, to remove the vesicatory as soon as it has produced the desired effect, as sloughing of the integuments often follows under these circumstances, hastening the fatal termination. During the whole course of bronchitis, unless some peculiar symptoms should justify its employment, opium in every form should be avoided. Its property of diminishing secretion, renders it in all acute inflammatory diseases of the mucous membrane, a dangerous remedy; and much objection exists to the employment of stimulating expectorants, such as ammoniacum, which only act indirectly by irritating the neighbouring mucous passage. The cough may be relieved from time to time by barley-water and gum-arabic, or decoction or infusion of linseed with liquorice-root, or by decoction of Irish or Iceland lichen, sweetened with sugar, to which a little lemon-juice

may be added. When collapse commences, the patient must be supported by milk, broth, and vegetable and animal jellies. In this state, sesquicarbonate of ammonia in conjunction with squill forms the best medicine for the patient.

When the bronchial disease is succeeded by dysentery or diarrhœa, those must be treated according to the directions given under their separate heads; and when epilepsy occurs, which is generally at an early period of the disease, a few leeches may with advantage be applied to one of the temples, and the bowels should be freely acted upon by a dose of chloride of mercury, followed a few hours afterwards by salts and senna. At the commencement of bronchial catarrh, a warm bath may be employed with the view of restoring the cutaneous perspiration, and modifying the approaching febrile action; and in the advanced periods of the disease, when the lower extremities are cold, they may be occasionally immersed in warm water.

The temperature of the patient's apartment ought to be kept at about sixty degrees of heat, and the diet must be strictly antiphlogistic.

CHRONIC BRONCHITIS.

The chronic form of bronchial inflammation has much resemblance to pulmonary phthisis, on account of the accompanying fever manifesting an evening exacerbation, and the copious mucopurulent expectoration which is presented in both. In chronic bronchitis the breathing is accelerated, the suffocating dyspnœa irregular, and the cough uncertain and changeable. On applying the stethoscope we perceive a tubular respiration mixed with a mucous rattle, and a loud snoring indicating dilatation of the bronchi. The pulse is rapid and small. In the evening, a marked increase of fever occurs, which is followed by profuse perspiration. The face is pale and thin, and general emaciation prevails. The eyes appear hollow, and the nostrils and lips are encrusted with a porriginous eruption, which, on being rubbed off by the patient, leaves bleeding ulcerations. Thirst and total loss of appetite are present, as well as purging in some cases, which rapidly emaciates the patient. Some infants are attacked with this subacute form of bronchitis at an early age, from exposure to the cold air when their caps are first left off; at other times it is the sequel of an acute, antecedent bronchitis. The noise made during respiration has a great resemblance to that of humoral asthma in adults. If it happen to occur at any time before the second or third year, it is attributed by vulgar and prejudiced persons to the teeth, which are blamed on all occasions when the nature of the disease cannot

be otherwise explained. I have met with many cases of chronic bronchitis among the poor, which have appeared about the sixth month, and continued afterwards during cold and humid weather several years. In these cases, in which, after the symptomatic fever has subsided, the snoring, respiratory noise continues for so long a time and ultimately ceases, I suspect that the dilated bronchial ramifications gradually recover their elastic property. In some patients this fortunate result does not take place, and such continue through life subject to the disease under the form of humoral asthma.

Chronic bronchitis sometimes appears in children from the sudden suppression of cutaneous eruptions.

The morbid appearances are found to consist of the same dilatation in the bronchial tubes which we observe after bronchitis; but the mucous membrane, instead of being thin and transparent, is generally thick and opaque, and frequently of a red colour. In some cases, where the expectoration has been purulent, I have found the mucous membrane assume a granular condition, resembling the conjunctiva in severe cases of purulent ophthalmy. I do not agree with Laennec, and Barthez and Rilliet, in attributing the dilatation of the bronchial ramifications to the accumulation of muco-purulent fluid: for I believe it is principally occasioned by the compression of the air during the act of coughing.

Treatment.—The best remedies for this chronic form of bronchitis, when little or no fever is present, are repeated blisters on the chest and a well-regulated temperature. These may be assisted by an emetic of ipecacuanha, given every second or third morning, and by irritating the gastric mucous membrane, when the stomach is empty, three times a-day by the administration of copaiba or Peruvian balsam, suspended in peppermint-water, with acacia gum. Most cases are complicated either with remittent or hectic fever. When the former is its associate, it may be distinguished by the peevishness of the patient; by the type of the fever, which will be found to increase twice or three times daily; by the almost constant picking of the nose and lips, or rubbing of the eyes; and by the offensive discharges of the bowels. Such cases must be treated principally in reference to the remittent fever, resulting from the subacute inflammation of the mucous coat of the intestines, which had been overlooked during acute bronchitis, or had supervened on the decline of that disease. The cough and other symptoms of chronic bronchitis will be found to be aggravated by the intestinal irritation, and therefore the case must be treated as remittent fever, by chloride of mercury and jalap every second or third morning, and squill with citrate of potash three or

four times a-day. In proportion as the remittent fever is subdued, the bronchial disease, and the ulcerations about the nose and upper lip which accompany it in this form, will disappear. The only application necessary for these ulcers and crusts will be an ointment, composed of one scruple of the ammonio-chloride of mercury and half an ounce of lard. It will be found in proportion as the intestinal discharges improve in smell and colour, the bronchial symptoms, as well as the fever, will subside; and as soon as the urine throws down a mucous deposit, and the skin recovers its natural moisture and soft feeling, a rapid improvement in every respect will be found to succeed.

Those cases which are accompanied with hectic fever and constant purging will generally be found to be connected with tubercular disease both in the pulmonary and intestinal structure. Such cases are dependant on a morbid constitution of the patient, which is prone to commence the process of tuberculization whenever any of the mucous or serous surfaces are attacked with inflammation. (See "Tubercular Sero-" and "Tubercular Muco-Enteritis.") These cases admit of no cure, and very small relief. There are, however, some instances in which the purulent expectoration and hectic fever depend upon a granular state of the bronchial mucous membrane, which it is of great importance to distinguish by the aid of the stethoscope and thoraic percussion. This species, which is not of unfrequent occurrence, will soon give way to the vigorous exhibition of the sulphate of zinc or sulphate of copper, on the same principle by which they remove chronic nasal catarrh. The sulphate of zinc may be given in the dose of half a grain or a grain, and the sulphate of copper a quarter or half a grain three times a-day, either in pills with extract of gentian, or in mixture with infusion of gentian or quassia, or with disulphate of quina. As the purulent secretion in the bronchi is reduced, the cough consequent upon it will subside; and if any bronchial rattle may remain after the symptomatic fever has left the patient, a Burgundy-pitch plaster may be worn on the front of the chest for some time, and the patient removed to a warmer situation.

PNEUMONIA, OR INFLAMMATION ON THE LUNGS.

The seat of this inflammation is the parenchyma, or the cellular tissue of the lungs. It is preceded by rigors, and commences with hurried breathing, slight pain in some part of the chest, and fever. It is not commonly met with in children unaccompanied with

bronchitis, pleurisy, or emphysema. In its uncombined form there is only slight cough at first, which appears to arise more from an increased mucous effusion into the aircells than from any actual disease in the mucous membrane. As the disease increases the patient is unable to lie down or to sleep, except at intervals, although from the first a slight drowsiness appears, which, as the disease advances, becomes more obvious. As the dyspnœa increases, the patient is anxious and restless, frequently changing his position, and uttering a moaning, monotonous sound at every expiration. When the inflammation increases, we find at the end of two or three days a sanguineous, or yellowish, glutinous mucus is expectorated. This is one of the essential symptoms of the disease. At this time the dyspnœa is more laborious, and the cough more frequent. The pulse also acquires increased celerity, and the urine is deficient and high coloured and deposits an amorphous sediment. Our diagnosis will be satisfactorily confirmed by the physical signs to be derived from the use of the stethoscope, which, at the beginning of the disease, applied low in the axilla, or beneath the scapula or pectoral muscle, will communicate a crackling or crepitous sound over a space more or less limited in extent, which is generally opposite the lower portion of the right lung. Both lungs are sometimes simultaneously affected, when the crepitation will be observable on both sides. In the more advanced stage of the peripneumony this respiratory sound will either be very obscure, or totally cease, when hepatization may be known to have taken place by the dulness perceived on percussion; and, in a still more advanced stage, when the patient lives long enough for suppuration to follow, when the stagnant blood globules are converted into pus, which is expectorated by the patient, a hollow rhonchus or guggling will be heard, which is afterwards exchanged for pectoriloquy, when the matter has been expectorated from the cavity of the abscess. A gangrene of the lungs, which is a very rare occurrence, may be discovered by the fetor of the breath, and the rapid sinking of the vital powers, accompanied with delirium. When the disease terminates in fatal hepatization, the respiration is so rapid that the patient is unable to enjoy a moment's respite even to take a tea-spoonful of liquid of any kind. The skin is now covered with a hot clammy perspiration, the face has a bluish or light purple aspect, the drowsiness increases, and the patient feels a sudden weakness. This state is the commencement of a fatal collapse, and is of short duration; for the pulse, which had acquired a temporary excitement, soon begins to fluctuate and flutter; at one time retiring and almost lost, and at another struggling with renewed but ineffectual effort

to restore the dying, aortal circulation. Meantime the cerebral congestion occasioned by the obstructed pulmonary circulation, and denoted by the purple face and livid lips and approaching stupor, alternating with delirium, proceeds, and renders the patient oblivious of his danger and unconscious of his impending fate. He dozes, and then suddenly awakes as if from a dream, and fancies himself convalescent, and, thus deluded, soon becomes insensible to every thing, and rapidly expires.

The most common form of acute suppuration in the lungs is what is called purulent infiltration. The first effect of pneumonitis, or acute inflammation in the lungs, is a congested state of the vessels, which, unless relieved, proceeds to an entire stagnation of the circulation in the affected part, the blood no longer circulating in its capillary tubes. In this condition of the lung, which is called a state of hepatization, from its resemblance in feel and colour to that of a portion of liver, the transmission of air is obstructed, the cells being loaded with mucus, and the obstructed part degenerating into a black, solid, inelastic, inorganic mass. As the pneumony advances, the inanimate vessels allow their dead and grumous contents to escape into the pulmonary parenchyma, where they undergo decomposition, whereby the blood-globules are converted into pus. Wherever phlegmonous inflammation in the cellular membrane exists, and proceeds to suppuration, this transition from hepatization to the formation of pus is observable by an incision of sufficient extent. On viewing the hepatized part, the divided portions of it will be seen to retain their firmness and solidity, and to present a dark, purple appearance; but when the suppuration is commencing, those parts will be found to have lost their solidity, and their dark aspect, becoming soft and compressible, and assuming a mottled pink and grey colour in consequence of some chemical change produced in the hæmotosine of the blood by the process of decomposition. Where the suppuration is complete, the mottled grey colour disappears, and as the knife passes through the softened and disorganized structure, the pus, completely elaborated, follows and exudes after every incision of the anatomist, and may be expressed with the slightest pressure. The fever attending this diffused suppuration is of the simple, inflammatory kind, and not subject to intermittence; and the disease runs a rapid course, seldom exceeding six or eight days.

Chronic abscess in the lungs, the result of pneumonia, is a most insidious disease; and on account of its slow progress in some cases, and the absence of acute pain, is frequently overlooked, until it becomes too late to prevent a fatal termination.

The disease begins either as simple, subacute pneumonia, or as pleuro-pneumonia; and if blood is taken away in the latter case, it will be found to present a buffed and cupped appearance on the surface. The tongue at the commencement is coated with a white fur, and the urine is high coloured. At the end of five days, if the inflammation is not subdued by proper bleeding, dyspnœa is complained of by the patient when he takes the least exercise, and some degree of pain continues. At this time the pulse will vary from 90 to 100. Within three or four weeks from the beginning of the disease, hectic fever appears every evening simulating, and too often mistaken for, a quotidian intermittent, little or no pectoral pain being felt. At this period of the disease the tongue will assume a dark, damson colour. After the hectic has regularly returned every evening at the same hour, it is sometimes obscure during two or three weeks, and appears to be suspended. Neither the patient nor practitioner must be deluded by the apparent improvement; for, on examining the countenance, it will be found tawny, and indicating internal disease, and the urine will still deposit an amorphous sediment. Sickness, debility, emaciation, and a characteristic dyspnœa, from the smallest exertion, will also be observable. After a while a cough is noticed, especially during the night, and sometimes sickness and vomiting accompany it. The pulse is never much under 100, whether the hectic fever is observed or not. Sometimes this slow and gradual change goes on during two months before any further alteration may be observable. At length the face presents a more purple appearance, resembling that which is excited in some persons by stooping in hot weather. The patient complains often of depression of strength and spirits, and has frequent attacks of slight syncope, and he acquires the habit of bending down his chin towards the sternum, as though he felt uneasiness, which this characteristic position relieved; and the moaning or grunting sound emitted involuntarily at every expiration, continues, almost constantly, during the progress of the suppuration, especially during the disturbed sleep of the patient. When the disease proceeds in this chronic form, in general, sooner or later, œdema in the lower extremities occurs; and after the pulmonary abscess has fully formed, the hectic disappears, and a fever resembling typhus supervenes. At length, the patient is suddenly attacked with a discharge of highly offensive matter from the air-passage, resembling that which escapes from the antrum Highmorianum when it has been the seat of chronic abscess; or he is seized with fatal collapse, like that from rupture of an internal aneurism, the cause of which is soon manifested after

death by the copious discharge of pus through the mouth and nostrils.

One of the most frequent complications with pneumonia is inflammation in the pulmonary or costal pleura, constituting Pleuro-Pneumonia. This may be distinguished by the severity of the accompanying pain, and by the intensity of the fever. Another complication of common occurrence is that with tubercles, which the interstitial, cellular inflammation assists in generating or exciting into activity in certain constitutions. In this case the respiration is particularly rapid, and the process of tuberculization is denoted by the accession of hectic fever, and may be detected by careful percussion.

Acute peripneumony is liable to occur as a secondary affection during eruptive diseases, especially measles and small-pox, and after important surgical operations. In the former cases it appears to be often the immediate consequences of bronchial inflammation, with which, under other circumstances, it is frequently associated. In the latter, I apprehend, that on examination after death, it will be found that tubercles have previously existed in the lungs, or that the patient manifested during life a latent, tubercular diathesis, which may have been brought into activity by the reaction following the constitutional shock occasioned by a severe surgical operation.

In speaking of the morbid anatomy of the lungs, in reference to pneumonia, most modern writers have denominated the inflammation met with in one or more of the lobules of the lungs, *Lobular*, and that found in the lobes, *Lobar*. On exposing the lungs of children, who have died from pneumonia, we observe them generally soft, flabby, and of a grey rose colour, marked with solid violet coloured projecting nodules. These discoloured spots are either circular or longitudinal; and, when they are not rendered obvious by their colour, they may be felt by passing the finger over the surface of the lung. The morbid appearances, indicating inflammation in the cellular structure, are met with in three degrees. In the first, we find the pulmonary tissue, on incising it, variegated with red and greyish pink. The red parts are more or less regularly bounded, and float on water, and afford, on pressure, a thin mucous liquid, mixed with air, and an evident crepitation. In the second, the lung at the diseased parts is of a red and deep violet colour, the red external marks corresponding with the deeper internal morbid parts, the central portions of which fall when plunged into water. The cellular tissue of the affected part, on pressure, presents little or no crepitus, and the central nodule discharges a red sanious liquid, without any air. The third degree, is marked by a yellow

or grey yellow colour, occasioned by the infiltration of pus within the pulmonary parenchyma, from which, as I have stated before, it may be pressed out, or be spontaneously discharged, when the parts are divided. Barthez and Rilliet, to whom the profession is indebted for much useful information on morbid anatomy, divide the Lobular Peripneumony into the *Nipple Form* (*mammelonée*), and the *Partial*. The Nipple Form variety presents a nodule of hepatization, the colour and appearance of which render it perfectly distinct from the surrounding tissue, even when that is gorged with fluid. The boundary of this nodule may be established by a white circle, supposed by Grisolle to consist of false membrane deposited by the inflammation, and having a fibrous appearance. In general, the demarcation is not only apparent from the change of colour, but also from a slight projection, which forms the division of the inflamed part, and which results from the section having lowered the adjacent parts, filled with air. The size of the nodules varies from that of a hemp-seed to that of a pigeon's egg; their circumference is generally regular, being more or less spherical, and their number varying from one to twenty, or more. This form of lobular peripneumony is the result of inflammation in one or more lobules, the neighbouring lobules not participating in the disease. The inflammation is centripetal, that is, tending to centralize itself in the lobules primitively affected. It is not uncommon to see this variety terminate in abscess. The inflammation concentrated in an isolated lobule, passes through the regular series of forms from that of sanguineous congestion to the formation of a purulent cavity. At a more advanced stage, the pus, originally deposited within the interstices of the pulmonary tissue, is collected into a small mass, which occupies the centre of the inflamed nodule. This small collection is enveloped by two concentric zones, one of which is internal and of a yellowish colour, and the other, forming the periphery, red, and more consistent; the former being produced by the inflammation in the third, and the latter, by the inflammation in the second, degree. After a while, the red external circle is invaded by the suppuration; the dimension of the central cavity is increased at the expense of the yellow circle; and when a division is made through the diseased points, in the last stage of the disease, round cavities are brought into view, whose dimensions vary from a 28th, or 14th, to a half or third of an inch. These cavities contain a thick, coherent yellow, or greenish yellow, matter, without any air; but their contents are rarely red and thin, although sometimes we find clots of blood mixed with the pus. The interior of the cavities, when they have not acquired their full development, consists of a bed of pulmonary

tissue, hepatized to the second or third degree, furnished sometimes with a layer of concrete pus, and at others with a false membrane, yellow, soft, and readily detached. At length the false membrane is transformed into a small polished, smooth layer, analagous to a serous membrane. These abscesses are often isolated from the bronchi, at other times they communicate with them freely, and at the point where the bronchial tube penetrates the cavity, the mucous membrane is cut perpendicularly, and presents a true solution of continuity. When the inflammation invades separately several adjoining lobules, the purulent cavity is multi-capsular, each of the purulent cells being isolated from its neighbour by a layer of hepatized tissue, and afterwards communicating, when the partitions are ruptured by the progress of the disease. These abscesses have generally a tendency to approach the exterior of the lungs; and they thus sometimes excite adhesive inflammation between the adjoining surfaces of the pleura, terminating in the construction of a false membrane, which is torn through when the lung is elevated from the part of the costal pleura with which it had been thus connected. After this forcible separation has been made, a little hole leading into the cavity of the abscess may be observed. When this adhesion does not happen, the pulmonary pleura opposite the part becomes gradually removed by absorption, and the matter is poured out through the perforation into the cavity of the chest. Barthez and Rilliet have seen two examples of this kind, as well as a singular case of perforation of the diaphragm and discharge of pus into the cavity of the peritoneum.* Pulmonary abscesses are often completely isolated, and excepting the thin hepatized parenchyma which surrounds them, are enveloped on all sides by perfectly sound pulmonary tissue. At other times, the whole, or a great portion, of a lobe is invaded by inflammation. In this case a division of the affected tissues presents the characteristic appearance, to which Barthez and Rilliet have assigned the name of "Lobular Peripneumony Generalized."

"The *Partial Peripneumony* is less limited than the nipple-formed; its circumference blends itself insensibly with the neighbouring tissues, so that we cannot establish any distinction either by its colour or projection. Its extent, often more considerable than that of the nipple form variety, is sometimes the same; its form is not always regular; the inflammation is extended in different directions, and is found to be every where in the second stage, or in the centre in the second, and in the circumference in

* See "Traité des Maladies des Enfans." Par. Barthez et Rilliet, tom. i., p. 66; from which valuable work a portion of this description of the morbid appearances has been abridged.

the first, stage. In the latter case, it may happen that the part choked with diseased points may be united with that of many other adjacent pulmonary points, whence it follows, that a great portion of one lung is found inflamed, and presents the mixed characters of peripneumony in the first and second stage.

"This form of pulmonary inflammation, to which we have first given the name of *Lobular pneumony generalized*, was formerly confounded by all pathologists with Lobar Pneumony.

"When the former has advanced to the third stage, it becomes entirely lobar, and a section of the lung presents an aspect which we may expect to see from the description we have just given; the points which were in the first stage, have advanced to the second, and those which were in the second stage, have passed into the third. The tissue is variegated with red and grey yellow colours intermixed.

"There is, then, a difference between the lobar and the partial peripneumony, which has become general; for, if in both, there may be an union of several stages of inflammation, they are differently disposed in them. Thus, in the common lobar peripneumony, when the disease commences at the base, it is raised by degrees, and while the base passes into the second stage, the upper parts proceed to the first stage at the same time; in the other case, on the contrary, many lobules indistinctly diffused, are inflamed, and ultimately become united."*

Lobar peripneumony in children, presents the same morbid appearances as in adults. We find the various degrees of the disease in the form of congestion, and red and grey hepatization, from the base to the summit of the affected lobe. We rarely meet with abscess.

The acute emphysema accompanying peripneumony in children, varies according to the extent of the pulmonary and bronchial inflammation, and the degree of oppression in the respiratory process. It is seated generally in the upper part of the lung at its sharp edge, and is most frequently in the vesicular form. It may be bilateral or unilateral, and is, when in the latter form, usually found on the same side with that of the diseased organ. The acute emphysema in children differs from the chronic disease in adults; the respiration in the former being remarkably aggravated, the respiratory sound almost natural, and the parieties of the chest not undergoing any alteration in shape; while in the latter, an obvious obscurity may, by auscultation, be observed in the respiratory murmur, accompanied with an increase of sonorousness,

* "Barthez and Rilliet," loco. citat. pp. 67, 68.

and a dilatation in the walls of the thorax, from which children labouring under acute peripneumony are exempt, except, such as have experienced deformity of the chest from the previous existence of rickets.

Treatment.—The different varieties and degrees of pneumonia having been proved to originate in the retardation of the sanguineous circulation in the parts first affected, terminating in a total cessation in the motion and vitality of the blood, and ultimately in a conversion of the red globules into globules of pus, and gangrene in the most severe forms of the disease; it is obvious, that the primary remedy will consist of some means of reducing, as suddenly and completely as possible, the force and frequency of the action of the heart and arteries, which in their endeavour to overcome the capillary obstruction, are continually extending it. The different degrees of inflammation resulting from this morbid, vascular commotion are no where more regularly displayed, than in the pulmonary tissue, where we find, under every form of peripneumony, first congestion denoted by extreme distension of the arterial ramifications and serous infiltrations; secondly, an entire coagulation of the blood within the capillary terminations of the same arterial branches, discovered by a solid, inelastic, airless mass, called hepatization, almost black with lifeless carbonaceous blood, no longer escaping from its inanimate vessels under the stroke of the knife; and lastly, a decomposition of the elements of the vital fluid, and softening and destruction of its tubes, which permit the purulent product to diffuse itself within the cellular membrane. The object to be had in view in affording relief, will be best attained by bleeding, which, in order that it may be effectual, must be practised early, and carried to such an extent as either to produce a temporary interruption in the action of the heart, or reduce the force and the frequency of its action. Some writers mention the cessation of pain as a proper criterion for the extent of the bleeding. This will often be found fallacious, on account of the comparative insensibility of the pulmonary parenchyma, and the difficulty of discovering in children the presence of pain, while under the influence of venesection. When this remedy is adopted at the commencement of the disease, one full bleeding will often put a stop to the further progress of the inflammation; but when much delay has taken place, it will be found requisite to repeat the abstraction of blood several times in order to make the same favourable impression on the circulation: and it is not uncommon for the blood in the first instance, to present, on coagulating, little or no buffy appearance, although the subjacent inflammation may prove to be of the most active nature. In performing the operation, it is of

importance for the surgeon to make a free opening in the vein, to enable him to withdraw the blood in the shortest space of time, not only when the bleeding is repeated but in the first instance; for it is a matter of consequence to avoid any unnecessary expenditure of the patient's strength, while we are contriving to overcome the inflammation. While the blood is flowing, the child should be placed in the sitting posture, and as soon as syncope comes on he should be laid in the recumbent position, which will soon restore the suspended circulation. When any circumstance prevents the adoption of this rule, more circumspection will be required in watching the effects of the loss of blood; because, when we allow the same degree of deliquium animi to occur, as in the former case, we shall be deprived of the resource which the recumbent position affords us, and considerable danger may exist should not re-action be speedily established. It is also advisable to avoid the violent impulse of the circulation which follows this state of long continued deliquium, when the inflammation has proceeded to hepatization, which is beyond the control of venesection; as in this case the difficult and rapid respiration would be increased, and an irritable condition of the heart and arteries induced. At every subsequent bleeding after the first, the surface of the coagulum will assume a buffed and contracted appearance on its upper surface; but we must not on this account alone be induced to drain the system of its blood, as this state of the crassamentum may continue to exhibit itself in the blood abstracted, some time after it might cease to be safe or prudent to repeat venesection.

It must not be forgotten, that some young patients as well as adults, are at first intolerant of loss of blood, and afterwards bear copious bleedings with impunity. This may arise from the natural state of the constitution, or from a degenerate condition of the blood previously acquired, and existing at the time of the attack. In this case, as in infants, it may be found necessary to have recourse to local in preference to general bleeding. It may be observed, however, that this apparent intolerance of the necessary loss of blood at the onset, is sometimes due to a state of alarming oppression connected with the pulmonary and cerebral congestion, which concur in some cases at the commencement, and often continue during the first twenty-four or forty-eight hours. In such cases, the face has a cadaverous appearance, and the temperature of the skin is below its natural standard. Great dyspnœa occurs, and the patient is unable to bear any other than the horizontal position, in consequence of an apprehension of immediate death from the least attempt to to sit up in bed. The function of the

heart is almost suspended; the pulsation at the wrist being scarcely perceptible at one time, and at another bounding with a peculiar jerk and hesitation, produced by the cerebral congestion, which is denoted by disturbance in the functions of the sensorium, either in the form of temporary delirium, or monomania. During this oppressed condition of the aortal and pulmonary circulations, and disturbance in the functions of the nervous system, a state resembling that of a dying person will sometimes continue during several hours, and frequently recur, convincing the patient that he is actually on the point of death, and inducing his attendants to believe the same. When the medical attendant finds his patient in this state of apparent deliquium, he may satisfy his own mind of the actual condition of the patient by a careful examination of the pulse at the wrist, during the systolic action of the left ventricle of the heart, when he will perceive by the sensation communicated to his finger through the integuments, that the calibre of the artery and the firmness and density of its muscular coat are undiminished, and that the obscure and undulating impulse affords really the perception of a struggle in the heart to carry on the circulation, rather than any deficiency in the quantity of blood in the circulation. In some cases, indeed, the heart for a time entirely ceases to act, during which period the patient experiences the most awful and distressing apprehensions of death. In such cases as those, the best practice is to stimulate the heart artificially by repeated doses of four or five grains of sesquicarbonate of ammonia, until the circulation is excited into some regularity, and then to bleed; for although the heart may be thus embarrassed and oppressed by the interrupted function of the nervous system, we must only view this circumstance as a modification of the disease, and not allow our minds to be diverted from the treatment of the latent inflammation. The blood in these cases will be found more black and carbonaceous than in the more simple and uncomplicated form of the disease, and the abstraction of a portion of it will often have the effect of equalizing the current of the circulation, and unfolding the hidden inflammation. When bleeding at the arm cannot be practised on very young children, and the inflammation is urgent, the jugular vein may be opened. After the first venesection a large dose of chloride of mercury should be given, and this should be followed at the end of a few hours by a draught of salts and senna; and the bleeding must be repeated at shorter or longer intervals, according to the severity of the inflammation. When the bleeding has been thus properly conducted, a decided relief of the symptoms will generally follow. Should not this result occur, one or two grains or more of chloride of mercury, a

sixth or quarter of a grain of potassio-tartrate of antimony, and two grains of compound powder of ipecacuanha, should be given in conjunction with citrate of potash and tincture of squill, once in four hours; and when the mouth becomes affected by the mercury, the medicine should be repeated at longer intervals, or occasionally suspended. After properly repeated bleedings, there is no remedy so effectual as calomel in removing the congested state of the small pulmonary arteries, and preventing impending hepatization. It is said, indeed, to have also a specific effect on the hepatized parts, hastening in them the process of suppuration. As soon as the gums become seriously affected, the mercury must be suspended. When peripneumony is connected with any of the exanthemata, we must treat the internal inflammation by bleeding as freely as if it were simple and uncomplicated, just as we should do when a vital organ is attacked with acute inflammation during gout or rheumatism. Œdema succeeding to pulmonary inflammation may be successfully treated by digitalis; and when the expectoration is found to be diminished under these circumstances, the sesquicarbonate of ammonia and squill may be advantageously administered at the same time. Sometimes a chronic inflammation in the pulmonary or costal pleura, remains during the state of atony succeeding the peripneumony. This will be most effectually removed by the ointment of potassio-tartrate of antimony, repeated blistering, or the external application of croton oil. Chronic bronchial inflammation associated with, and succeeding, pneumonia, will be most effectually relieved by the counter-irritation excited in the œsophagus and stomach by the exhibition of balsam of copaiba, or the aqueous solution of ammoniacum, after all acute inflammation has been subdued. Those cases, which assume a typhoid character towards the decline of the disease, must be treated with quinine and suitable stimulants, and the atmosphere of the room should be refreshed by cautious ventilation.

With respect to diet, total abstinence from animal food and fermented liquors must be observed, until the inflammatory symptoms have been removed. Barley-water, lemonade, tea, and similar diluting fluids should constitute the principal culinary articles taken by the patient, until the inflammation has subsided, when animal and vegetable jellies may be freely given to restore the strength.

During the whole progress of pneumonia, the temperature of the patient's apartment must be maintained as nearly as possible at sixty degrees of heat.

Chronic inflammation in the cellular membrane of the lungs,

must be treated by repeated bleedings, and small doses of mercury. When hectic fever supervenes, either simple or tubercular, suppuration must be suspected. In either case, bleeding must be omitted. When hepatization continues in a chronic form, which is a rare occurrence, on account of its natural tendency to terminate in suppuration, the iodide or biniodide of mercury may be given, the former in the dose of half a grain, and the latter, one-fourth of a grain, twice a-day.

PLEURITIS, OR PLEURISY.

The symptoms of this disease are acute pain in one side of the chest, increased by every inspiration, and by any attempt to lie on the affected side. A short, dry cough is also generally present, and the disease is always accompanied with inflammatory fever, which is proportionate with the inflammation in the pleura. The attack usually commences by chilliness, or a paroxysm of rigor. The pain felt during inspiration is so severe that the patient appears almost afraid to breathe, and draws in more air than he is compelled, to prevent suffocation. The fever soon becomes intense, and the tongue acquires a thick, white fur. On examining the affected side, we discover a dulness of sound, and a modification of the voice which is denominated ogophony, together with bronchial respiration; and, as the disease proceeds, total absence of the murmur of respiration, and an evident dilatation of the affected side of the thorax. When pleurisy appears in the epidemic form, it is accompanied with symptoms of typhus; and when it attacks a scrophulous patient, it is liable to seat itself in the upper portion of the pulmonary pleura, and to be followed by tubercular disease in the lungs. As soon as effusion takes place into the cavity of the chest, its extent may be ascertained by the dulness of sound perceived on percussion, instead of the usual thoracic tympany; and when the effusion is very extensive, the opposite lung presents a puerile respiration. The form of the affected side is changed by the effusion, the chest appearing rounder than natural on that side, and the intercostal spaces being elevated above the level of the ribs, and communicating a fluctuation to the fingers. In the left side the effusion may force the heart out of its natural position to the right, or central part, of the thorax.

Costal pleurisy is liable to be confounded with rheumatic inflammation in the intercostal muscles. It may be distinguished from the latter by the attendant fever and rapid hard pulse. In rheumatic pain in any of the muscles of the chest, the pulse is

always either slower than usual, or not above the natural standard, and it is uninfluenced by the usual remedies for pleurisy. Neuralgia in the intercostal muscles may also be mistaken for pleuritic inflammation. It may, however, always be discovered by the absence of fever, by the relief afforded by pressure, and by the fugitive character of the pain.

The effects of pleuritic inflammation, discovered after death, consist of effusion of serum, in which portions of coagulable lymph are sometimes found floating; purulent matter; and lymph, varying in density, being sometimes thin and transparent, and in other cases very thick, opaque, and cartilaginous. The lymph, sooner or later, generally becomes organized by vessels shooting through it, and forming a connection with the original membrane; and in some instances a cellular structure is afterwards produced, into which effusion of serum has taken place. It is uncertain at what period the vascularity of these false membranes commences; but it is probable the period varies in different cases. By means of these new formations, we often find the costal and pulmonary pleuræ connected together in various parts, and to a considerable extent.

Partial pleurisy, as that existing between the lobes of the lungs, or in the diaphragmatic portion of the thoracic, serous membrane, are of rare occurrence in children. The symptoms of the latter are acute pain near the lower margin of the false ribs, cessation of the inspiratory motion of the diaphragm, excessive elevation of the ribs during inspiration, dyspnœa, inclination of the body forwards, for the purpose of affording as much relaxation as possible to the diaphragm, anxious countenance, and a remarkable fear of coughing. At first, the respiratory murmur is heard at the inferior part of the chest; but as the disease proceeds, the sound or percussion becomes dull, and the murmur of respiration ceases; and these phenomena extend upwards in proportion with the progress of the inflammation, and its complication with pulmonary disease. After effusion occurs into the cavities of the thorax, the liver or spleen may be felt in a state of partial dislocation below the cartilages of the ribs. In those cases vomiting, hiccup, or jaundice may attend.

The most frequent exciting cause of pleurisy in children, is a sudden suppression of the cutaneous perspiration, or the repulsion of an eruption from the skin. The disease also proceeds, in cachectic patients, from the inflammation accompanying the extension of pulmonary tubercular disease to the serous surface of the morbid lung. It often arises from the same extension of disease in simple inflammation of the pulmonary parenchyma.

Chronic pleurisy may either occur originally in a sub-acute form, or it may succeed to an acute attack after the primary inflammation may be supposed to have subsided. In either case, the countenance and emaciated state of the patient indicate the existence of a lurking disease; and on examining the pulse and the chest, the usual signs of pleuritic inflammation may be discovered; and while effusion of pus is proceeding within the thorax, by careful attention an obscure hectic fever may be detected. When the naked chest is examined, the affected side will be found to present a rounded and œdematous aspect, and the interstices between the ribs elevated by the subjacent purulent effusion. In such cases, too, it is not uncommon to find the vertebral column distorted; and when the left cavity is the seat of the disease, the heart more or less displaced. This chronic form of the disease is chiefly met with in scrophulous children; and when neither nature nor art have succeeded in arresting its progress, œdematous swellings in the legs, diarrhœa from extension of tubercular disease to the bowels, and manifest hectic fever, destroy the patient.

Treatment.—The treatment of pleurisy in the acute form, when unaccompanied with pneumonia, readily submits to prompt and active treatment. The first remedy is bleeding, which must be carried to the extent of removing the pain, or producing syncope, care being taken to keep the patient in the erect posture, until one of these effects is produced. The bowels should then be freely acted upon by salts and senna. The patient should be visited frequently, and as soon as a return of pain is observed, the bleeding should be repeated, even after intervals of a few hours only, when the inflammation is urgent. For this repetition of bleeding, the pain and heat of the skin will be our best guide. Care, however, must be taken to watch the state of the pulse; for as soon as it ceases to afford the sensation of quickness and hardness or density, which proceed from the vigorous and excited condition of the muscular coat of the artery, and as soon as it gives to the finger of the physician a jerking sensation, indicating declining vigour in the muscular power of the heart and arterial branches, general bleeding must be omitted. When this precaution is disregarded, organic disease in the heart may be induced, which may ultimately prove fatal; but in such cases, should much pain continue, local abstraction of blood must be had recourse to, and afterwards the application of a blister. In this stage of the disease, and when the inflammation and the action of the heart and arteries have been modified by full bleeding, opium in a large dose may be given

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food may be allowed to renovate the strength. It must be observed, that while the inflammation in the pleura continues, the secretion of urine will be remarkably diminished and high coloured. When, therefore, the usual quantity and appearance of that secretion are restored, we may have recourse with safety to stimulating and nutritious diet.

Chronic pleurisy is usually the result of the acute form, a subacute inflammation remaining after the active stage of the disease has been modified by previous treatment. I have already stated that acute pleurisy, when severe and obstinate, frequently terminates in serous or purulent effusion, which may be discovered by the stethoscope, and by the preternatural projection of the affected side. The effect of a long continuance of subacute or chronic inflammation is progressive increase of this morbid deposit, which is accompanied with much less pain than that which denoted the acute form of the disease. In most cases hectic fever is present, especially when pus has been deposited. In some, the collection of matter is stationary, being bounded by a sac formed by false membrane. The patient lies in a squat form on the affected side, which is œdematous; and an obvious curvature of the spine is gradually produced. All respiratory sound is now lost, and the patient at the end of a few months, unless relieved by a surgical operation, falls a prey to hectic fever, in the most extreme state of emaciation. As I have stated before, in some rare cases, this fatal termination is averted by spontaneous absorption; in general, however, the only remedy which remains offering any chance of recovery, after the failure of repeated blisters and diuretics, is the operation of paracentesis, which may be performed with a much better prospect of success in the chronic, than the acute, form of the disease. When an opening is made into the cavity in the chest for the relief of empyema, soon after the termination of acute pleurisy, the admission of atmospherical air soon excites irritative fever, and is generally followed by the death of the patient. The same result also sometimes follows the operation for chronic empyema, in which case the sac containing the matter has been found occasionally a quarter of an inch thick, and incapable of contracting and closing the cavity left by the abstraction of the pus. If the lung should, in such a case, be so far compressed and carnified as to have entirely lost its elastic property, there will be little prospect of recovery; the patient will be rapidly carried off by the effects of the decomposition of the matter remaining in the cavity, exposed to the action of the air unavoidably admitted. In

order to ascertain the contents of the thorax, Dr. Davis invented a small trochar with a groove, which may be safely employed for that purpose.*

Paracentesis Thoracis.—The operation recommended by Dr. Williams is the following, which he advises to be performed with a trochar:—

"As soon as the stilette is withdrawn, steady pressure should be applied by the hands of the assistants to the affected side, to depress the ribs and shoulder and to press up the diaphragm, to promote the flow of liquid, and to prevent the introduction of air through the orifice during any sudden and forcible act of inspiration. For the same reason, during a fit of coughing, if there appear any tendency to intermission in the stream of liquid, the orifice should be closed with the finger. The pressure should be steadily increased as the liquid flows; and if the stream should stop suddenly, a probe should be passed through the canula, to clear it of clots of lymph, or other obstructing matter; and this may be done also if the stoppage is more gradual; but, if still no more flows, the canula should be quickly withdrawn, and a compress or a large poultice placed on the orifice; and then, but not till then, the pressure on the walls of the chest may be withdrawn."†

To prevent the occurrence of pneumothorax, Mr. Benjamin Bell and Larrey recommended the operation to be so performed that the wound in the skin and the intercostal muscles may not be parallel, and that a valvular opening may be the result, as when a psoas-abscess is opened on Mr. Abernethy's principle. To insure this effect Larrey raised the skin of the thorax upwards, and divided it about an inch or two below the situation at which the opening was to be made. The skin, when relaxed, covered the wound through the intercostal muscles and costal pleura, and, as he supposed, excluded the air, while it permitted the matter to escape downwards obliquely beneath the valve thus formed.‡ Larrey also placed a tent or stopped canula in the opening, and kept the edges of the wound together with adhesive plaster.

The best situation for the opening is between the fifth and sixth, or the sixth and seventh ribs, and between the front and lateral parts of the chest, or a little anterior to the indigitations of the serratus anticus magnus. In making the opening on the left side, care must be taken to commence far enough backwards to

* "Lancet," No. 638, p. 284.
† "Lectures on the Physiology and Diseases of the Chest," p. 100.
‡ "Bull. de l'Acad. de Méd.," tom. i., p. 73.

avoid the heart; and in all cases we should take care to make the opening as dependent as we can, provided we do not descend so low as to interfere with the diaphragm. The operator must also make his opening on the upper margin of the ribs, to avoid the intercostal arteries.

The operation recommended by Mr. Hargrave is the following:—

"The patient being situated in the most convenient position for the discharge of the fluid at the same time attending to his comfort, at the place already indicated the surgeon makes an incision a little above the rib through the integuments to the intercostal muscles; he then depresses the inferior edge of the wound to the superior edge of the rib, and cuts carefully through the attachment of the intercostal muscles to it; having laid bare the pleura costalis, he pierces it cautiously with a trochar and canula, and draws off the collection of fluid within the chest."*

By this proceeding a complete valve is formed over the intercostal opening. For the purpose of withdrawing the fluid contents of the thorax after this operation, Dr. Carson, of Liverpool, contrived an ingenious tube, which acts on the principle of a syphon.† This tube appears to be only adapted for a purulent or sero-purulent fluid, which contains no floating portions of lymph, as those would be liable to interrupt the exit of the matter.

Heyfelder relates many cases in which the operation of paracentesis was performed with success on children from six to eight years of age.‡ Vaudermonde has published a case of a child in whom an abscess of the chest was found after it was opened to communicate with the bronchi. Notwithstanding this the patient recovered.‖ Barthez and Rilliet have also recorded a singular case of an external phlegmonous abscess on the chest of a boy which communicated with the cavity of the thorax, and after continuing several years, terminated in death. Similar cases have also been reported by Cruveilhier, Andral, and Gerard.

The success attending the operations of Mr. Crompton, although not very encouraging, are sufficient to justify the attempt to save life in every case, even when connected with tuberculization; and in these cases Laennec advises paracentesis, from his belief in the curability of pulmonary phthysis, when he is satisfied of the existence of a cavity in the diseased lung.

* "Operative Surgery," pp. 445 and 446.
† "Lancet," vol. ii., p. 456, 1829-30.
‡ "Archiv.," 3rd series.
‖ "Journal de Vaudermonde," 1756, vol. x., p. 337.

TUBERCULAR PLEURITIS, OR PLEURISY.

In scrophulous children, inflammation of the pulmonary or costal pleura is accompanied with a deposit of tubercular matter either on the free or adherent surface of that membrane. When the disease commences on the adherent surface of the costal pleura, and extends into the cellular membrane and intercostal muscles, it is seldom accompanied with pain, until the free surface of the serous membrane is attacked with the specific inflammation. In the latter case, a slight cough is present, as well as pain, but no expectoration takes place, unless the disease becomes complicated with pulmonary tubercles in a state of softening, the matter of which might be expectorated by means of a communication formed between the lung and bronchi. Very slight dyspnœa is observable in tubercular pleurisy until within a short time of the fatal termination of the disease, when it has extended to the lungs, and terminated in pulmonary phthysis. During a considerable period, this insidious disease proceeds without obvious fever, and with little emaciation; but the face discovers a pale and diseased appearance, which, to an experienced observer, is sufficiently characteristic of some serious, internal malady. After the tubercular disposition has proceeded some time, and extended to the lungs, hectic fever may be detected, especially by nightly paroxysms of perspiration, and by rapid emaciation. This change, however, may be very sudden towards the termination of the disease, and take the inexperienced practitioner by surprise.

Treatment.—In all scrophulous patients attacked with inflammation, we should be active with our treatment, and guarded in our prognosis. Whether the free or adherent surface of either pleura may be the seat of inflammation, leeches should be applied without delay, for the purpose of arresting the deposit of tubercular matter, which, in those predisposed to the disease, is apt to follow the slightest inflammation. In treating this disease, therefore, we must be guided more by the constitution of the patient than the severity or activity of the disease. If we omit local bleeding in the first instance, and wait till tuberculization has commenced, we shall be able to render little service afterwards to our patient. The bowels must be relaxed, and iodide of potash exhibited in large doses, one or two grains, three or four times a-day. In these cases, general bleeding makes no impression on the specific, local inflammation, and preparations of mercury, unless administered at the very commencement, only hasten the softening of the tubercles, and the destructive process. The power which this

medicine exerts in removing congestion from the capillary vessels, and primary simple inflammation therefrom, is so decided, as to render its employment indispensable in the first instance; and in tubercular inflammations its effects are promoted by its combination with iodine. If this specific inflammation is allowed to proceed until the tubercular globules are separated from the blood, and deposited in the cellular membrane in the lungs or intercostal spaces, or on the free surface of the pleura, all attempts to cure or interrupt the diseased action will be useless. When hectic fever is established, the case will be as hopeless as if the morbid process had originated in the lungs; and the same treatment will be required as that recommended for the relief of pulmonary consumption.

PNEUMOTHORAX.

The introduction of atmospherical air between the surfaces of the pleuræ, is an occurence which most frequently happens in the last stage of pulmonary consumption, from the bursting of a tubercular abscess through the pulmonary pleura. This may take place in one or more parts of the serous surface. The immediate consequences of the accident, are severe pain from pleural inflammation, and dyspnœa threatening suffocation. The disease is said sometimes to proceed from the secretion of air by the exhalant vessels of the pleura; but the proofs of its origin from this cause are by no means satisfactory. An empyema is also said, in a few instances, to have burst into the lungs, and thus established a communication between some perforated aircells and the pleural cavity. Gangrene of the lung, terminating in rupture of the pleura, has likewise given rise to pneumothorax, as well as to a general emphysema. The physical signs of the presence of air in the cavity of the chest, are a projection of the intercostal spaces, the total absence of the respiratory sound, and a clear sound on percussion; and, when pus escapes into the cavity of the chest together with air, a metallic tinkling, or jew's-harp sound, is discovered by the stethoscope. The clear, drum-like sound of the chest may be interrupted by adhesions between the pleuræ. The presence of air and fluid between the pleuræ may also be discovered by shaking the chest, when the agitation of the contained liquid may be heard by immediate auscultation. The patient generally lies on the affected side, and the arm on the same side has been found œdematous by some observers, as the elder Fontanus, Buchnerus, and Valsalva.*

* "Morgagni de Causis et Sedibus Morborum," epist. xvi., s. 36.

The fatal termination of pneumothorax usually occurs from the second to the fourth week. It sometimes happens in the course of a few hours or days. Recovery is rare under any circumstances; but Barthez and Rilliet have recorded a well-marked case of a child three years old, who, having been attacked with a violent cough and fever, accompanied with involuntary discharges from the bowels, was admitted into the Hospital for Infants, in Paris, and, at the end of about a month, was discharged perfectly cured.*

Pneumothorax may arise from penetrating wounds of the chest, or from fractured ribs, or from the operation for empyema.

Treatment.—The cachectic state of the patient, when this disease occurs from a tubercular abscess in the lungs, holds out but little expectation of relief. The violent pain arising from the consequent inflammation, should be treated by the application of leeches, and the internal use of opium. When the sense of suffocation is unusually distressing, and death is impending at an early period after the attack, present and temporary relief may be afforded by paracentesis; but this must be represented only as an expedient to prolong life, for there will be no rational expectation of recovery when the patient had been previously suffering with a fatal disease, and afterwards exposed to an operation, which, in morbid subjects, is always followed by an unfavourable and destructive inflammation.

Pneumothorax, arising from wounded lungs, may be followed by pleuritis. This should be treated by copious bleeding, general or local, according to the age of the patient; and, when suffocation is threatened, the operation of puncturing the pleural membrane must be had recourse to, for the purpose of removing the dangerous pressure on the mediastinum, which interferes with the expansion of the opposite lung, and the action of the diaphragm. Should emphysema in the cellular membrane also be present to any considerable extent, scarifications may be made to afford temporary relief. As soon as the wound in the lung has healed, the discharge of the air into the pleural cavity will cease, the lung will recover its elasticity, and the extraneous air will be rapidly absorbed.

EMPHYSEMA OF THE LUNGS.

This appears under two forms,—the Vesicular, or Pulmonary, and the Interlobular.

The *Vesicular emphysema* consists of a dilatation, or rupture, of the aircells of the lungs, in which latter case several cells are

* "Traité des Maladies des Enfants." Par Barthez et Rilliet, tom. i., p. 195.

united. Some of these cells are of the size of a millet seed, while others are found as large as cherry-stones or harricots.* It is probable that in all cases of extreme enlargement, the cells consist of several others which have been ruptured, so as to form one large cavity. When the chest is opened, the distended lungs project through the opening, and feel firm to the touch. The crepitation is less, and the subsidence of the lungs, after an opening has been made, is much more gradual than in the natural state. When we deposit a lung in water, it is more buoyant than a healthy lung. In extreme cases several lobules are united, forming, by the destruction of their interlobular partitions, one large cyst containing air. The morbid state of the pulmonary cells may be occasioned by hypertrophy, atrophy, or over-distension. Hypertrophy is generally the result of bronchitis, and sometimes it arises from the double labour required by one lung, when the other is incapable of performing respiration. Atrophy of the lung occurs in children from the pressure, to which it has been subjected by pleural effusion, which prevents the free introduction of air into the pulmonary aircells, and produces absorption of their partitions. Over distension of the aircells, long continued, produces a loss of their natural elasticity, in consequence of which they remain always distended, instead of being alternately dilated and contracted. In this state of tension, any sudden and violent inspiration or expiration, as during a paroxysm of asthma or hooping cough, occasions rupture of the cells.

When the lung on one side the chest only is emphysematous, that side of the chest is obviously more expanded than the other, the intercostal spaces being wider, and affording a more distinct sound on percussion. When both lungs are diseased, the chest acquires externally a remarkable rotundity, projecting unnaturally at the front and posterior surfaces. While the sound from percussion is so much augmented as to become tympanitic, the respiratory murmur is either very obscure or imperceptible; but when larger vesicular cysts are produced under the pleura, the sound perceived during inspiration is peculiar, and has been denominated, "Crepitous râle with large bubbles."†

Interlobular emphysema is a collection of air within the cellular membrane intersecting the parenchyma of the lungs, and dividing the lobes of the lungs into separate lobules. The emphysematous cells thus produced are most extended towards the surface of the lungs, where they generally appear in rows; and when they spread to the root of the lungs, they conduct the effused air into the

* "Laennec." † Ibid.

mediastinum, where it is extended through the common cellular membrane, producing emphysema on the chest and neck; an occasional occurrence in severe cases of hooping-cough. The presence of air in the cellular membrane of the chest and neck at once discovers the existence of interlobular emphysema, which it is otherwise difficult to distinguish by physical signs. It is the opinion of Laennec, that interlobular emphysema is produced by the rupture of some of the aircells, and Dr. Copland explains its origin in the same manner.* On the other hand, Dr. Townshend, who disputes the truth of this explanation, states, that rupture of the aircells has never been found in connection with this disease.† Notwithstanding this assertion, there appears to me to be little doubt, that the effusion of air into the cellular membrane, in this species of emphysema, is effected primarily by rupture of some of the aircells, although such rupture may have escaped detection.

Treatment.—As emphysema of the lungs is always symptomatic and accidental, the attention of the physician must be confined to the original disease. The vesicular species is the most intractable; for when the aircells remain long preternaturally enlarged, or their subdivisions are lacerated, and several of the cells united into one large vesicle, the infirmity will continue, and the only remedy will consist in avoiding exposure to cold and moisture, and other causes calculated to excite bronchial inflammation. In these cases, the natural elasticity of the cells is destroyed, and, therefore, any sudden impulse of air in coughing, or additional interruption to the process of respiration, occasioned by a loaded state of the bronchial tubes, produces extreme dyspnœa, which may be heard to a considerable distance. The locality best adapted for such invalids is one which is warm, sheltered, and dry. The difficulty with which the venous blood is deprived of its superabundant carbon during its passage through the lungs, in these cases, induces the patients to expose themselves to currents of air, and to avoid heated and unventilated apartments; and no harm arises from such exposure, while the surface of the body is well clothed and the feet kept dry. On the contrary, much relief is afforded to the labouring lungs, and the decarbonization of the blood is greatly assisted by the inhalation of fresh air at every inspiration; the comparative increase of oxygen in pure unrespired air, acting as a substitute for the lost faculty of spontaneously enlarging the volume of air in the lungs by an occasional, deep inspiration, which persons in perfect health are in the habit

* "Dict. of Pract. Med.," part iii., p. 754.
† "Dict. of Pract. Med." vol. ii., p. 27.

of exercising, when long confined in a hot and crowded room, for the purpose of preventing approaching asphyxia.

The interlobular emphysema requires no treatment, unless it is so extensive and sudden as to expose the patient to the danger of suffocation; in which case bleeding must be practised for the purpose of diminishing the pulmonary venous congestion. When the emphysema in the cellular membrane of the neck produces serious inconvenience, the incarcerated air may be liberated by scarifications. As soon as the accompanying hooping-cough, or other disease, which has excited the emphysema, has been relieved, the effused air is gradually removed by the absorbent vessels.

HÆMOPTYSIS.

A discharge of blood from the air passages is not so frequent in children as in adults, which is owing to the rapid growth of the former requiring a greater expenditure of nutriment, by which plethora is obviated, and to their comparative immunity from violent mental and physical exertions, and those morbid developments which are more commonly observed at puberty. Hemorrhage may occur in the mucous membrane lining the larynx, trachea, or bronchi, or from the parenchyma, or a tubercular cavity in the lungs. It has been customary to divide this disease into Active and Passive, or Inflammatory or Cachectic Hæmoptysis.

The only cases in which I have found a discharge of blood proceeding from the larynx in children, except in purpura, have been those of chronic laryngitis, after ulceration has existed several months. In these rare cases, the hemorrhage, which is copious, is of the active kind, and is accompanied with fever, thirst, and a white furred tongue. The exciting cause of the hemorrhage is some violent exertion of the voice, or some sudden hurry in the circulation from running. The quantity of blood coughed up is copious, its appearance is arterial, and its effects alarming. The cough is violent and suffocating. On examining the fauces, we may notice a vascularity extending over the velum, uvula, and tonsils; and the pain and soreness on each side of the upper part of the larynx, which are characteristic of laryngeal ulceration, will also be present. The blood ejected is not mixed with bubbles of air.

The expectoration of blood from the bronchi is accompanied with a rattling, or crepitation, occasioned by the air, with which the blood is entangled; and the patient is often conscious of the approach of the hemorrhage by the previous crepitus. This discharge of blood occurs in two opposite conditions, *i.e.*, the inflam-

matory, or febrile, and that cachexy, in which purpura hæmorrhagica prevails. In the former, the pulse is hard and quick, the skin hot and dry, and the tongue coated thickly with a white fur; the patient has a florid complexion, and, generally, light hair; the cough is loose and rattling, and the expectoration easy; the patient can lie on either side.

The hæmoptysis, which proceeds from a tubercular cavity, may be distinguished by the tubercular diathesis, and by the hectic fever, debility, and emaciation with which it is connected. Thoracic percussion will detect, in general, a tubercular state of the lung; and the stethoscope, if the cavity is considerable, the peculiar sound, which is called pectoriloquy. The patient will also be able to lie only on one side.

The hemorrhage which proceeds from the mucous membrane of the larynx and bronchi, in that species of disorder of the system which is denominated hemorrhagic purpura, may be discovered by the general cachectic condition of the patient, the sallow countenance, debility, inaptitude for exertion, purple spots on the extremities which are not removable by pressure, and by the bleeding from the gums, excited by the least friction. This hæmoptysis is accompanied by a little, tickling cough, and proceeds from the capillary vessels in the mucous, laryngeal, tracheal, or bronchial membrane.

Hemorrhage into the parenchyma of the lungs, constitutes what is called Pulmonary Apoplexy, which may occur soon after birth, or have been preceded by bronchitis or pneumonia. The attack is sometimes almost immediately fatal, and the pulmonary hemorrhage occurs more frequently without than with hæmoptysis. The disease is most common in children above five years of age, and boys are more subject to it than girls.* The external surface of the lung is found, after death, marked with dark-coloured or black spots, which discharge black blood on being cut into and compressed. In slight attacks, the tissue of the lung is not destroyed, and the blood is effused into the vesicular structure. A more decided form of the disease presents these marks in a more firm and friable state, in which the least pressure penetrates the parts, and converts them into a black, bloody, broken-down mass, without any traces of pulmonary tissue. In the worst forms of the disease, we find the parenchymatous structure completely destroyed, and a portion of the lung converted into a cavity. Hence, we find there are three degrees of pulmonary apoplexy,—first, a kind of enchymosis or infiltration into the cellular mem-

* "Billard."

brane; secondly, a rupture of the cellular and vascular apparatus, with sanguineous infiltration; and, thirdly, the formation of a cavity. The last is the only true form of pulmonary apoplexy, according to the proper acceptation of the term. There is a marked difference, in some cases, between these different forms of the disease just described, and hepatization, which consists in the entire absence of all disease in the parenchyma, in the immediate vicinity of the nodule or cavity. At other times, marks of inflammation may be discovered, and, when the hemorrhage proceeds from purpura, traces of that disease will be found in the bowels, kidneys, or other organs.

Treatment.—For hæmoptysis, proceeding from ulceration in the larynx, bleeding is the principal remedy; which must be repeated at short intervals, as long as the hæmoptysis continues, and the blood presents a buffed and cupped surface on the crassamentum. Twenty or thirty grains of sulphate of magnesia may be given once in four hours, in compound infusion of roses; and, after the hæmoptysis has ceased, means adapted for the cure of the chronic ulceration in the larynx must be commenced. For this purpose, after all inflammatory symptoms have been subdued, the patient should take an emetic every second morning, composed of a quarter or half-a-grain of sulphate of copper, and five grains of ipecacuanha, and, three times daily, ten minims of copaiba, and the same quantity of balsam of Peru, suspended in water by means of one drachm of powder of acacia. When hectic fever has existed previously to the attack of hemorrhage, tubercular disease may be suspected, which will destroy all hope of ultimate recovery, such cases always terminating in fatal phthysis. In some cases, venesection must be regulated more by the state of the patient, and the effects produced on the constitution, than by the locality of the hemorrhage.

When bronchial hemorrhage is attended with bronchitis or pneumonia, it must be treated by venesection, carried to such extent as the state of the patient may admit, and nauseating doses of potassio-tartrate of antimony must be conjoined with proper aperients. When bleeding has been carried to a great extent, and still the inflammatory state and the hæmoptysis continue, two or three grains of acetate of lead may be given with much benefit, combined with opium. Some practitioners prescribe rhubarb as an antidote to the constipating effects of opium in this composition. When the state of the patient renders rhubarb preferable as an aperient, the practitioner must not direct the ingredients to be made into pills, as the tendency of the acetate of lead to harden every thing in contact with it, will have the effect of rendering the

pills perfectly insolulable in the stomach and bowels. In all cases in which an aperient is required during the internal use of lead, sulphate of magnesia will be found the most proper aperient. The passive hæmoptysis, which results from the morbid state of the blood and the capillaries of the bronchial mucous membrane, will require total abstinence from bleeding, both local and general. This disease must be vigourously attacked by the constitutional remedies recommended for the treatment of purpura, care being taken to devote special attention to the unhealthy condition of the assimilative organs, on which the hemorrhagic disposition will be found to depend. (See Purpura.)

The hæmoptysis, proceeding from a tubercular cavity, is sometimes suddenly fatal. It is at all times alarming, on account of the peculiar condition of the arterial tubes, from which the hemorrhage commences when the disease is associated with gangrene. The effect produced on these vessels by the degenerate species of inflammation, which terminates in this form of gangrene, is a destructive ulceration, not preceded by the infusion of lymph within their internal coat, which, in other cases, is found to be a provision of nature intended to obliterate the healthy part of the canal, and to obviate hemorrhage. It is customary in these cases for practitioners to rely upon various styptic or astringent medicines, supposed to exercise an effect upon the blood, which disposes it to coagulate in the ruptured vessels. Hence, alum, kino, Ruspini's styptic, which is said to be composed of gallic acid, were the remedies prescribed by the older practitioners. I need not say that such practice is founded on an erroneous pathology. The only rational indication which the pathology of the disease points out, is that of exciting the nervous energy in the muscular coats of the arteries, with the view of restoring their natural contractile faculty. The enervated state of the bronchial or proper nutrient arteries of the lungs, which is the cause of the destructive process following inflammation in the pulmonary texture, must be considered as the result of the general depravity of the constitution, and therefore the remedies should be such as are designed to rouse the vitality, and excite the contractility of those vessels. The medicines best calculated to answer these purposes, are, oil of turpentine, quina, and the electric or galvanic fluid. Dr. Willshire speaks highly of oil of turpentine, both in active and passive hemorrhage from the lungs, and attributes its efficacy to its astringent operation.* This astringent effect, I have already explained, is not possessed by any medicine, and I believe that such a stimu

* "Lancet," Dec. 31, 1843.

lant as turpentine would be inadmissible in active hemorrhage. The cases in which Dr. Willshire has so signally succeeded with turpentine, must therefore have been such as have arisen from atony or enervation in the capillary arteries. In the "North of England Medical and Surgical Journal," a case of passive hæmoptysis is related, which resisted venesection, acetate of lead, sulphate of zinc, and sulphuric acid, and was completely cured by disulphate of quina.* The writer was fully aware of the impropriety of bleeding in these cases, which he very properly condemns in strong terms; and, in my opinion, the same prohibition ought to be extended to acetate of lead, the use of which should be restricted to active or inflammatory hemorrhage. Its tendency to paralyse the muscular fibres of the alimentary canal, and other parts supplied with nervous energy by the abdominal centres, is quite sufficient to deter us from its use in hemorrhage, proceeding from enervation, in any part of the vascular system. The same remedies, which I have just enumerated for the complication I have mentioned, will also be proper for the passive hemorrhage, arising from simple tubercular excavation. Hemorrhage frequently commences in children of delicate organization, with symptoms of pneumonia, before any indication of tuberculization manifests itself. Here the bleeding is in the active form, attended with quick, hard pulse, pain in the chest, hot skin, and white, furred tongue. In this case, bleeding from the arm must be had recourse to without delay, and a state of nausea excited by the potassio-tartrate of antimony, repeated at proper intervals, to support its effect. Should these measures fail, the acetate of lead and opium may afterwards be tried, with a prospect of benefitting the patient.

The treatment of pulmonary aploplexy must be active and decided. The patient must be bled as profusely as his state will permit, with the view of delaying the current and diminishing the force of the pulmonary circulation, and producing a temporary remora. The circulation must afterwards be placed under the control of digitalis, which must be given in the dose of one grain of the powder, or five or six minims of the tincture, once in eight hours. The effect this medicine produces, is to retard the action of the heart, and reduce the velocity of the current of the blood. The bowels must be freely purged with salts and senna, as a loaded and inactive state of the colon is commonly found connected with this disease. The patient must be kept quiet, and avoid a loaded stomach; and should a tickling cough be present, he should take, occasionally, from five to ten minims of compound tincture of

* "North of England Med. and Surg. Journal," No. 1, August, 1830.

camphor in a little cold water. Should the effusion of blood into the parenchyma not be very great, absorption will remove it, and the patient may recover.

PULMONARY APOPLEXY. (See "Hæmoptysis.")

HOOPING-COUGH, OR PERTUSSIS.

This is one of those diseases, which, on account of its frequent occurrence, is unfortunately too often left to the exclusive management of nurses. The consequence is, that many children annually perish from bronchial or pulmonary inflammation, excited by neglect or improper treatment, or remain sufferers through after-life from asthma, generated by dilatation of the bronchial ramifications, or by vesicular emphysema.

Most English physicians consider hooping-cough to be contagious as well as epidemical. French medical writers believe it to be epidemical. It rarely attacks young infants and old persons, although no age is exempt from it. One of my patients, who was only three months old when the disease began, died from convulsions, excited by the cough, within fourteen days. Pertussis attacks the individual only once in his life, commencing in the autumnal, winter, or vernal months, and usually subsiding during summer. It has two principal stages, the Catarrhal, and the Convulsive, or Spasmodic; and some writers add to these, the stage of Decline. The first stage commences in some patients as a common catarrh, with a frequent, tickling cough, and slight fever; in others, with acute laryngitis, or croup. This stage continues from a week to a fortnight, and is succeeded rather abruptly by the second, which is denoted by the characteristic cough, whence the disease takes its name. This peculiar cough consists of successive, involuntary, suffocating expulsions of air from the air passages, succeeded by a long and sonorous inspiration. These paroxysms of convulsive coughing are often so violent, as to occasion epilepsy, or effusion of blood beneath the conjunctival membrane of the eye, or from the nose or ears. The patient, under these circumstances, becomes almost black in the face, and feels a sense of approaching suffocation, until inspiration returns. In severe cases, several fits of convulsive coughing occur in succession, until the child is quite exhausted and almost senseless. In most cases, when the mucous membrane of the minute ramifications of the bronchi, or the pulmonary aircells are the seat of the specific inflammation, the stomach is acted upon mechanically by the convulsive contrac-

tion of the diaphragm and the abdominal muscles, which compel it involuntarily to discharge its contents, together with those of the bronchial passages. As a proof that this process takes place without previous sickness, or gastric derangement, the patient, immediately after the fit of coughing is over, feels hungry, and calls for food. In all cases, the approach of the paroxysm excites in the patient a marked apprehension of impending distress, and instinctively propels him to secure himself from falling by seizing hold of a table, or some other firm support, or by attaching himself to his nurse's dress. At first, little or no expectoration occurs, but as the second stage advances, either viscid mucus, or pus, is expelled, and terminates the paroxysm. The period at which the purulent secretion commences, is three weeks after the first appearance of the disease, at which time a quotidian, or regular evening paroxysm of fever, of the nature of evening hectic fever, symptomatic of the purulent secretion, is discovered. When the patient is carelessly exposed to a cold atmosphere, bronchitis, pneumonia, or pleuro-pneumonia, is superadded to the disease, and protracts its duration; and these complications are associated with cerebral convulsions in plethoric children, who have large heads. When inflammation attacks the bronchial ramifications, and much mucous secretion follows, they are liable to become dilated, and thus to increase the misery of the patient both during the disease and after its termination. During pneumonia, also, vesicular or interlobular emphysema may arise, and add to his distress; the former leaving permanent dyspnœa, and the latter endangering infiltration of air through the mediastinum into the cellular membrane of the face, neck, or chest. The violence of the cough may also produce rupture of the capillary vessels of the eyelids and upper lip, greatly disfiguring the patient. In the decline of hooping-cough, the latent disordered state of the alimentary canal discovers itself in the form of remittent fever in delicate infants, accompanied with emaciation, and sometimes with spasm of the glottis; and this secondary fever aggravates and prolongs the duration of the original disease. During the catarrhal period of hooping-cough in infants and young children, the mucous membrane of the bowels is almost always affected concurrently with slight dysentery, which in the former is erroneously attributed to dentition, and in the latter is overlooked, in consequence of the cough attracting predominant or exclusive attention. For a more full explanation of my views, respecting the nature and origin of remittent fever and spasm of the glottis, the reader is referred to the chapters on those diseases. It must, however, be observed, that when the latter disease is connected with epilepsy, there will

be reason to suspect the consecutive attack of some cerebral, or, more probably, cerebellous congestion, or inflammation. In scrophulous children, the second stage of hooping-cough is sometimes accompanied with an intense heat and dryness of the skin, alternating with chilliness, which ultimately terminates in hectic fever, and the development of tubercular disease in the lungs.

It is needless for me to enumerate all the various theories which have been invented, to explain the origin and nature of hooping-cough. It appears to me to be nothing more than a bronchial catarrh of a specific character, which is modified by the treatment and the constitution of the patient; and my observation of, and extensive experience in, the treatment of the disease, induce me to concur with Billard, and other French writers, in considering it to be an epidemic and not a contagious disease. As I before remarked, the hooping-cough begins in some children with inflammation of the larynx. This gradually descends the trachea, until it reaches the bronchi, at the bifurcation of which is seated the most sensitive part of the air passages. The same process takes place when the disease commences as common catarrh. As soon as the specific inflammation reaches this irritable part, the peculiar running, suffocating cough is observable, and every subsequent exposure to cold increases, extends, and prolongs the disease. It is the opinion of Dr. Copland, that hooping-cough, in the simple form, is altogether nervous, and that in uncomplicated cases the nervous affection never proceeds beyond irritation.* Dr. Webster also believes, that the symptoms depend upon inflammatory irritation in the brain or of its membranes;† and Leroy,‡ Boisseau, Otto,§ and Begin,‖ have also observed the frequent connection of cerebral disease with hooping-cough from the beginning of the attack, but they by no means admit that the latter is dependant on the cerebral affection. If the cough were only nervous, we should expect to see it terminate, as the hysterical and other nervous coughs, without expectoration, and without the peculiar, shrill inspiration. In hooping-cough, however simple, we invariably find the patient expectorate either viscid mucus or pus, and we know that in simple, chronic laryngeal inflammation, the cough is followed by the discharge of a starch-like inspissated mucus. The post-mortem appearances consist of increased vascu-

* "Dict. of Pract. Med.," Part v., p. 242.
† "Med. and Phys. Journ.," Dec. 1822.
‡ "Med. Maternelle," Paris, 1803.
§ "Nye Hygæa," Aug., 1824.
‖ "Traité de Therapeutique," &c., tom. ii., 1825.

larity, or actual inflammation of the mucous membrane of the air passages, extending even to the pulmonary aircells.

"On examination after death, the most usual morbid appearance, is inflammation of the mucous membrane. The lungs collapse imperfectly, and when cut into, an abundance of frothy and puriform mucus exudes from the bronchi and aircells. Increased solidity of the lung has often been found, and by some it is said to be constantly observable. When it does occur, it would appear that the inflammation had extended from the mucous membrane to the substance of the lung, or attacked both its textures."* These morbid appearances are accounted for by Dr. Copland in the following manner:—

"The impression made by the causes is followed by functional lesion of the respiratory nerves, particularly the nervus vagus; and, owing to this lesion, the mucous surfaces they supply frequently experience consecutive changes, as respects the state of circulation, exhalation, and secretion. Hence result vascular determination and augmented secretion, attended by irritation of the glottis, epiglottis, pharynx, and air tubes, inducing convulsive action, which supervenes the more readily, as the disease is not only essentially nervous in its nature, but often becoming consecutively irritative, or inflammatory; this last characteristic being only an occasional complication, occurring from predisposition, habit of body, epidemic influence, or fortuitous causes favourable to its development."†

In opposition to this theory it may be observed, first, that when the cough is slight as in most adults, no concomitant cerebral symptom is present; secondly, that after an attack of spasm of the glottis, which it is now acknowledged is produced by the excited action of the pneumogastric nerve, we can neither discover any expectoration during life, nor laryngeal, tracheal, nor bronchial inflammation after death; thirdly, that the disease always commences with inflammation in the bronchial or some other portion of the mucous membrane lining the air passages, as other epidemic catarrhs; and fourthly, that the symptoms of cerebral or cerebellous disease, never unfold themselves until the second stage, denoted by the spasmodic cough, has established itself. Hence it appears to me, that the brain and cerebellum are affected in a secondary manner by the temporary obstruction in the pulmonary circulation occurring during the paroxysms of convulsive cough, and the impediment to the return of the venous blood from the

* Dr. C. Johnson, "Cyclop. of Practical Med.," vol. ii., p. 430.
† Loco citato, p. 243.

brain and consequent cerebral congestion. Adopting this view of the pathology of hooping cough, it will be found that its treatment may be facilitated, its duration limited, and its severity and danger greatly diminished by the practice which I have long adopted, and am about to recommend.

Treatment.—As soon as the disease is discovered to be hooping cough, the patient must be confined day and night to a temperature of sixty-five degrees of Fahrenheit's thermometer. This degree of temperature may be artificially raised and maintained in most houses. The temperature must be the same in the bedroom as in the sitting room, and both rooms should, if possible, be on the same floor. The bedroom should be ventilated during the day, and the sitting room during the night; but the windows of the apartments must on no account be opened while the patient is in them. The bowels may be regulated by some gentle aperient, as salts and senna. No other medicine will be required during the first stage of the disease, except a mixture composed of citrate of potash and squill. When the second stage arrives, while proper attention is paid to temperature, the cough will be found much slighter, and the expectoration much less than if the child were permitted to be exposed to the external air; and at the end of six or eight weeks at the farthest, all symptoms of the disease will disappear. This regulated temperature may be commenced at any stage of the disease with advantage, while the cough is alarming, and the expectoration copious or purulent; and it will not interfere with any treatment which bronchial or pulmonary inflammation may specially demand. Should the disease have been neglected, and the patient be found suffering with purulent expectoration and hectic fever, before the regulation of temperature has been adopted, he may be speedily relieved by adhering to it, and by the exhibition of half a grain or a grain of sulphate of zinc, or a quarter or a half a grain of sulphate of copper, dissolved in an ounce of water, with half a grain of disulphate of quina, three times a day. These metallic sulphates have, with the assistance of an exalted temperature, the effect of reducing the mucous and purulent secretion in this disease on the same principle on which they succeed in the cure of chronic nasal catarrh, to which the reader is referred. The quina will assist the stomach in retaining the zinc or copper, and in removing the periodicity or quotidian access of the fever. Acute bronchial and pulmonary inflammation must be treated by suitable venesection and other means adapted to these diseases; but they will never be found to arise when the regulation of temperature is uninterruptedly employed from the commencement of the disease. I have before stated, that the mucous membrane of the bowels is frequently affected simultaneously with that of the

bronchi or larynx. Hence we must expect remittent fever to manifest itself towards the decline of the bronchial disease. The earliest symptoms of this consecutive fever will be moaning in the sleep, rapid emaciation, picking of the lips and fingers, and rubbing of the eyes, with which will be associated peevishness, perverseness, and disinclination for amusements. In this state, the least annoyance or opposition excites passion, which is immediately followed by a fit of coughing. The treatment of this modification as well as that of spasm of the glottis, when that is also complicated with hooping-cough, must be conducted in the same manner as I have directed, when speaking of these complaints. Patients who may have had their illness prolonged by either of these diseases should be removed to a healthy situation, where they may enjoy a pure, mild air, as soon as the disordered state of the bowels has been removed. Should any cough remain, which is sometimes kept up by habit and local association, the change of air and scene will at this period soon remove it. The most common convulsions excited by the violent paroxysm of hooping-cough are those which constitute epilepsy. As these almost invariably appear only in robust children, leeches must be applied to the temples, and the bowels freely opened; and if the epilepsy should still persist the warm bath may be prescribed. If the child is of sufficient age to admit of venesection, he may be bled at the arm; if not, and the case is urgent, the jugular vein should be opened, and three or four ounces of blood abstracted. These are the most dangerous and fatal convulsions, to which children are liable, and therefore relief must be promptly afforded. Hydrocephalus rarely succeeds an attack of hooping-cough. When it does occur, it must be treated by the usual remedies for that disease. In scrophulous children the bronchial inflammation sometimes terminates in the development of tubercles, which hurry the patient into pulmonary consumption. On this account the progress of hooping-cough should be carefully watched, in order that acute inflammation in the mucous membrane, and in the pulmonary parenchyma may be discovered and immediately relieved. Should latent phthysis be detected in the decline of the disease, the patient should be removed to a warm climate, which, in many cases, will have the effect of suspending or retarding the progress of pulmonary tuberculization.

PULMONARY CONSUMPTION.

This destructive disease in the lungs is found at all ages. It is more common in the male sex from infancy till the seventh year,

and from the seventh to the eleventh more frequent with females. In children it appears most commonly as a sequel to measles, pneumonia, or hooping-cough. It commences with hurried respiration, perceptible especially after exercise, and with chilliness and rapid pulse. In some cases, cough appears at the commencement; in others, it is not observable until the disease is far advanced. The rapidity of the respiration may be owing to various causes: as, the deposit of numerous pulmonary or bronchial tubercles, to the co-existence of peripneumony, acute inflammation of the bronchi or pleuræ, or pneumothorax. In acute pulmonary tuberculization, the respiration is constantly short and oppressive; the dyspnœa being aggravated by every accession of pain, fever, or mental excitement. Sometimes the patient appears to enjoy a momentary respite, when he takes at intervals a deeper inspiration; at other times, particularly when pneumonia is present, he makes a monotonous moaning noise, at every respiration. When the tubercular development is slow or partial, the breathing is but little accelerated at first, and the dyspnœa increases in a gradual manner; but when this morbid process is induced by inflammation in the lungs, the hurry in the respiration diminishes with the decline of the pneumony, and it afterwards increases in proportion with the advance of the tubercular disease. While tuberculization is proceeding, the respiration is never perfectly natural under any circumstances, and the child is constantly labouring under a distressing incapacity of enjoying any amusements requiring physical exertion.

Cough, except in some rare instances of which I have seen several, exists from the commencement of the tuberculization in the lungs, and it is so general a concomitant with tubercles in those organs, that whenever we observe its occurrence consecutively to indomitable, specific inflammation in the meninges of the brain, or in the peritoneum, we may safely conclude that the disease in these membranes is of a tubercular character. When the cough has once occurred it never leaves the patient. An attentive observer may derive some useful information from this symptom. For instance, when it is short, frequent, and dry, it indicates bronchial irritation without any increased secretion, and at the commencement of peripneumony and bronchitis, it is a symptom of the existence of tubercles. A cough with expectoration may lead us to suspect the existence of tubercles in a state of suppuration, or of tubercular cavities, or of an advanced peripneumony, or bronchitis. The paroxysms of cough in some cases in children, resemble those of hooping-cough, but may be distinguished by the absence of the shrill sound during respiration, and of the discoloration of the

face, peculiar to chinkcough. This croupy sound is produced by the imperfect development of the larynx, and is therefore confined to very young children. The fits of coughing, which proceed from an accumulation of bronchial secretion, generally occur just as the child awakes ; and as infants have no power of expectorating, we shall find them swallowing, or children, who are old enough, expectorating, after each paroxysm, the mucous or purulent secretions, which had obstructed the passage of the air into the pulmonary cells.

When fits of coughing supervene after consumption of the lungs has long existed, and when there are no tubercular cavities, and the crude tubercles have produced little or no bronchial secretion, we may expect that the paroxysms result from a tubercular condition of the bronchial glands, which is common in children. We can receive but little information from the appearance of the matter secreted, especially in children under seven or eight years of age, as they almost always, as I have just stated, evince an inability or disinclination to expectorate the secretions through the mouth. When we have an opportunity of examining the matter expectorated, we may often with safety decide, that viscid and tenacious mucus, resembling very stiff starch, is the product of the mucous membrane of the larynx, trachea, or bronchi, when other symptoms give rise to a suspicion of the existence of disease in either of those situations.

Hæmoptysis very rarely attacks children under seven years of age ; but pains in the chest are of frequent occurrence, arising either from pleuritic inflammation or from the progress of tuberculization. In the former case, the pain is acute and near the surface ; in the latter, it appears to be more central, less circumscribed, and less intense.

One of the characteristic signs of pulmonary phthysis in adults is generally wanting in children : I allude to the power of lying only on one side in bed. Children enjoy the faculty of lying on either side in a remarkable and inexplicable manner.

Of all the symptoms of this disease, there are none so constant and characteristic as hurried respiration, debility, emaciation, cough, expectoration, and hectic fever. As the disease proceeds a tubercular state of the mucous membrane of the bowels frequently succeeds, when purging comes on and rapidly exhausts the patient. This diarrhœa is also frequently produced by an aphthous inflammation, which affects the mouth and fauces, and the intestinal canal. The devouring progress of tuberculization and the formation of cavities in the lungs proceed, and the hectic fever returning every evening with rigors, followed by intense heat and profuse

nightly perspiration, exhaust the patient, who is usually unconscious of his approaching dissolution.

An experienced observer may discover in the physiognomy of the patient at an early period of the disease traces of an internal malady of a fatal character. The face is pale and shrunk, and at times presents a feverish blush on one or both cheeks, indicating internal decay. The muscles feel soft, and lose their usual bulk, the least exertion exhausts the animal strength, the food ceases to afford support to the wasting body, the nostrils pant, and the spine bends forward, unable to support the chest and superincumbent parts.

There are two varieties of children subject to pulmonary consumption:—those who have a dark complexion and black eyes, slow pulse, natural inactivity, and long eye lashes; and those who have a florid complexion with delicate skin, light hair, light blue eyes, and enlargements in the lymphatic glands.

There are three principal stages of pulmonary consumption distinguishable by physical signs: The *first stage* is denoted by comparative dulness on percussion, especially in the upper portion of the lungs on one side, just beneath the clavicle, and by a diminished softness and freedom in the respiratory murmur on the same side of the chest. When this inequality of sound, derived from percussion and auscultation, exists, there will be a presumption of the existence of disease, and an attentive observer will discover a disparity even in the movements of the two sides of the thorax, the morbid side being the least exercised. When these signs are associated with cough, disordered respiration, a rapid pulse, and a morbid aspect, we may safely pronounce the disease to be phthysis in its primary stage.

The *second stage* is marked by a decided alteration in the appearance and character of the matter expectorated. During the first the expectoration consists only of frothy mucus. It is now found to contain portions of opaque matter, suspended in the mucus, and occasionally mixed with streaks of blood. The hectic fever, which had in the first stage escaped common observation, begins now to attract the notice of the patient and his attendants. He has periodical evening chills, succeeded by heat and perspiration, which latter regularly return early every morning. The pulse is now even during the apyrexy never below 90, and the patient breathes in a hurried manner. Debility is now complained of by the patient as the principal symptom, unless he happens to feel pain in the side, which is one of the concomitants of a softened or suppurating state of the pulmonary tubercles, and generally supposed by the patient to be merely a stitch or inflammation in the

intercostal muscles. This pain is produced by the extension of the inflammation accompanying the process of tubercular suppuration to the pulmonary pleura, which consolidates itself with the adjoining costal pleura by means of an effusion of coagulable lymph, destined to become organised with a cellular structure, and often ultimately to participate in the extending tubercular deposit. The situation of these pleuritic pains and adhesions is peculiar, being almost always on the side of the chest, just below the mamma, and inclining more towards the front than the back. The softening of the tubercles in the upper portion of the lung affected is accompanied with an increasing expectoration of tubercular matter, of a yellowish colour, resembling pus, which, on being viewed through a compound reflecting microscope, is found to consist of regular globules. Cavities are now formed, from which hemorrhage, in the form of hæmoptysis, sometimes proceeds. Meantime the process of tuberculization, softening, and the formation of cavities proceeds downwards towards the bottom of the lung, and the hectic fever and expectoration increase. The upper portion of the chest now affords no sound on percussion, and the stethoscope conveys to the practised ear a crepitant and cavernous rhonchus, and in certain parts of the clavicular or scapular region pectoriloquy is discoverable. In some extraordinary cases the tubercular cavities have been known to cicatrize, and the patient to recover, without ever having any relapse.

In the *third stage* the hectic perspiration is excessive; diarrhœa, as I before mentioned, often takes place, the mouth and throat are covered with aphtha or muguet, and the lower extremities become œdematous. The destruction of the upper portion of the lungs, and the general emaciation and loss of animal power, now concur in producing a characteristic alteration in the external appearance of the thorax: the shoulders projecting forwards, the clavicles becoming prominent and having a remarkable hollow space beneath them, and the chest losing its natural rotundity. Another phenomenon also is present; the upper part of the chest, especially on one side, if that is affected much more than the other, remains almost immovable during inspiration, the air no longer being able to penetrate the morbid mass. At this period of the disease the mind, which will often continue remarkably clear and vigorous, participates in the general decay of the physical powers. The child, still more unconscious than ever of his near approach to the grave, occupies his thoughts on objects of dress, or future pleasure, or worldly enjoyment. It is now the obvious duty of the physician, if he has not before discharged that duty, to explain to anxious parents and friends the delusiveness of these false hopes

and expectations, and to afford the patient an opportunity of enjoying that real and substantial happiness which can alone be derived from the prospect of a future, spiritual existence. A false charity and fear of exciting alarm or giving offence sometimes unfortunately restrain the medical attendant from unfolding his real opinion. My own experience in such hopeless cases convinces me that all patients entertain a confidence in and respect for their professional attendant in proportion as he adheres to truth and honesty in his conversation; and I am equally satisfied that patients at all ages endure the trials of a painful and hopeless disease with fortitude and composure, in proportion as their confidence has been secured by truth, and their minds regulated by sober, religious exercise and spiritual exhortation.

The duration of pulmonary consumption in children varies; but it is generally more rapid with them than with adults, as in a large proportion of cases the tubercular disease commences in young subjects in the bronchial glands, and remains often a considerable time unnoticed, especially when unattended with cough; the length of time during which tuberculization may have been proceeding before it is discovered is generally very uncertain. The suppuration or softening of tubercles in the bronchial glands very rarely occurs without a corresponding disease afterwards appearing in some parts of the lungs, which affords all the characteristic symptoms of pulmonary phthysis. The disease has, however, proved fatal, having been accompanied with decided hectic fever, when the bronchial glands have alone been found to be the seat of the malady. In other cases, where neither percussion nor the stethoscope have discovered any pulmonary lesion, and tubercular matter has been copiously expectorated, and hectic fever has been present, it has been ascertained after death that the discharge from the specific suppuration in the bronchial glands had made its exit through an aperture into the bronchial passage, and been thence evacuated by the cough.

Every variety of tubercle is met with in these glands and the lungs, but the most common in the former is the tubercular infiltration; and the most rare, what the French call the *poussière tuberculeuse*, or minute particles of tubercular matter. The disease generally first invades the centre, and gradually extends to the surface. In some cases it appears in irregular patches. Grey granulations may also be seen in the central parts, while those at the circumference are found converted into tubercles. Sometimes only part of the bronchial glands are diseased, and at other times a great number are affected, and, approaching each other, acquire the size of a pullet's egg. These ganglions are covered by a cyst,

to which the tubercular matter is adherent, and which at first appears to consist of a single layer, on the internal surface of which minute vascular ramifications may be observed. As the diseased process advances, this cyst may often be found separable into two membranes. The tubercular matter undergoes softening as in other parts of the body, this process beginning either at the centre or circumference. The softened tubercular matter is usually discharged into some adjoining organ; but absorption sometimes occurs, which has the effect of diminishing the volume of the cyst and reducing or removing its contents, or of converting them into a calcareous mass by withdrawing the more fluid parts. The bronchial glands, when thus enlarged by tubercular disease, may be found compressing the nerves and neighbouring vessels or organs, as the trachea, the lungs, or the œsophagus; or communicating with the lungs or bronchi by the discharge of their morbid contents into those parts. This communication with the bronchial passage is the most common, and it is produced in the following manner:—The pressure of the bronchial glands and the process of tuberculization first occasion inflammation in the loose intervening cellular membrane, which gradually becomes more firm and vascular. At length, partly by absorption, and partly by the extension and suppuration of the tubercular deposits, a perforation is established through the bronchial membrane. Barthez and Rilliet have recorded two instances of this kind of perforation, in one of which two tubercles were discovered converted entirely into calcareous matter:—

"Chez un garçon de six ans nous trouvâmes un petit ganglion situé au-dessous du point où la bronche gauche se devise dans le poumon, et adhérent intimement à ce conduit. En incisant la bronche nous vîmes à sa face interne une tache jaune qui correspondait exactement à la petite masse tuberculeuse ganglionaire, qui ayant usé la bronche de dehors en dedans, n'etait plus separée de l'interieur du canal que par l'epaisseur de la membrane muqueuse.

"Dans un autre cas, la membrane muqueuse bronchique etait elle même perforée par un petit ganglion crétacé.

"Un ganglion situé immediatement derrière la bifurcation de la bronche droite a le volume d'un petit pois, et contient deux tubercules entièrement crétacés, gros comme deux grains de millet, à leur niveau le cartilage bronchique est erodé, et la muqueuse ulcérée dans une étendue beaucoup plus petite que le cartilage."*

The tubercular cyst is lined with a red, irregular, thick false

* "Traité de Maiad. des Enfans," tom. 3, p. 172.

membrane, whose junction with the bronchial, mucous membrane is not discoverable, although its appearance and colour by no means correspond; and in contact with this false membrane is found a layer of white, thick tissue of a tubercular character, which resembles another false membrane.

The bronchial tubercular cyst sometimes communicates with a pulmonary cavity by means of a cylindrical canal, lined with a membrane similar to that belonging to the glandular cavity.

In infants tubercular deposits evince a great tendency to seat themselves just beneath the adherent surface of the pulmonary pleura, assuming different forms, and acquiring various magnitude; some of which I have found in the adult unaltered even by fatal pneumonia, after the tubercular process had many years subsided. They commence with small flat deposits of tubercular matter, which increase by additional deposits of the same nature, to a certain extent, when their lateral growth terminates. Additional depositions afterwards accumulate at the inner surface of the tubercles, which they extend centrically, presenting a projection within the parenchyma, varying from a few lines to that of half an inch or more. While the sub-pleural tubercle is thus penetrating towards the central part of the lung, the glandular tubercle situated near the root of the lung, marching gradually in the same way, unites with it, and thus, after softening has taken place, establishes a communication between the lung and the bronchial gland. This communication may be extended through the pleura, and terminate in pneumothorax.*

The pressure exercised by the enlarged, bronchial glands on the venous trunks, is liable to produce *dropsy, dilatation of the veins*, and *hemorrhage*. The compression of the pulmonary veins may produce œdema of the lungs, and that of the superior vena cava infiltration of serum within the cellular membrane of the face. The swelling which results from the latter may affect only the eyelids, or extend to the whole face, producing a swelling resembling that which results from a granular degeneration of the kidneys. This effusion of serum is not altogether the effect of pressure; for it only occurs at an advanced period of the disease, when the blood has been deprived of a large portion of its fibrine, and is ready to deposit its serum in the cellular membrane, wherever the venous trunks are exposed to pressure. In these cases, as in the œdematous swellings which proceed from diseased heart, there is often observable much irregularity, both in

* See a Memoir on this subject by Barthez and Rilliet, in the "Archives de Médecine."

the seat and durations of the tumefactions, which appear and disappear sometimes in a remarkably sudden manner.

Among the phenomena occasioned by venous compression, may be mentioned a purple colour of the face, lips, and tongue, resembling that which arises from cardiac disease.

Hæmoptysis is a rare occurrence in children. It most frequently proceeds from the rupture or perforation of a pulmonary vessel; but when the return of the blood from the head is obstructed by a considerable enlargement of the bronchial glands, and innutrition and enervation have been rapidly advancing, a sudden impulse given to the circulation by passion or otherwise, may occasion a copious extravasation of blood from the venous capillaries in the pulmonary or bronchial mucous membrane, which may leave behind it no other lesion than an appearance of ecchymosis. An instance of sudden death occuring from hemorrhage, occasioned by congestion in the capillaries of the pulmonary mucous membrane, is related by Barthez and Rilliet.

"L'enfant mourut d'une hémoptysie foudroyante; nous ne trouvâmes aucune trace de perforation vasculaire, mais seulement quelques ecchymoses pulmonaires."*

In investigating tubercular diseases in the bronchial glands and the lungs in adults, we derive an assistance from auscultation and percussion, which in most cases may be relied upon as affording us more positive information on the actual state of the contents of the thorax, than we can obtain from any other source. The imperfect development of the chest of an infant or young child, the small space between the sternum and the spine, their imperfect ossification, and the state of the bronchial glands, render it difficult and almost impossible to obtain such clear evidence from the use of the stethoscope of the existence of internal disease, as in adults.

When the lower portion of the trachea is compressed by enlarged, bronchial glands, we perceive a great roaring rhonchus, marking the respiratory murmur, heard to a distance, remarkable for its continuance, and differing by its sound and intensity from the hissing and snoring rattle, the result of bronchitis, which disappears generally after a few days. When tubercles exist in a crude state at the summit of the lungs, accompanied with inflammation of the bronchi, the rattling, which in the healthy state is subcrepitant, presents to the ear a gurgling sound. A feeble respiratory sound may arise either from direct compression on the larger bronchial ramifications, or from the interruption to the entrance of air into the aircells occasioned by pulmonary œdema.

* Loco cit. tom. 3, p. 185.

When in bronchial phthysis there is no communication between the glands and the bronchi, we may perceive the same alterations of sound as we notice in pulmonary consumption. Thus after a prolonged expiration, we may observe a true, cavernous respiration in the back, in the sub-spinal fossa, and especially at the upper part of the interscapular space.

The different forms of tubercular matter commonly developed in the lungs of children, are the following:—Grey Granulations, Grey Infiltration, Minute Particles of Tubercular matter (Poussière Tuberculeuse), Yellow Granulations, Miliary Tubercles, Yellow Infiltration, Softened Tubercles and Tubercular Caverns.

Grey granulations.—These are round, and more or less permanent, and feel like small, hard, grains. A small, thin, soft, false membrane easily separable, is often found on the pleura, as far as these granulations extend. This false membrane appears to be secreted by the free surface of the pleura, in consequence of the inflammation produced by the irritation of the subjacent granulations. On dividing the granular portion of the lung, the adjoining aircells subside, and leave the granulations projecting from the adherent pulmonary structure. These granulations are met with often in tubercular lungs, being more frequent in children from one to two years and a half old, than from eleven to fifteen, and less common from the sixth to the tenth year.* They are developed as often in the right as the left lung, and sometimes in both, and more frequently in the upper than the lower portion. They usually appear in large quantities, especially in the superior lobe; but we rarely find one lung containing grey granulations, without some species of tubercle existing in the other. In 265 infants who died with pulmonary tubercles, Barthez and Rilliet met with 94, who had grey granulations.

Grey infiltration.—This gives to the lung a grey, violet tint, and renders it heavy, solid, and resisting to the touch. It is found in masses of irregular form and size, and sometimes disposed in bands or zones, but scarcely ever invades an entire lobe, unless it attacks the middle one. This infiltration is rather more common in the right than in the left lung, and we more frequently find it in the right than in both lungs. It is met with in proportion as the child is advanced in age, and very rarely without some other lesion in the lungs.

The "*Poussière tuberculeuse*," or *minute particles of tubercular matter*.—Lungs affected with peripneumony are the customary seat of this tubercular disease; but it is sometimes found in lungs

* "Barthez et Rilliet."

invaded by other tubercular masses. This disease appears most frequently from the age of eleven to fifteen years, and more commonly in the right than the left lung. It is also more frequently seen in the upper than the other lobes. Some diseased lungs contain no other tubercular matter. In 265 infants, who died with pulmonary disease, Barthez and Rilliet found this in 15. In examining the diseased lung, great care must be taken to prevent a certain condition of that organ being confounded with it. The small finely-injected and ramifying vessels, when the parts are divided, leave between them some greyish points of sound pulmonary tissue, resembling these minute particles of tubercular matter. On compressing the lung between the finger and thumb, it crepitates and exudes blood, when the appearance of the *tubercular poussière* vanishes. This variety of tuberculization may be of a yellow colour, or grey and semi-transparent.

Yellow granulations.—This presents an appearance similar to that of the grey granulation, excepting its colour; but it differs from the latter by its softness and want of elasticity, and by the facility with which it permits the knife to divide it. This form of granulation, rather more uncommon than the grey, is found in every fourth child, whose lungs are tubercular, and is more frequently met with from the third to the tenth year, than at any other age. It is more commonly found in the lower than the upper lobe.

Miliary tubercle.—This appears under the form of an irregular or crimpled state of the lung, which by running the finger over the surface is found to penetrate deeply into the organ. The lung feels round and hard, and the tubercles on examination are found to be of a grey or yellow colour. The projection of the crimpling depends on the state of the adjoining pulmonary tissue. These tubercles are either isolated and thickly scattered, or expanded in large masses on the surface of the lung. On being cut through, we find them to consist of groups of grey or yellow granulations, or miliary tubercles. The latter are generally divided, when we cut into the lung, and their yellow tissue appears more or less consistent, often soft, and sometimes penetrated by a bronchial tube, from which, as from its centre, a little mucus may be expressed. The miliary tubercles are seen more frequently in the right than the left lung, and in the upper than the lower lobe.

Yellow infiltration.—This appears externally under the form of a yellow patch, which seems to extend more in width than in depth. A perpendicular division of the lung represents this infiltration as prolonged into the parenchyma, and of various degrees of thickness. Its circumference is irregular, and often surrounded

with miliary tubercles, or yellow granulations, which have a tendency to coalesce with it. In some instances, the morbid lung is solid and plump, and a portion of one of its lobes is more or less increased in size, where its colour will be found the same as that of the yellow tubercle; that part of the lung presenting a hard, yellow surface, intersected with depressed, lozenge-shaped, or pentagonal lines. The tubercular matter may be said to have invaded the lobules, and to have avoided the cellular divisions which separate them. This yellow infiltration is not always superficial; as it often descends into the depth of the organ, or affects its entire structure. It is found in infants from one to two years and a half, much more frequently in the right than in the left lung; but at all other ages the disease is met with most in the left lung. It also is found to inhabit the upper in preference to the other lobes; and wherever it is discovered, it is found to exist in considerable quantity. It is seldom unaccompanied with other tubercles in the lungs, or with tubercular cavities.

Softened tubercles are discovered more frequently in the lungs than in any other organs; and when they are found in other parts of the body, they are also generally met with in the lungs. Their common seat is in the tubercular cavities, or in the midst of large masses of yellow infiltration, or miliary tubercles. Tubercles in a soft state are more common in children from eleven to fifteen years than at any other age, and less frequent from three to five years and a half; this transformation of pulmonary tubercles being more common even from one to two years and a half, than from three to five.* Softening takes place oftener in the right than the left lung, and in the superior than the other lobes.

Tubercular cavities.—When tubercles become softened in the lungs, caverns are formed tortuous and irregular, and full of pus and broken down tubercular masses. Their shape is various, and they sometimes occupy the whole lobe, and extend into the adjoining one. The cavities are often intersected with small bridles, consisting of vascular ramifications, or impervious vessels, or pulmonary tissue, thickened by inflammation and tuberculated. The walls of the caverns are seldom smooth, being generally furnished partially with a yellow, soft, rather thick, false membrane, which may be readily detached; and on the bottom is found a membrane of a more or less deep red colour, sometimes enchymosed, soft, with nipple-shaped projections of variable density, resembling a fungous membrane, adapted for the production of purulent matter. The parts external to the cavity are hepatized, or filled with a

* "Barthez et Rilleit."

grey infiltration, and seldom permeable by the air. In the interior, just as they enter it, the mucous membranes of the bronchi are sometimes cut off perpendicularly; but at other times it is impossible to distinguish these membranes from the red lining of the cavity. These bronchial tubes are usually destroyed throughout their calibre, in a line perpendicular to their axis, but they have been found opened at their side, in one part only of their diameter, as if by lateral ulceration, thus resembling the opening of the bronchi in the cavities of the bronchial glands.*

Tubercular cavities occur much more frequently in very young children than in adults, being found in the proportion of one in three. This comparative frequency of these cavities at a very early age, may be accounted for by the frequent occurrence of yellow infiltration at that period of life, and by the readiness with which these large tubercular masses are softened at their centre. In consequence of this abundance of yellow infiltration in young infants, the tubercular excavations are found to differ from those met with in children at a more advanced age; the whole of a lobe being often occupied with excavations, surrounded, almost on every side, by a thick bed of tubercular matter. These cayerns, too, which in the adult are most commonly found on the left side, are in very young children discovered chiefly on the right side, and in the latter frequently consist only of masses of softened infiltration.

In children of a more advanced age, we find the cavities much more frequently in the upper than the lower lobe. In very young children, on the contrary, particularly on the right side, we meet with these cavities much more commonly in the inferior lobe.

In some cases, in which the formation of tubercles proceeds only to a limited extent, and only a single cavern is formed, this may be cicatrized and cured, after the tubercular matter has been evacuated. This cicatrization of tubercular cavities is much more rare in infants than in adults, and in children at an advanced age. These cicatrices generally present themselves on the outer surface of the lung by a wrinkling or depression on the pleura, which has been correctly described by Laennec. These appearances in the pleura are not always a proof of the existence of an ancient cavity; except when we find a cavity penetrating the lung, commencing from this external depression of the pleura, and lined throughout by that kind of hard, new membrane, which is always found to constitute a cicatrix in other parts of the body. Adjoining their cicatrizations, or in their centres, we sometimes see a small calcareous or encysted tumour, containing a little ropy liquid, and lined with

* " Barthez and Rilliet, t. 3, p. 232.

a white fibrous, or semi-cartilaginous membrane, and occasionally communicating with a bronchial tube. When we meet with miliary tubercles and grey granulations, which are recent formations, as well as cicatrized caverns, we may conclude that the disposition to the process of tuberculization had not been cured.

The œdema of the lungs is generally found to be dependant on the pressure occasioned by the diseased bronchial glands. It is sometimes the consequence of the serous congestion accompanying the development of pulmonary tubercles.

PATHOLOGY OF PULMONARY PHTHYSIS.

The remote causes of this disease are various ; as sudden exposure to cold, want of proper clothing, a continued residence in a damp and crowded habitation, want of regular ventilation, and defective assimilation of the food. One of the effects of exposing scrophulous children to a sudden transition from a warm to a cold atmosphere is pulmonary inflammation, which, in such children, excites into action the tubercular predisposition. In children descended from sound parents, and not having manifested any scrophulous tendency, inflammation of the lungs will be found to terminate in recovery, or in some of the results described under the article, Pneumonia. In scrophulous children, on the contrary, the inflammatory action developes specific disease previously lurking in the system. By some pathologists, the tubercular matter, constituting this specific disease, is believed to exist in the blood, and to be separated from it and deposited in the inflamed part. In a young female, strongly predisposed to pulmonary phthysis, I found tubercular matter blended with the coagulum, and deposited after venesection. The blood is undergoing continual changes, and is constantly influenced by the vital and chemical forces to which it is exposed. Thus, when the vital principle is defective, the chemical affinities of the food obtain a comparative ascendancy, and the elements of the blood, and of nutrition and decomposition, are disturbed. For instance, during the existence of disease in the mucous membrane of the small intestines, which has the effect of impairing the function of the abdominal ganglionic system of nerves, and degrading the vital principle of that vast surface intended to supply the body with nutrition, the faculty of decomposing those substances containing silica is suspended, and we consequently find the blood deprived of its proper portion of that element; as may be observed by the absence of enamel in the primary teeth in a state of formation at the time. Hence, when the blood is found deficient in phos-

phate of lime and magnesia, the bones gradually lose their firmness, so as to admit of their being bent in any direction. Hence, also, when these phosphates are in excess in the blood, we find them deposited in various parts, as the muscles, tendons, capsules of the joints, or in the lungs. I once met with a large portion of bony structure deposited in the parenchyma of the lungs by inflammation, which had afterwards rendered it innocuous by entirely encasing it with a thick, false membrane. According to the experiments of Barruel, who exposed the blood of various individuals to the action of sulphuric acid, it appears that some peculiar elements are contained in the blood of certain persons, which differ from those found in the blood of others. For instance, he discovered a different smell in the blood of a man whose complexion was fair; and this may account for the opposite nature of the perspirable matter of various individuals.

Whatever may be the remote cause of tuberculization, it appears to me that, in every instance, inflammation is the exciting cause of the morbid process. This may be satisfactorily observed in the treatment of wounds and ulcers following accidents and surgical operations in scrophulous subjects. Whoever will take the trouble to notice the fact, will find that neither injuries, produced by accident or the knife, in such persons, will heal, as long as inflammation continues. On the contrary, he will discover, as long as the impediment is permitted, an increasing deposit of opaque scrophulous matter, which not only prevents the healing process, but produces a peculiar, everted, and indurated appearance in the edges of the wound, and an infiltration of a white opaque matter in the surrounding structure. A knowledge of this fact is of great importance to the operating surgeon, who may be puzzled to discover the cause of this peculiar appearance, and be led to apprehend the most unfortunate results. The immediate and rapid improvement in the appearance of the granulations, and in the healing process, from the disuse of stimulants, and from the simple application of cold water dressing, in such cases, is most extraordinary and convincing. The white opaque matter, interspersed with the granulations, the indurated and everted edges, and the hypertrophy of the surrounding parts disappear, and the ulcer, assuming a florid aspect, rapidly heals. This scrophulous, or tubercular predisposition, may be hereditary or acquired. In the former case, it manifests itself, often in early infancy, in the lymphatic system, but more particularly and primarily in the organs designed for the digestion and assimilation of the food. The predominance of lymph and deficiency of hæmatosine and fibrine, remarkable in the blood of scrophulous children, are probably the

result of interrupted assimilation, and determine the vicious character of the secretions. Hence the globules of chyle, imperfectly converted into blood during their transit through the lungs, in consequence of this disturbance of their original elements and their defective animalization, appear to be ready to be deposited in the crude state in which we find what is called tubercular matter. As one of the results of pulmonary inflammation in healthy children, we find nodules, consisting of blood, extravasated in the lungs, and gradually converted into pus. In scrophulous patients, on the contrary, when inflammation attacks the cellular structure of the lungs, we find tubercular nodules, the effect of inflammation, which, by interrupting the circulation in the capillary arteries, determines an effusion of the morbid globules to a greater or less extent, according to the degree of vascular obstruction. The imperfect vitality of the minute branches of the aortal system, which prevails in scrophula, more readily admits of this extravasation in the pulmonary structure, as well as in other organs, than in children possessing a sound and vigorous constitution. When the free surfaces of mucous membranes are the seat of tubercular or scrophulous inflammation, we find what Dr. Carswell denominates tubercular accretions, which correspond to the muguet observable on the mucous surfaces of healthy persons. These tubercular deposits are not exfoliated as in healthy subjects, but are succeeded by specific ulceration of a destructive character, in consequence of the decay or want of vitality in the nutrient vessels of the membrane, and the malignant property of the accretion; and wherever inflammation exists, the process of tuberculization extends itself. There is a manifest difference between healthy lymph, effused by the granular extremities of the capillary arteries engaged in the restorative process of cicatrizing an ulcer, and the corroding, tubercular matter having some resemblance to it, separated from the blood of a scrophulous patient and deposited on an ulcerated surface. The former is nearly transparent, and is chiefly found in the centre of the surface, while the edges of the ulcer become flat, and are daily more and more approximated by means of a thin pellicle, or new membrane, proceeding from every part of its circumference. The tubercular deposit, on the contrary, covers the whole surface, and, penetrating beneath its circumference, renders the integument at that part hollow and everted, as if it were corroded. The constant exposure of the mucous membrane lining the larynx, trachea, bronchi, and pulmonary cells, to the vicissitudes of the atmosphere, explains the reason why inflammation, and the consequent deposit of tubercular matter, should occur more frequently in the respiratory than in any other organs; and the comparative prevalence of

pulmonary phthysis, in mountainous situations, admits of explanation from the same cause.

The tubercular diathesis may be acquired by continued exposure to a damp and crowded atmosphere, as I have before stated. This fact is familiar to those who are in the habit of observing the mortality incident to the children of the poor, who are accumulated in subterraneous residences in large towns; and the same fact has been noticed in horses and other animals, which have been confined to damp and unhealthy localities. I have also observed pulmonary consumption to prevail in all ages among those who inhabit the damp, unventilated dwellings in the new sand-stone rocks. In all these cases the digestion and assimilation of the food are diminished, and the product of chylification impaired by the imperfect decarbonization of the blood during its passage through the pulmonary circulation. The same deterioration in the vitality of the blood occurs to those, whose occupations expose them to the inhalation of particles of glass, iron, and coal, which mechanically obstruct the combination of the oxygen of the air with the superfluous carbon of the blood. To these may be added the insalubrious effects produced by the inhalation of lactate and phosphate of ammonia, generated by the decomposition of animal matter in the lungs in the last stage of consumption, which has been supposed by the vulgar to be the medium by which pulmonary phthysis is sometimes communicated. Sir James Clarke* is of opinion that the disease is never conveyed in this manner, and certainly its origin from such a source is not reconcileable to any rational pathology. At the same time I must admit that many instances have occurred, under my own observation, of persons previously healthy having fallen a prey to pulmonary consumption, after having been in close and constant confinement with those who have died from the disease. This may be accounted for by the loss of rest, the confinement to a heated and unwholesome atmosphere, and the offensive and deleterious effects of the animal effluvia before alluded to, occasioning, as they almost always do, nausea, loss of appetite, and feeble digestive powers. To the morbid condition of the blood resulting from this unnatural mode of existence, and the consequent vicious assimilation of the food, may be added exposure to the sudden changes of temperature required by the patient, to which his attendants are obliged to submit. A catarrh produced under these circumstances frequently terminates in phthysis; so also, when the mucous membrane of

* "Cyclop. of Prac. Med.," article "Pulmonary Consumption."

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when accompanied, as it frequently is, with chronic, bronchial catarrh. This may be distinguished from the hectic of phthysis by thoracic percussion, by the stethoscope, by the diseased state of the alvine discharges, by the absence of disordered respiration during the apyrexy, and by the characteristic irritation in the intestinal mucous membrane, indicated by itching in the nose, lips, and eyelids. It must not be forgotten, however, that simple catarrhal inflammation in the bronchial mucous membrane, accompanying a corresponding disease in the mucous membrane of the intestines, may degenerate into phthysis in a scrophulous child by the effusion of tubercular depositions on the mucous surfaces.

Treatment.—The only period during which medical treatment is of any avail, is that which precedes the establishment of hectic fever. When pneumonia or pleuro-pneumonia occurs in a scrophulous patient, a small bleeding should be had recourse to, and repeated once or twice; and a grain of chloride of mercury, with the fourth or sixth of a grain of potassio-tartrate of antimony, should be given once in four hours. This treatment must be active, and divided and adopted at the very commencement of the disease, otherwise it will be useless or injurious. The power which mercury possesses, by its action on the minute vessels, in arresting inflammation, both in the parenchymatous and serous structures, is manifested in this as well as in simple inflammation in these parts. The modus operandi of mercury, is that of forcing or diffusing the circulation generally, and removing partial remora, whereby the small pulmonary or pleural arteries are relieved from the congestion and retardation in their current, which are the precursors of specific, as well as simple, inflammation. We thus produce an artificial excitement, which supersedes the morbid action, and prevents the deposit of tubercular globules, with which the inflamed blood is pregnant. Antimony assists this process by irritating the mucous membrane of the stomach, exciting nausea, and thus diverting the circulation from the pulmonary to the gastric tissue. This practice is more necessary to the safety of delicate than robust children, because congestion and specific inflammation are more liable to occur in such patients. As soon as the local inflammation has been superseded by this treatment, it should be discontinued, and followed by the exhibition of citrate or iodide of potash, and squill, to which, if cough should remain, from five to ten minims of compound tincture of camphor may be added. This composition may be repeated three or four times a day, until the mercurial fever has subsided. It is only in this incipient stage of tuberculization that iodine is admissible or of any avail; for when exhibited after hectic fever has begun, like mer-

cury, it has the effect of hastening the process of destruction. After all inflammatory symptoms have disappeared, from six to ten grains of pil. ferri comp., or from half an ounce to an ounce of mistura ferri comp. may be prescribed twice a-day. Either of these chalybeate preparations will rapidly restore the patient after all febrile action has been subdued. When softening or suppuration of the tubercles, and hectic fever have commenced, before the medical practitioner is called in, neither bleeding, mercury, nor antimony, should be recommended. The time and opportunity of effecting a cure will have passed by, and we must be satisfied then with alleviating the symptoms of a disease which defies all the present resources of our art. It will, therefore, be useless for me to enumerate the various medicines which have been successively extolled for the cure of this disease. I may, however, remark, that the profession are perfectly satisfied of the inutility of digitalis, which I am convinced has formerly, from its indiscriminate employment, done much mischief. It is a powerful medicine, and liable to accumulate and produce poisonous effects, and it is inadmissible in all pulmonary diseases, accompanied with inflammation, simple or specific.

Although we cannot cure confirmed consumption, we may alleviate many of its urgent symptoms, a duty which the physician is called upon to discharge in all chronic and incurable diseases. The only medicine on which we can depend for temporary relief to the cough, is opium in some form, a linctus, or mixture, which must be given in small doses, occasionally repeated. When this symptom is most troublesome during the night, a drachm or two of compound tincture of camphor may be given at bedtime, in a little water. The patient should not be mortified by abstinence from any article of food for which he may have an appetite. The best remedy for profuse hectic perspiration is a hair-mattress, which should, if possible, be provided. To assist this, compound infusion of roses, combined with a small quantity of tincture of opium, when the bowels are relaxed by the sulphuric acid, may be given the patient three or four times a-day. In this state, the mistura ferri comp. has sometimes been found useful; but, when it has the effect of increasing the dyspnœa and the cough, it must be omitted. In the last stage of phthysis, diarrhœa is apt to occur. This may be relieved by chalk-mixture and opium. The best local remedy for inflammation in the pleura, denoted by sharp pain in the side of the chest, just below the mamma, is a small blister, or, if the state of the patient will permit, a few leeches, care being taken afterwards to apply warm, dry flannel, instead of water. The aphthous eruptions, which affect the mouth towards the end of the

disease, may be relieved, from time to time, by a lotion consisting of a grain of bichloride of mercury, and an ounce of distilled water. Excoriations and ulcers on the back and hips, may be prevented by the water-bed, or by the timely application of undiluted liquor plumbi diacetatis.

With respect to prophylactic measures, one of the most efficient is regulated temperature, which is best obtained by a change of residence from a cold to a warm climate. On this subject, Sir James Clarke's "Essay on Pulmonary Consumption" may be consulted with advantage. Many children predisposed to consumption, and particularly those who are desceded from phthysical parents, may, by an early removal to, and continued residence in, a warm climate, be secured from the invasion of the disease, and enabled to attain maturity and advanced age. Where the consumptive tendency is remarkably evident, this confinement to a warm atmosphere should be prolonged until the usual age at which the disease commences has passed, or such improvement in the general health has taken place as may afford a fair presumption that the patient may be able to bear the vicissitudes of the English climate.

The vulgar belief that children of delicate stamina may be rendered robust by exposure to cold, is now in a great measure exploded. Such children, when unable to enjoy a change of climate, should be well clothed, particularly about the feet and chest, and should receive medical attention as soon as any febrile action is excited by cold. The most common form of remittent fever, consisting of alternate chills and heats, should be removed by citrate of potash, or from five to ten grains of compound powder of contrajerva, with two drachms of liquor ammoniæ acetatis, and a little sugar, diluted with peppermint water, given once in four hours, until a gentle perspiration is induced.

To prevent the excitement of pulmonary disease by the inhalation of metallic or gritty particles, an ingenious and successful apparatus may be seen in use at Messrs. Yeomans and Shaw's spindle manufactory at Sheffield, and found described in the "Lond. and Edinb. Monthly Journal of Med. Science," October, 1843, page 886.

PLEURALGIA, OR STITCH.

Children are subject to an acute pain in the side of the chest, from running, which is commonly called a stitch. This is produced by an over-exertion of a portion of the intercostal muscles, and not by a distention of the vessels of the pleura, as is supposed

by some writers.* It is unaccompanied with fever, and generally subsides after a short interval of rest, or from the support of a handkerchief tied round the thorax.

There is a chronic form of the disease, attended with soreness from external pressure, and sometimes with swelling under the integuments. This is of a rheumatic character, and often migrates from the intercostal to other muscles. This species is also unaccompanied with fever, but the urine will frequently be found to deposit an amorphous sediment. The cause of this disease is exposure to cold winds, when the chest is imperfectly clothed. Hence, it is mostly confined to boys, in consequence of the manner in which their dresses are sometimes made, especially their waistcoats, which leave the front of the chest almost entirely exposed.

Treatment.—The acute form, which consists only in overexertion of the muscles, subsides spontaneously after short rest or pressure, which enables the child to afford temporary quiescence to the affected muscle. The rheumatic or chronic form of the disease should be treated by a few leeches, and by five grains of compound powder of contrajerva, with two drachms of solution of acetate of ammonia, with a little syrup and peppermint water, once in four hours. Should the pain resist these means, a small blister should be applied, and five grains of carbonate, and half-a-drachm of sulphate, of magnesia be given three times a-day. The latter medicines should be continued until the pain has subsided, and the urine has ceased to deposit pink-coloured or lateritious sediment. Should the pain resist these means, the ointment of potassio-tartrate of antimony may be rubbed over the affected part every night, until pustules appear, which will not fail to eradicate the local disease.

DISEASES OF THE HEART.

These diseases are not so various in children as in adults. The most frequent affection of the heart in children is dilatation, which is the general termination of hypertrophy, and is probably owing to the weakness and atrophy so often existing during childhood from defective assimilation. This may exist with or without hypertrophy, and may be owing to congenital defect. When dilatation occurs in both ventricles, the least excitement from passion, or any other cause, arrests the return of blood from the lungs, and is liable to produce pulmonary apoplexy or hemorrhage. The cause of this dilatation of the ventricles is some contraction in the auri-

* Van Sweiten, Sauvages, Macbride, and Good.

culo-ventricular opening, which, impeding the current of the blood through the heart, occasions a retrograde action, extending from the aortal to the pulmonary heart, and dilating the ventricle of each. Hypertrophy of the right ventricle without dilatation, by propelling the blood with undue force into the lungs, may occasion the same hemorrhagic results. This obstruction in the first instance increases the muscular power of the ventricles, but after it has continued some time the distending force of the blood by degrees overcomes the resistance, and dilatation is the consequence. In this case we may meet with hypertrophy and dilatation conjoined; the ventricles being stretched or preternaturally dilated, the walls of the ventricles retaining their original thickness. In children rendered feeble by typhus, or by long-continued defective assimilation of the food, the muscular structure of the heart loses its faculty of resisting the impetus of the blood, and ventricular dilatation is the result. In this case the walls of the ventricles become feeble and greatly reduced in substance. Hypertrophy of the left ventricle, with or without dilatation, is mostly found in children of robust constitution, with large heads and expanded chests. When this exists, and the current of blood is accelerated by passion or disease, pulmonary hemorrhage, epistaxis, epilepsy, or cerebral apoplexy is generally the result. This may be observed in such children even during infancy, from the comparative enlargement and increase of muscular power of the left ventricle, especially at the commencement of eruptive fevers or of bronchial or pulmonary inflammation.

As hypertrophy of the ventricles, especially the left, is generally the result of subacute or rheumatic inflammation of the heart, I shall proceed to describe that disease and its consequence. It proceeds usually from rheumatism translated from the joints, or from hooping-cough, measles, or small-pox, or in conjunction with pneumonia from cold.

SUBACUTE CARDITIS, OR CHRONIC INFLAMMATION OF THE MUSCULAR STRUCTURE OF THE HEART.

The first symptoms of this disease are a constant palpitation of the heart, felt externally over a small surface, and increased by the least exertion or mental emotion. This violent action of the heart is accompanied by hurried respiration, great rapidity of the pulse, and a disinclination to lie on the left side. The pulse is at first strong and bounding, but, as the disease proceeds and the walls of the ventricles grow thin, it becomes small and even soft, and sometimes lost, while the heart appears as it were to be resting for a

time from its incessant labour. During these intervals of inaction, the patient is alarmed with an apprehension of impending and certain death. When the hand is placed over the cardiac region after dilatation has taken place, the heart is found to beat less forcibly and over a much larger surface, and a slight undulating pulsation or tremor is perceptible; and the artery at the wrist, although not rendering any actual impulse, may be perceived to undulate and preserve its cord-like feel. This state, which may continue half an hour, or an hour, or more, will be found to differ from the collapse of death by the heat of the surface remaining unabated even in the extremities. After this paroxysm has subsided, a free and general perspiration follows. This alarming state is in some cases induced by the attempt to assume the sitting posture, or even to turn in bed. The urine is deficient in quantity, and deposits an amorphous sediment; and while the central organ of the circulation remains the seat of this formidable disease, debility and emaciation rapidly advance. After the cardiac disease has made still further progress, serous infiltrations, varying their locality and extent, appear in the extremities, and sometimes effusion into the abdominal cavity takes place. Ascites, under these circumstances, results from the congested state of the liver, and the compression occasioned by the vast enlargement of the heart. This engorgement of the liver, as a consequence of the pressure of the dilated and displaced heart, is frequently overlooked. Sometimes the œdematous swellings will seat themselves on the fore-arms or on the sides of the abdomen with astonishing rapidity, and sometimes the cellular membrane will be more distended above and sometimes below the knees. When the disease is connected with inflammation in the pericardium, the pulse is found to intermit, and the patient is exposed to almost constant paroxysms of suspended action of the heart, during which the sensations of fainting and dying are so alarming that the patient is induced to support himself by resting his elbows on his knees to relieve his oppressed respiration. During these attacks a distressing internal heat as well as a sense of suffocation are experienced. These arise from the imperfect decarbonization of the blood in the lungs during the temporary inaction of the heart, and the loaded and oppressed condition of its right cavities. On examining the body of one patient who died in a paroxysm of the kind I have just described, and who had repeatedly experienced an apparent cessation of the heart's action during half an hour at a time, I found several ounces of straw-coloured serum effused within the pericardium, and two pints of bloody serum within the cavity of the chest. The parieties of the left ventricle were exceedingly thin and flaccid. When pneumonia or bronchial inflam-

mation is complicated with the cardiac disease, cough is present. In the last stage of the disease, in addition to the dropsical effusions above mentioned, sloughing of the integuments over the tibia occurs a short time before death. These commence with great pain, similar to that which accompanies ulceration in the extremities from valvular disease in adults. Vesications first appear, and these are followed by black sloughs, which slowly separate with pain and misery. In some cases very small circular ulcers, exceedingly painful, resembling those which arise in the toes of old persons from ossification in the nutrient vessels, suddenly present themselves on the legs, and even the arms. These patches of mortification begin with black circular spots, in the same manner as the mortification of the toes to which I have alluded; and their cause is analogous, namely, cessation of the circulation in the cutaneous capillaries. This loss of vitality in the cutaneous vessels in the extremities of children labouring under this disease is occasioned by the feeble, obstructed, and inefficient action of the heart, whose muscularity in the last stage is almost destroyed by the attenuated state of the dilated, aortal ventricle. I am inclined to attribute the painful and often fatal ulcerations in the extremities of old people to that natural attenuation of the muscular structure of the heart which is generally found to be progressive in advanced age in those whose constitution is naturally feeble and free from gout and rheumatism. I had a patient of this description, an exceedingly healthy and temperate lady, who at the advanced age of 92 years recovered from mortification of the toe, in whom no ossification of the arteries could be discovered. On the contrary, I had an old gouty subject, who died from cancer in the pylorus, who never had any symptom of defective circulation in the extremities, although all the arterial branches which could be felt externally on the upper as well as the lower extremities were rendered as hard and inelastic as bone by the deposit of phosphate of lime in their tunics. In the advanced stage of hypertrophy with dilatation of the heart, the left side of the chest is expanded and enlarged, and the cartilages of the ribs on that side everted, and children as well as adults generally die suddenly.

The following instructive case may be read with advantage, as it will convey more particular information than can be communicated by any general description of the disease:—

Case.—1840, Sept. 11. Miss M——, aged ten years, of fair complexion, blue eyes, and light hair, has had dyspnœa with strong palpitation of the heart during fourteen days. Cannot lie down. Has constant sense of suffocation and distressing sensation of heat. The skin is hot and dry, and the tongue clean and of a dark red

colour.* The action of the heart against the ribs is violent and jerking. This diseased state of the heart had been preceded by rheumatic inflammation in the knees, which had suddenly receded.

22nd.—Pain and soreness in the region of the heart, extending to the shoulder. Extreme irritability. Cannot bear the least motion. The heart now beats over a large surface, dilatation having commenced. The pulsation of the heart visible through the bedclothes. Frequent fear of dying from suffocation.

Oct. 8th.—A swelling on the left side of the chest, occasioned by the enlarged and dilated heart. The cartilages of the left ribs everted.

Nov. 22nd.—The dilatation of the heart having greatly increased, bleeding at the nose occurred, from obstruction in the venous trunks returning the blood from the brain.

Dec. 26th.—The heart beats over a much larger surface than ever, but now the pulse has become *soft, and has lost its throbbing and violent action.* The least motion or mental excitement induces dyspnœa. Extreme emaciation.

1841, April 5th.—*Anasarca and ascites. Bronchial rattling and flushed face* from increased venous obstruction. The heart felt over a still wider space, but its pulsations, and those at the wrist, much more feeble.

9th.—Cough. Anasarca increased. Vesications on the legs in the integuments over the tibia.

20th.—The vesications have burst, and discharge much serum. The ascites vastly increased.

May 3d.—The abdomen exceedingly distended with the dropsy. Œdema relieved by the discharge from the legs.

14th.—Sloughing of the integuments on the legs at the blistered parts.

June 11th.—The integuments on the legs assume a black colour in some parts, and are mottled in others up to the knees. Countenance cadaverous. Died suddenly.

Treatment.—As soon as the symptoms of hypertrophy manifest themselves, a few leeches should be applied over the region of the heart, and a grain or two of chloride of mercury should be given once in four hours. When the gums become tender, the mercury must be given at longer intervals, and a grain of digitalis should be administered twice a-day, or once in eight hours, to reduce the inordinate action of the heart, and remove the venous obstruction. General bleeding can seldom be prescribed with safety, and the digitalis, which acts more beneficially in powder

* This dark colour of the tongue is occasioned by obstructed pulmonary circulation.

than in tincture or infusion in these cases, should be given at long intervals. The chloride of mercury and digitalis must be steadily and cautiously continued, and, when dilatation of the ventricles has taken place, and the action of the heart is suspended, and alarming collapse occurs, three or four grains of sesquicarbonate of ammonia must be given, and repeated frequently, until the heart resumes its pulsation. Under the best medical treatment, dilatation of the heart is a most dangerous and generally fatal disease, particularly when it is the result of rheumatic metastasis. As it is generally preceded by hypertrophy, which is a comparatively safe and curable disease, no time should be lost in attacking the primary disease by leeches and calomel, with which we shall in most cases succeed. It must, however, be observed, that the most fortunate attack of cardiac inflammation leaves the heart prone to subsequent disease from slight causes. When dilatation is established, the preparations of mercury must be discontinued; our principal reliance for relief must rest with a cautious and continued use of digitalis, which, by delaying the action of the ventricles, increases their force, by allowing the muscular energy of the heart a degree of repose between its successive movements, approaching to that observable in health. The advantages of this muscular repose of the heart, are these:— The ventricles acting with renovated and accumulated force, are thus enabled more perfectly to discharge their contents, and the venous capillaries are relieved from the pressure occasioned by the obstruction in the vena portarum and the venæ cavæ. In cases of dilatation of the ventricles of the heart, followed by ascites, hydrothorax, or passive hemorrhage, I do not consider that digitalis acts specifically as a diuretic, but, by retarding and invigorating the action of the feeble and dilated ventricles, it affords the absorbents an opportunity of removing the serum, which had been deposited in the cellular membrane, or the serous cavities. Whoever will take the trouble to observe the fact, must be convinced that this medicine not only retards, but strengthens the action of the heart, as may be readily discovered by the renovated impulse and volume perceptible in all the arterial ramifications. When relief to the dropsical effusions is not afforded by the sole influence of digitalis, its operation may be assisted by the action of drastic purgatives on the congested mucous membrane of the intestines. One of the best medicines for this purpose is elaterium, which may be given once in two or three days, either in a full dose, from a quarter to half a grain, or in smaller doses, repeated every three or four hours.

When speaking of rheumatism, I shall have occasion to caution the practitioner with respect to sanguineous depletion, and the

necessity of treating inflammation in the fibrous structures with attention and on safe and scientific principles, with the view of obviating its transition to the vital organs.

FUNCTIONAL DISEASES OF THE HEART.

These are not so various in their character in children as in the adult, on account of the comparative immunity of the former from mental depression and dyspepsy. The only two which I need notice as affecting children, are, that which accompanies anæmia, from defective assimilation, or from rapid growth, accompanied with fatiguing occupations; and that which arises from violent exercise.

The principal symptom of functional disease of the heart, is palpitation, which, in that species arising from either of the two former causes, is peculiar. This palpitation is found, on placing one hand over the region of the heart and the other on the wrist, to be twice as frequent in the former as in the latter situation. This is owing to the diastolic action of the left ventricle being felt, as well as its systolic impulse, or the proper pulse. The causes of this double pulsation, perceived in the cardiac region and not in the pulse, is a weak or irritable state of the muscular fibres of the heart, produced by an excess of serum and deficiency of fibrine in the blood. It is generally excited by exercise, and distinguishable from organic disease in the heart by its intermiscence, and by the small space which the pulsations occupy in the thorax. There is also a peculiar jerking in the pulse, somewhat resembling that which proceeds from adhesion of the pericardium to the heart. The impulse is sharp and sudden, and the artery at the wrist feels thin under the finger. In hypertrophy of the heart, the violent pulsation against the ribs is incessant; each stroke of the heart is continued with preternatural force and impetuosity, which raises the bedclothes, and extends above the situation of its apex, and by a forcible elevation but not a jerking of the pulse at the wrist. Dilatation, with hypertrophy, may be readily distinguished by the extensive, struggling motion of the heart occupying an immense space, and by the other concomitant symptoms of organic disease in the heart.

The other species of palpitation is a more serious disease. It is most frequently met with in boys at school, who, running with each other, or against time, accelerate the circulation to such a degree that the heart is exhausted, and the patient suddenly falls into a state of syncope. As soon as the heart has recovered its action, a violent palpitation succeeds, which is renewable from

slight bodily exertion, and sometimes continues at intervals to annoy the patient during several months or years. This disease may, by neglect or improper treatment, terminate in permanent dilatation of the cavities of the heart, if the constitution of the boy is infirm, or he may happen at the time to labour under anæmia.

Treatment.—The proper remedy for the first species of palpitation is some preparation of iron. The oxyde may be given in a dose from five to ten grains, three times a-day, or one grain of the sulphate twice a-day, in the form of pills, combined with extract of gentian. As the nature of this disease is often misunderstood, even by medical practitioners, I will adduce a case in illustration of my remarks:—

Case.—1845, Oct. 18th.—Richard B , a boy fourteen years of age, requested my advice respecting a disease in the heart, which his medical attendant had considered, after a long attendance, perfectly hopeless. The symptoms which attracted primary attention, and had alarmed the patient and his medical adviser, was the constant recurrence of a pulsation of the heart which was exactly twice as rapid as that of the pulse, whenever he took the least exercise. The boy was delicate, feeble, and emaciated, and had been required to pursue an occupation too laborious for his strength, while his rapid growth was proceeding. The double pulsation of the heart, and the impulse of the radial artery, were short and jerking, and the vessel at the wrist felt remarkably thin. Between the systolic action of the heart, and its corresponding pulsation at the wrist, an intervening pulsatory motion was distinctly felt in the cardiac region, produced by the contraction of the left auricle, and the concurrent diastole of the left ventricle. I prescribed two grains of sulphate of iron, one of aloë, and four of extract of gentian, to be taken twice a-day. I also prescribed nourishing diet, and temporary abstinence from all bodily exercise, except a short walk daily in the open air. By pursuing this treatment during three weeks, the double palpitation of the heart, the hurried respiration from exercise, and all other symptoms of anæmia, entirely and permanently disappeared.

The treatment best adapted for the palpitation of the heart arising from over-exertion in running, is the application of leeches over the region of the heart, the exhibition of chloride of mercury and digitalis, absolute rest, and an unstimulating diet. The results to be expected, if the disease is not soon subdued, will be hypertrophy, with or without dilatation. The advantages to be derived from the assistance of digitalis in the commencement of this disease, are, the repose which it will afford to the turbulent action

of the heart, and the consequent increase of contraction in the ventricles, which will result from its use, and which will greatly protect the cardiac walls from the dilatation consequent on the exhausted state of their muscular fibres. During a long time after the healthy function of the heart has been restored, the patient must be confined to moderate diet and exercise.

PERICARDITIS, OR ACUTE INFLAMMATION OF THE PERICARDIUM.

This is very rarely a primary disease in children. It is mostly found to arise from metastasis of rheumatic inflammation. The symptoms are, pain in the left side of the thorax in the region of the heart, extending to the scapula, and to the upper portion of the arm; palpitation of the heart; hurried respiration; short, dry, cough; intense febrile heat, accompanied with a suffocating and fainting sensation; restlessness; rapid, jerking pulse at the wrist; high coloured urine; and inability to lie on the left side. At the end of the third day, and sometimes sooner, when adhesion of the pericardium to the heart takes place, in consequence of the rapid effusion of lymph, muttering delirium sometimes comes on, the surface of the body is intensely hot, and covered with copious hot perspiration, the pulse, which retains its peculiar jerking, becomes too rapid to be counted, and death speedily supervenes. In slighter cases of acute inflammation of the investing membrane of the heart, or in those in which treatment is successful in obviating death in the first instance, the patient continues many weeks labouring under the effects of the inflammation in a more chronic form, or is destined to be exposed to certain death, by the constant distress and trouble to which the heart is exposed in carrying on the circulation while restrained and hampered by the adherent pericardium. When the membrane lining the cavities of the heart is the seat of acute inflammation, arteritis occasionally supervenes, and complicates the case by prolonging the jerking and rapid pulsation in all the principal arterial branches, during six or eight months after the urgent symptoms of pericardiac inflammation have subsided. These complicated cases are, as far as I have observed, always referrible to preceding rheumatic inflammation in some distant part of the body. The most characteristic symptoms of acute inflammation of the pericardium, are the jerking, rapid, or almost countless pulse, the intense heat and profuse perspiration, the anxiety, fainting sensation, and impetuous respiration, to which may be added, a remarkable flushed and intoxicated appearance in the countenance.

In addition to the peculiar jerking impulse of the heart, which

I have described, the other physical signs of pericarditis, are a sonorous and murmuring sound in the ventricular systole, or dulness from percussion, perceptible when there is any effusion within the pericardiac bag, and a rolling or tumbling of the heart, observable more especially when it is entirely adherent to the pericardium,

The morbid appearances are various. Sometimes the pericardium is entirely consolidated and united with the external coat of the heart, by means of lymph effused between them. At other times we find flakes of lymph floating in purulent matter. When the internal membrane is the seat of the disease, the valves are found thickened, and the auricular-ventricular orifices contracted by the deposit of the lymph. In most cases a general appearance of redness prevails on the surface of the pericardium, or it is mottled with red specks. The apparent thickening of the pericardium is produced by the dense lymph on its inner surface, or interposed between that and the heart; and when complete adhesion is found, it is almost impossible to separate the union without injuring the original structures. The common thickness of the false membrane is about three lines, but it is occasionally found half an inch or more in density. In some instances the lymph effused on the inner side of the pericardium, has a cellular appearance, resembling the cells on the surface of a large, coarse sponge; in other cases we find bands of lymph interposed between the two serous membranes, or a flocculent appearance occasioned by vermiform portions of lymph hanging from the pericardium. All these varied productions of lymph appear to indicate a design in nature to obliterate the cavity of the pericardium, for the purpose of preventing its over distension with effused fluid, which would be otherwise continually deposited from the new, secreting surface. To render her intentions more complete, nature first converts the transparent into opaque lymph, by means of minute vessels, which gradually extending their diameter, and freely inosculating, are found afterwards conveying red globules, and converting the new production into cellular membrane. In a scrophulous subject, this new cellular structure becomes the nidus for the construction of fatal tubercular disease, like the lymph effused between the pleural or peritoneal surfaces.

Treatment.—Acute inflammation invading a fatal organ, requires in every instance, the most prompt attention either to save life, or to obviate effects calculated to interrupt or destroy the healthy function of the part. This remark is peculiarly applicable to acute inflammation in the pericardium. Full and decided bleeding ad deliquium must be immediately adopted, and repeated

at longer or shorter intervals, should the severity of the case require it. These intervals may vary from one to several hours. After the first bleeding, a draught composed of two or three drachms of sulphate of magnesia, and an ounce of infusion of senna, should be given Two grains of chloride of mercury, combined with a fifth or sixth of a grain of opium, to prevent purging, until the gums are sensibly affected, must be given once in three or four hours, as soon as the bowels have been properly evacuated. Should a relaxed state of the bowels be present, the purgative may be omitted, and the mercurial treatment commenced without delay. The action of mercury upon inflamed serous membranes in arresting the deposit of lymph, and diverting the blood from its local determination, is satisfactorily demonstrable in the treatment of acute iritis, during which we can enjoy ocular inspection of the process. As soon as the mercury begins to act, either on the salivary glands, or on the intestinal canal, producing griping and tenesmus, the distended vessels of the eye which are engaged in producing the filaments of white lymph, destined to converge and construct a false membrane in the interior of the visual organ, and to destroy sight, rapidly resume their natural dimensions, leaving the absorbents to clear away the materials intended for the new structure. The copious effusion of lymph, which in pericarditis results from the sudden impulse given by the acutely inflammatory process to the vessels on the free surface of the membrane investing the heart, is arrested by mercury with as much certainty and dispatch as in iritis. As soon, however, as this medicine has effected the object we have in view, it should be omitted; and if much feverish action remains, after the heart has recovered from its inflammatory trouble, citrate or nitrate of potash may be usefully administered in a mixture containing nauseating doses of potassio-tartrate of antimony. The diet must be antiphlogistic, the heat of the apartment temperate, and the patient should be lightly clothed. Should symptoms of dilatation of the ventricles of the heart succeed the disease, there will be reason to apprehend some valvular or internal membranous thickening in some part of the auriculo-ventricular apertures. In such a case, it would be advisable to prescribe a cautious perseverance with pilula hydrargyri and digitalis, from which combination the best effects may be expected. In a cachectic or scrophulous patient, constant circumspection will be required to watch the inception of tubercular deposition. This unfortunate occurrence will be denoted by an insidious hectic fever and progressive emaciation, accompanied with the usual characteristic appearance of phthysis in the countenance of the patient. Such an event will, however, never be found to occur,

when the primary inflammation is instantly arrested; for, as far as my experience extends, I can confidently say, that tuberculization has never established itself when nature has been timely interrupted in her attempts to construct a false membrane.

CHRONIC PERICARDITIS.

This form of pericardial inflammation has been in my own practice much more common with children than the acute; and on account of its occasional obscurity and its secondary or transitorial origin, and its frequent complication with other diseases, I apprehend that it has often terminated fatally without its existence having been suspected during life. The symptoms are similar to those of pericarditis,* to which it is sometimes a sequel. The accompanying fever is moderate, the anxiety and sense of suffocation much less obvious than in the acute inflammation, and the hot perspiration, flushed face, and excitement of the sensorium before described, are generally absent. The more uniform and characteristic symptoms are a jerking pulse, which soon becomes intermittent; frightful dreams with almost continual moaning, and starting from sleep with apprehension of approaching death; and frequent attacks of collapse, during which the action of the heart and arteries appear for some time to cease, and the skin becomes covered with a cold damp exudation. The patient generally complains of a weight or load on the chest and frequently sighs, and when his breathing is more oppressed than usual, he sits up in bed, instinctively resting his elbows on his knees, and bending the body forward in order to relieve the weight and pressure of the loaded pericardium.

This disease is sometimes the consequence of scarlatina, rubeola, hooping-cough, and remittent fever; but it is more generally preceded by rheumatic inflammation in some distant, fibrous structure. In some instances it appears suddenly as a fatal transition of disease from the membranes of the brain. In these cases a deposit of serum within the pericardium takes place in a remarkably sudden manner.

The abnormal appearances found after death consist either in the partial adhesion of the free surfaces of the pericardial membrane, or the production of bridles of lymph extending from one

* The termination *itis*, which ought to be written *ites*, is included by Dr. J. M. Good in his catalogue of suffixes, and denotes acute inflammation, in which sense I have used it in this work. Dr. Good, who was an elegant and classical writer, however, inaccurately derives this termination from ιτις, instead of ίτης, which signifies, impetuosity.

surface to the other, or patches of white adherent lymph or effusion of limpid or straw-coloured serum within the bag of the pericardium. In children I have never found the heart in a state of hypertrophy in connexion with pericarditis, or with the subacute form of this disease.

Treatment.—When the chronic pericarditis is detected at an early stage, and the constitution is not too much exhausted by previous disease, a grain of chloride of mercury and the same quantity of digitalis may be given every night and morning, and blisters be repeatedly applied to the region of the heart. As soon as the mouth becomes sensibly affected by the mercury, it should be laide aside, and the foxglove should be continued, occasionally intermitting its use for a day or two, when the stomach or brain become affected by it. In recent cases the effused fluid will often be absorbed by this treatment, and when that result cannot be accomplished, and the disease remains incurable, great relief will be afforded by the continued use of digitalis given every night, which will have the effect of suspending the intermission of the pulse by invigorating the muscular structure of the heart, which in these cases is generally feeble or atrophied.

CYANIA, OR BLUE DISEASE.

The purple or leaden colour of the skin observable in some children is generally known by the name of blue disease. It is almost invariably occasioned by some congenital defect in the heart, whereby a portion of the venous blood is permitted to circulate directly through that organ without receiving the benefit of exposure to the atmosphere through the pulmonary aircells. The consequences of this imperfection are accumulation of superfluous carbon in the blood, a condition to a certain extent resembling that of the intra-uterine fœtus, whose blood is not exposed before birth to the change produced by respiration ; and an imperfect development of the animal faculties. In most cases these children experience paroxysms of extreme dyspnœa, or temporary asphyxy, during which the surface of the body becomes almost black. These attacks are usually preceded by a distressing and frightful fit of screaming, and are excited by passion or the least annoyance. In some instances the patients die sooner or later during infancy or childhood, in others they arrive at maturity, and in most cases they expire in one of the paroxysms of syncope or dyspnœa. Richerand relates an instance of a man attaining the age of 41 years with this blue disease, who was unable to sleep in any but

the sitting posture.* The most frequent impediment to the propulsion of the whole of the venous blood through the lungs, and to the consequent decarbonization of a considerable portion of that fluid, is found to consist in the foramen ovale and ductus arteriosus, or one of them, remaining pervious. In some cases congenital malformations are met with, as, an almost impervious state of the pulmonary artery, the origin of the aorta in both ventricles or in the right.

When the discoloration is slight, and the child escapes the severe paroxysm of asphyxy or dyspnœa, he may survive the disease. In such a case we may presume that the communication between the two cardiac ventricles, or any other aperture which may permit the venous to unite immediately with the arterial blood, without previous exposure to the oxygen of the air, gradually and permanently closes.

Treatment.—Nutritious diet, easy of digestion; a regular or rather open state of the bowels, to be insured by occasional, gentle, aperient medicine, as, castor-oil or rhubarb; regular exercise in the open air; residence in the country; careful avoidance of all causes of mental irritation; and the exhibition of vegetable acids in a diluted form.

DISEASES OF THE LIVER.

CIRRHOSIS.

This consists of a subacute inflammation in the cellular tissue of the liver, which terminates in contraction of the tissue, and corresponding elevation, of the glandular structure. The irregularity which results from this process has obtained the name of granular, or hobnail liver. The consequences of the morbid state of the liver are incurable jaundice and ascites. The premonitory symptoms of this disease are pain in the epigastric region, occurring about an hour or two after taking food, a quick pulse, vomiting, and constipation. As the disease proceeds, these symptoms increase, and the tongue becomes red, and remarkably smooth on its surface. At length pain in the right shoulder occurs, and slight jaundice appears, first observable in the conjunctiva. In consequence of the general volume of the liver

* "Nouveaux Elémens de Physiologie," &c.

being diminished, no enlargement of that organ can be discovered by external examination.

Much obscurity at present exists as to the cause of this disease, which is exceedingly uncommon in children. Barthez and Rilliet have only met with four examples of it in young subjects, in two of whom the disease was complicated with tubercles.

It is the opinion of Dr. Corregan, that the disease commences in the duodenum, and extends thence to the cellular membrane of the liver.*

Treatment.—When we are so fortunate as to be consulted in the early stage of this disease, we may prescribe with advantage local bleeding over the seat of the pain, and afterwards local irritation excited by repeated blistering, or by antimony. Dr. Corrigan advises the internal use of iodide of mercury, or hydrargyrum cum cretâ, until the gums are sensibly affected, and afterwards trisnitrate of bismuth, and some preparation of iron, and lastly country air.†

GREY GRANULATIONS.

These are found generally on the surface of the liver, beneath the serous investment, and covered by a false membrane. They are occasionally hard, but generally smooth and polished, under the adventitious membrane.

MILIARY TUBERCLE OF THE LIVER.

The miliary tubercle is deeply seated in the organ, and seldom acquires a larger size than that of a pea.

Tubercular deposits present a deeper colour in the liver than in other organs, which is owing to the tinge they acquire from the colouring matter of the bile. From the number of small cavities found in the liver, when affected with miliary tubercles, it appears that they pass through the process of softening, as in other organs; and when they communicate with the biliary pores, the latter are diminished in their diameter by the tubercular matter, and converted in some places into biliary cysts, the bile appearing to promote the process of softening.

The presence of miliary tubercles is not discoverable by any particular symptom until they have united, and the tubercular matter has acquired a considerable bulk, when ascites may result. It may, however, be suspected by the negative evidence afforded

* "Med. Times," Jan. 25, 1845. † Loco citato.

by a careful examination of the chest, by the diseased appearance of the patient, by tenderness felt in the right hypogastric region and in the epigastrium, and by hectic fever evinced by periodical chilliness, succeeded by slight, febrile heat, felt particularly in the hands and feet.

Treatment.—These tubercular diseases being always preceded by a state of cachexy, our principal means of affording any benefit to our patients will be confined to that period which precedes the establishment of hectic fever; for, as soon as that symptom has manifested itself, all expectation of recovery in the existing state of our knowledge of specific diseases must be abandoned. In the early stage, therefore, our attention must be directed to the digestive and assimilative organs, and when quickness in the pulse and debility concur and continue without any manifestation of pulmonary, bronchial, or mesenteric disease, we should attack the insidious and chronic excitement by the cautious use of some mercurial preparation, which, by diffusing the circulation from the seat of disease, before the tubercular matter has been deposited, will generally succeed in arresting the morbid process. When softening of the tubercles and hectic fever have commenced, every preparation of mercury must be prohibited. Subacute inflammation often lurks during many weeks in the parenchymatous structure of internal organs before its locality is suspected, during which time an artificial general excitement in the circulation may be established with the effect of removing the vascular congestion, which is destined to terminate in specific and fatal inflammation.

HEPATITIS, OR ACUTE INFLAMMATION IN THE LIVER.

The symptoms of this disease are pain in the right hypochondriac and epigastric regions, inflammatory fever, a yellow colour of the integuments and of the conjunctiva, and a mahogany colour of the urine, which affords a yellow tinge to substances dipped into it. The attack is usually preceded by rigors. In some cases the pain extends to the back, just below the scapula, when the posterior portion of the liver is the seat of the disease; and when the inflammation seats itself in the peritoneal coat as well as in the parenchyma of the organ, the pain becomes acute. On examining the region of the liver, we find that viscus tender and enlarged. It very rarely happens in this climate, that hepatitis terminates in abscess, and such a result is still more uncommon in children.

Treatment.—Bleeding, local or general, according to the age of the patient. A few grains of chloride of mercury, and two

hours afterwards a drachm or two of sulphate of magnesia, with an ounce of compound infusion of senna. If the symptoms are not speedily relieved, a grain of the chloride of mercury must be given once in four hours, till the gums become a little sore. After this sensible effect of the medicine has been produced, the bowels should be kept in a relaxed state, by the exhibition of two grains of potassio-tartrate of soda, and four or five grains of rhubarb, twice a day, until the fulness and soreness of the liver, and the discoloration of the skin, have disappeared.

JAUNDICE.

A yellow colour of the skin, and conjunctiva, in some cases approaching to a green or black tint, from obstruction to the discharge of the bile into the duodenum. The nature of the obstructing cause varies. It sometimes consists of inspissated bile, sometimes of pressure upon the gall ducts by a large collection of hardened fæces in the colon, and sometimes by subacute inflammation in the substance of the liver. The two first varieties are preceded by a costive state of the bowels, loss of appetite, and accompanied by defective energy in the muscular fibres of the large intestines. In these cases the biliary ducts appear to partake of the atony, and the discharge of the bile being thereby delayed, this secretion is allowed to accumulate, and become so thick as to pass with difficulty. When biliary obstruction proceeds from a large collection of stagnant fæces, the abdomen will be found remarkably tumid and projecting. (See "Constipation.")

One of the most frequent causes of jaundice in children is a subacute inflammation in the parenchyma of the liver, which, from the comparative insensibility of that structure, is not attended with any pain, and is usually overlooked. This variety of jaundice is often epidemic among children, appearing either simultaneously, or in rapid succession in the children of a family or district at certain periods, generally in the latter end of autumn, when sudden vicissitudes in the temperature of the atmosphere prevail. This variety will be found, on minute inquiry, to commence with slight, alternate chilliness and heat, lassitude, and other symptoms of the mild remittent fever of this climate. I believe this is the species of hepatic inflammation which was believed by Henke and Meisner to reign in an epidemic form.

In all the varieties of jaundice the urine is loaded with bile; and in all, except that which arises from a collection of hardened fæces in the colon, the stools are white, or resembling pipe-clay.

When the disease is occasioned by the pressure of tubercles, the colour of the skin resembles that which is observed in those who, in advanced life, labour under an incurable degeneration of the liver, of a specific character. The colour in this case is a kind of copper tint. A boy, who was some time under my care, and who died from this species of the disease, lingered four or five years, and became exceedingly emaciated before his death.

From whatever cause the impediment to the free discharge of the bile proceeds, that fluid, in consequence of the free communication between biliary pores, the capillary ramifications of the vena cava superior and the absorbents, is readily and directly conveyed into the right cavities of the heart, and thence distributed in the blood over the whole system. Hence it is not uncommon for a patient, who has had the disease a considerable time, to perceive white paper and all other white objects as if they were of a yellow tint; the bile having been conveyed through the circulation to the retina.

Treatment.—The variety which originates in slight obstruction in the biliary ducts, will only require a dose of salts and senna every third morning, and twice on each of the intermediate days, three or four grains of rhubarb, ten of potassio-tartrate, and five of sesquicarbonate of soda.

The variety proceeding from hardened and accumulated fæces will require more active measures. Three grains of chloride of mercury must be administered every second night, and five grains of carbonate, and one grain of sulphate, of magnesia, mixed with six drachms of compound infusion of senna, twice or thrice daily, until the symptoms of jaundice have vanished, and the discharges from the bowels have acquired a natural colour, and afford satisfactory evidence of recent formation. In these cases, a large chamber vessel will be nearly filled with dark coloured, offensive fæces, which have been detained within the cells of the colon several preceding weeeks or months. (See "Constipation.")

The epidemic, or autumnal, variety will require the application of a few leeches in the right hypochondrium, if any soreness or fulness be felt in that region. Three grains of chloride of mercury should be given immediately, and at the end of two hours a draught of salts and senna, and once in four hours citrate of potash, in a state of effervescence. Should not the symptoms of the disease subside in the course of a week, a grain of chloride of mercury may be prescribed twice or three times a-day, until the discharges from the bowels have recovered their natural colour, or the gums become tender. When either of these effects has been produced, half a drachm of sulphate of magnesia, dissolved in an

ounce of compound infusion of roses, may be continued twice a day, until the skin has entirely lost its yellow tint.

The last variety, which is connected with specific disease in the liver, is incurable. All that art can accomplish, will be to regulate the bowels and relieve dyspnœa. For these purposes, from five to ten grains of rhubarb, and ten of sesquicarbonate or potassio-tartrate of soda, given every morning in an ounce of infusion of columba, will be found an eligible remedy.

DISEASES OF THE KIDNEYS.

ALBUMINARIA, OR BRIGHT'S DISEASE; OR, ALBUMINOUS NEPHRITIS.

One of the most common diseases of the kidneys to which children are liable, is the albuminous nephritis, either in the *acute* or *chronic* form. In the former it appears as a sequel to scarlatina, or from exposure to cold. It commences with chilliness, succeeded by heat, and accompanied with a dull pain or sense of constriction in the region of the kidneys. The febrile state is also denoted by a quick pulse, and heat and dryness of the skin. The urine is soon observed to be deficient in quantity, and, on being compared with the secretion from healthy kidneys, it is found to possess less specific gravity, and to coagulate on the application of heat. These properties of the urine denote a deficiency of urea and salts, and the presence of albumen. The colour of the urine is reddish, resembling water impregnated with blood, and it is always acid. At the very commencement of the disease, the urine often exceeds in gravity that of the healthy secretion. With the aid of a good microscope, globules of blood may be perceived floating in the urinary secretion. The tongue is furred, and the bowels constipated. In many cases vomiting occurs, and at the end of a few days anasarca follows, producing an elastic, serous infiltration in the face and extremities, and in other parts. The blood, after venesection, presents a buffy appearance. This disease sometimes terminates spontaneously in perfect health; in other instances, it is succeeded by chronic pericarditis and dropsy of the pericardium, pneumonia, pleuritis, ascites, or fatal effusion in the brain. In some cases it gradually advances into the *chronic* variety. This latter form of the disease is unattended by fever, and

commonly appears without having been preceded by the acute variety, especially in scrophulous children. Under the latter circumstances, as soon as the albuminous urine is discovered, the patient will be found to have a pale, doughy complexion, and will complain of unwieldly swellings in the thighs or legs. His face will be puffed, and his upper lip hypertrophied and sometimes cracked, and he will complain of debility and depression of animal spirits. Sometimes the urine will appear as if mixed with blood, and it is always voided in small quantities. The skin, as in the acute variety, is uniformly dry. When the urine is exposed to about 166 degrees of heat, the albumen is deposited in crowds of small, yellowish white coagula, and, in some rare cases, it forms a solid coagulum. Albumen is also deposited by the application of nitric acid and the bichloride of mercury. In consequence of the animal matter contained in albuminous urine, it undergoes decomposition, and becomes offensive much sooner than healthy urine. In all doubtful cases, the suspected urine should be subjected to the acid test as well as that of heat. As the disease proceeds, the specific gravity of urine diminishes, until, in some cases, it is reduced to 1,004,* and in its last stage the albumen almost entirely disappears. In this chronic, as well as the acute, variety, dropsical effusions follow; but their appearance in the former is much more remote than in the latter. Their progress and termination are, however, much the same in both, after anasarca has commenced.

The state of the blood is materially altered in the early stage of albuminaria; the serum being reduced in gravity from 1,030 to 1,020, and the solid portions from 100 to 60 in 1,000. As the disease advances, the coagulum becomes diminished, the buffy appearance is less observable, and the density of the serum increases, and the urea, which had disappeared, will be again discoverable in excessive quantity. The hæmatosine, or colouring matter, as the disease increases, is reduced to one-third of its natural proportion, whether venesection has or has not been employed, which is the principal cause of the pallid aspect of the patient.

The duration of the disease may extend to several months, or years; and when the appearance of albumen in the urine is the only symptom attracting attention, and the child appears ruddy, and in other respects well, there will be reason to presume that the morbid condition of the urine may arise from some temporary defect in the process of assimilation, and not from diseased kid-

* "Christison."

neys. I have now a patient who is perfectly well in every other respect, except that his urine contains albumen, which it has done during several years without inducing any other apparent disorder in the economy.

The morbid condition of the kidneys is various. They may be found twice or three times as large as natural, increased in density, and marked externally with deep red points, their surface being also of a red colour. This increase of bulk is found to depend on an increase in the cortical substance, and the dark red points arise from the glands of Malpighi, which are highly injected with dark red blood.* The mucous membrane of the cups and pelvis is injected with ramifying vessels. When the examination is conducted in a more advanced stage of disorganization, what Dr. Bright calls the *granular* state is found. The external surface of the kidneys is then of a yellowish colour, and dotted or covered with white or yellowish spots. These granulations are seated in the cortical substance, and are most conspicuous at either extremity of the kidney, and are seen on dividing the organ to descend through the cortical structure, appearing like irregular fleecy lines continuously with the striæ of the tubular cones. In some cases the malpighian glands, infiltrated with albuminous deposit, appear externally in the shape of small grains under the investing membrane of the kidney, which is thickened and strongly adherent.

The proximate cause of albuminous nephritis is involved in much obscurity. It has, however, been, in a great majority of cases, found to prevail in scrophulous subjects, particularly in children; and the disturbance in the elements of the blood, which is one of the most obvious proofs of its existence, may lead us to conclude that it is primarily dependant on some defect in the processes of assimilation and sanguification. In some young patients, however, who appear to be free from congenital predisposition, the disease is frequently excited by exposure to cold, without any antecedent cachexy. In these cases, the immediate cause of the disease is a congestion, excited in the kidneys by exposure to cold. Independently of renal disorder, or disorganization, we sometimes meet with cases, as I have before stated, in which the urine is found to be albuminous; and, therefore, that condition of the urine must not alone be considered as indicative of albuminous nephritis.

Treatment.—The acute form of the disease, will require in the first instance loss of blood, either from the arm, or by cupping in the loins; and the same practice should be adopted in the chronic

* "Rayer."

variety, before the anasarca is extreme. Jalap and supertartrate of potash should be administered every morning, and, when the dropsical effusion resists these means, a quarter or half a grain of elaterium may be given every third morning. As the kidneys in this disease discover a particular propensity to be morbidly excited by mercury, all preparations of that mineral must be prohibited. Neither in this nor any other inflammatory dropsy, have I ever found digitalis admissible, its proper action being to give tone to the arteries, and thereby to diminish serous exhalation arising from vicious congestion. Other medicines having the repute of acting as diuretics, have little or no influence on this disease, and this cannot excite surprise, when we reflect on its nature and cause. When the disease is evidently connected with scrophula, iodide of potash will be found a most valuable remedy. I have a boy now under my care afflicted with the chronic variety of the disease, who, after moderate venesection, is rapidly improving from the exhibition of this medicine, in the dose of two grains, twice a-day. All the anasarca have been removed, but the urine remains albuminous. This boy has a scrophulous aspect, and scrophulous disease in the absorbent glands. In the advanced stages of albuminaria, the mucous coat of the bowels sometimes becomes inflamed or ulcerated. The proper remedies for the former state, which is attended with diarrhœa, is opium; and for the latter, that medicine in combination with sulphate of copper. The extension of this disease to the bronchial mucous membrane, or to the pericardium, is highly dangerous, and must be viewed as a fatal association of the disease.

FUNGOID DISEASE IN THE KIDNEYS.

The primary symptom of this rare disease, is a discharge of bloody urine, which resists all remedies. On careful examination, a fungoid enlargement will be found in the region of the affected kidney, extending below the hypochondrium. The countenance has a pallid and morbid appearance. Fungoid tumours usually occur also in the inguinal glands, as the disease advances. The quantity of urine secreted and discharged is profuse, and it is sometimes free from blood. The pulse varies from 90 to 100. The disease is not attended with anasarca. Its duration is sometimes extended to several years. It attacks children as well as adults, at all ages. A case, which occurred to a child four years old, is related in the "Medical Gazette" for May, 1831.

Treatment.—The only medicine which has appeared to me to exert any effect upon the discharge of blood, is benzoic acid, which may be given in the dose of five or ten grains, three times a-day.

We have, however, no specific for the cure of the disease, which invariably ends in the death of the patient.

NEPHRITIC CALCULUS, OR GRAVEL.

The only species of chrystalline sediments, or gravel, which are usually met with in the urinary discharges of children, are the uric acid and the fusible, or the gravel, composed of a mixture of lime and triple phosphate of magnesia and ammonia. The uric or lithic acid gravel, is of a brown or reddish colour, resembling the grains of the new red sandstone. Its chemical characters consist in its becoming black before the blow-pipe, exhaling during conflagation a peculiar odour, and leaving a white ash. This white ash residue speedily dissolves in diluted nitric, or in citric, acid, with a slight effervescence. The solution tastes like nitrate of potash. This gravel dissolves in liquor potassæ, and, with the assistance of heat, in nitric acid. The acid solution, evaporated to dryness, leaves a residue of a pink or carmine colour, which instantly disappears on the re-application of diluted nitric or sulphuric acid. It may be collected on paper, and, on being moistened and rubbed with water, it imparts a rich pink stain to the paper, as if it proceeded from a water-colour.

The fusible or phosphatic gravel is whiter than any other, and resembles acetate of lead on its appearance. It is composed of very minute chrystals, which melt before the blow-pipe. It is readily soluble in acids, particularly in muriatic. The discharge of this calculous matter is generally accompanied with mucus in children, which often gives it the appearance as if it were matted together, and connected with minute hairs. This disease is vulgarly and erroneously supposed to proceed from dentition. This gravel is generally attended with pain about the pelvis, and more or less dysury, which symptoms are also especially attributed by ignorant persons to the process of dentition.

The cause of both of the above species of sediment, is a disordered state of the stomach and bowels, which produces imperfect assimilation.

Treatment.—The lithic acid gravel will be readily dissolved by five minims of liquor potassæ, of five grains of sesquicarbonate of soda, given twice a day, in an ounce of infusion of uva ursi. Two or three grains of chloride of mercury should be taken every third night, and a draught of infusion of senna and potassio-tartrate of soda the following morning. The patient must be prohibited from eating acid and unripe fruits, and pastry of every kind.

The best treatment for the triple phosphatic gravel, is five minims of hydrochloric acid, in half an ounce or an ounce of water, three times a-day, and lemonade ad libitum. These will rapidly remove the appearance of the calculous deposit, but its reproduction will require other remedies. These consist of chloride of mercury and rhubarb, or jalap, which must be administered so as to operate freely on the bowels every third morning, and be continued until the child has recovered a healthy appearance, and a natural appetite.

HÆMATURIA, OR BLOODY URINE.

This is an exceedingly uncommon disease in children, except when it proceeds from purpura or scurvy, in which diseases the blood is so deficient in fibrine, that it escapes from the mucous membranes from the least friction or irritation. Hemorrhage also proceeds from the mucous membrane of the kidneys and ureter, from the passage of gravel, and from fungoid disease. A boy about five years of age was under my care several years, during which time he was subject to frequent attacks of hæmaturia, which always arose from lithic acid gravel. By a continued use of alcaline medicines, and attention to the stomach and bowels, he perfectly recovered.

Treatment.—For the cure of that species which proceeds from a depraved condition of the blood, see "Purpura." That which arises from fungoid disease, either in the kidneys or bladder, is irremediable. (See "Fungoid Diseases of the Kidneys.") The proper remedies for the hemorrhage, occasioned by the friction of calculous concretions, or gravel, see "Nephritic Calculus, or Gravel."

DISEASES OF THE BLADDER.

VESICAL CALCULUS.

When this disease is not congenital, it may always be prevented by timely attention to the urinary deposits; and, since the publications of Dr. Prout, and other modern writers on the subject of urinary gravel and calculi, stone in the bladder is an uncommon occurrence in children. The symptoms of this disease are severe pain in the orifice of the urethra, immediately after the evacuation of the bladder, or just as the last drops are passing. This pain

arises from the inflamed and tender state of the mucous membrane, occasioned by the friction or contact of the stone, and is most severe when the calculus is composed of or coated with the rough particles of the triple phosphatic calculus. In severe cases, the last drops of urine are accompanied with blood, and the pain continues a considerable time after the bladder has been emptied. In boys, when the disease has been of long standing, a spasmodic contraction of the membraneous portion of the urethra, which may end in stricture, is liable to occur, and, by inducing pain before the discharge of urine begins, may deceive the surgeon. In all cases, however, the characteristic elongation and itching of the prepuce, and pain after the discharge of the urine, will distinguish stone in the bladder from all other diseases. In the advanced stage of vesical calculus, prolapsus ani is a general accompaniment.

Treatment.—Very small calculi may be removed from the bladder by dilatation. When they are of any considerable size, lithotomy will be found necessary. This is a very safe operation in children, and may be performed at a very early age. I have operated with success on a boy only two years old, and Mr. Key on a boy sixteen months, and he has also assisted at a similar operation on a boy only thirteen months of age.* Lithotrity is inadmissible on children under twelve years of age.

STRANGURY, OR INFLAMMATION OF THE MUCOUS MEMBRANE OF THE BLADDER.

Frequent and irresistible desire to pass urine, preceded by severe pain in the neck of the bladder, and mostly accompanied with a discharge of mucus, sometimes mixed with blood. This disease is distinguishable from stone in the bladder by the presence of pain before micturition, and by relief instead of pain immediately after that act. The inflammation is of the subacute kind; but it is occasionally acute, and terminates in sloughing, an instance of which occurred in my practice in a girl about fourteen years of age. It is sometimes connected with polypus in the urethra in young females, when offensive purulent matter is discharged, as well as viscid mucus, and the strangury is more frequent and urgent. In such cases, when the disease is overlooked or neglected, eneuresis and low fever succeed. Sometimes the inflammation in the mucous coat of the bladder is of the apthous character, when aphtha or muguet will be discoverable in the mucous membrane of the mouth, accompanied with fever, vomiting, and intense thirst, indicating the extension of the disease to

* "Guy's Hosp. Reports," No. 4, p. 17.

the inner surface of the stomach. This is one of the diseases which is commonly but most erroneously supposed to be connected with dentition.

Treatment.—Simple uncomplicated inflammation, or catarrh of the mucous membrane of the bladder, should be treated with citrate of potash and a few minims of tincture of opium once in four hours, and five or six grains of compound powder of ipecacuanha every night, the bowels being relieved, when needful, by salts and senna. Warm barley-water or milk and water should be taken in abundance. When the strangury is urgent, relief may be speedily afforded by a suppository, consisting of half a grain or a grain of opium, which may be repeated once or twice a day.

The acute species will require the early application of leeches to the region of the pubes, and should retention of urine occur from the obstruction occasioned by the presence of any portion of the slough in the urethra, the catheter must be employed twice or thrice every day. A young lady was under my care with this aggravated form of the disease who required the use of the catheter six weeks before the obstruction passed away, and she ultimately recovered. Nearly the whole of the mucous membrane of the bladder was discharged in this case in a sloughy condition.

When polypus is suspected, its presence may be ascertained by the finger introduced within the vagina. The tumour will thus be readily discovered by its large volume and the distension of the urinary passage. When the polypus projects, it may be secured by a pair of forceps, while a ligature is dexterously thrown round its neck; or the front of the passage may be dilated and the tumour secured by means of a small canula. When the polypus is half an inch or more in thickness at its neck, it will require a second ligature before it is separated. After the polypous obstruction is removed the patient rapidly recovers, but is afterwards liable to vesical catarrh.

The aphthous inflammation of the bladder and of the mucous membrane of the mouth, fauces, and stomach will require the citrate of potash in a state of effervescence, with or without opium, according to the state of the bowels. Barley-water, soda-water, or arrow-jelly constitute the best diet during the disease. All stimulants must be avoided. An opiate suppository or enema may be introduced into the rectum twice a day until the urgent symptoms of strangury are relieved; and if these should fail in affording temporary benefit, the hip-bath should be employed. In obstinate and chronic cases twenty or thirty minims of tincture of opium mixed with a little barley-water may be injected into the bladder with the best effect.

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occur. Although it is a dangerous, it is not always a fatal symptom; and therefore as well as with the view of preventing the excoriation of the integuments on the back or nates, the bladder should be evacuated by the catheter once in eight or twelve hours. By due vigilance and attention much misery and annoyance may thus be avoided.

IMPERFORATE URETHRA.

The urethra may terminate in a thin membrane in the situation of the proper orifice, or it may not penetrate through any part of the glans penis, ending abruptly in front of that part with a preternatural opening; or it may pass partially through the glans without any external aperture.

Treatment.—The membranous obstruction must be ruptured with the blunt extremity of a silver probe, and if any disposition to contract is afterwards observed in the orifice, a soft bougie of proper size should be introduced a little distance within the passage, and secured by a T bandage during an hour every day, until the contraction is removed.

When the glans is found partially perforated by the urethra, the part in front should be penetrated by a small trochar in the natural situation of the opening, and the new passage kept open by the constant use of the bougie, which must be carefully replaced every time it is removed either by accident or by the force of the urine. If the new opening is made larger than the rest of the passage, the current of the urine will not disturb the bougie. This, however, must be removed and replaced every day, and be gradually discontinued as soon as cicatrization has taken place.

The preternatural aperture should not be interfered with until the boy is of sufficient age for a more delicate operation, which may be performed on the principle practised by the late Sir A. P. Cooper. This consists in paring the edges of the opening, and covering it with a flap formed from the adjoining integument, which must be twisted and accurately applied to the raw edges. A trochar must then be passed through the glans in the natural direction, so as to form a canal communicating with the urethra. Into this artificial opening, a small piece of an elastic gum catheter must be introduced, for the purpose of affording a passage for the urine, and retained by the use of a T. bandage. The portion of catheter must be renewed as often as it becomes too soft for the purpose. Should the Taliacotian operation fail, the preternatural opening may be closed by the repeated application of nitrate of

silver, or the actual cautery; or it would probably contract spontaneously after the artificial opening has been established.

PHYMOSIS.

The phymosis of infants is a congenital defect, consisting of a preternatural contraction of the foreskin, which is not sufficient for the current of the urine.

Treatment.—A sharp bistoury must be carefully insinuated between the prepuce and the glans, over the surface of the latter, and the prepuce divided at one stroke of the instrument. The surgeon must take care to pass the point of the bistoury, close to the corona glandis, before he pushes its point through the integuments, otherwise the contraction will return. A little lint must be introduced between the sides of the wound, and the divided parts covered with tepid water, until the cicatrization has been completed.

PARAPHYMOSIS.

This disease is a retraction of the prepuce, either entirely or partially over the glans penis. When it occurs in little boys, it is the result of accident, or of friction of the prepuce against a rough dress. Inflammation of the prepuce, and infiltration of serum into the cellular membrane, are the consequence. This infiltration is often extreme; the swollen parts appearing almost transparent.

Treatment.—When the prepuce is forced over the glans by accident, and the surgeon is consulted before inflammation has commenced, the prepuce may be restored to its proper situation by gently pressing it forward with two fingers, while the thumb supports the glans. In most cases, considerable swelling and inflammation will be found. Under these circumstances no attempt should be made to replace the distended prepuce. A lotion composed of one drachm of liquor plumbi diacetatis, and half a pint of distilled water must be applied to the inflamed parts, which must be supported by means of a T bandage. This treatment must be pursued until the tumefaction has subsided, when the displaced prepuce will be found in every instance to resume its natural situation and appearance, without any manual operation or further interference.

CALCULUS LODGED IN THE URETHRA.

The symptoms of this accident are a fulness, and some degree of inflammation of the penis, a frequent and painful desire to pass urine, which escapes in drops, or dribbles slowly, and sometimes

an evident swelling and induration in some part of the urethra towards its extremity, occasioned by the lodgment of the calculus.

Treatment.—When the stone is not perceptible by external examination, as large a soft bougie as the passage will admit, should be gently introduced into the urethra until it arrives at the stone, in which situation it must be retained a few moments and then withdrawn a little, when a sudden inclination to empty the bladder will be felt, and if much urine escapes by the side of the instrument, it should be removed, when the stone will probably follow. Should not this happen, the bougie may be introduced again at the end of a few hours, and being brought into contact with the calculus, the latter may be gently pressed backwards, with the view of altering the direction of its longitudinal axis, in case that should lie across the passage. Should all these attempts fail, and the patient not suffer much uneasiness, the stone may be left in the urethra, provided the urine makes its way, and no retention follows. Under these circumstances, a regular course of alcaline or acid medicines, according to the ascertained nature of the calculus matter, should be prescribed, until the growing passage may acquire sufficient diameter to permit the calculus to pass. When retention of the urine takes place and is urgent, an opening should be made into the urethra, and the stone extracted. This is a safe operation, especially in children, in the membraneous part of the urethra, which is the usual seat of the calculus. A case is related in the "Lancet." vol. xi. p. 91, in which the stone, after residing in the membraneous portion of the passage during one year, was safely removed by incision. A similar case occurred in the practice of Mr. Green. The calculus had rested in front of the bulb, and was extracted by an opening made into the passage at the part, after retention of urine had been produced.* When the stone cannot be extracted through the natural orifice, Mr. Liston recommends it to be pushed backwards towards the perinæum, as it is more difficult to heal a wound in front than behind the bulb, from which latter situation the stone may be safely removed by an incision, which heals without any risk. It must be remembered that at this situation, the urethra lies deep and under the arch of the pubes, and, therefore, care must be taken to extend the first incision sufficiently far towards the anus, to allow space for the future steps of the operation.† Sir B. Brodie, also prefers the operation behind the bulb, as in that situation there is much less risk of the formation of sinuses than in front of that part.‡

* "Lancet," vol. xi., p. 460.
† "Practical Surgery," p. 420.
‡ "Med. Chir. Rev.," v. 17, p. 190.

When the stone is found within a short distance of the orifice, I have always been able to remove it by means of a silver director.

INFLAMMATION OF THE PREPUCE.

This disease is discovered by a discharge of purulent matter from the inner surface of the prepuce, which is swollen and tender. The cause of the complaint is exposure to cold. It sometimes also appears to proceed from a deranged state of the digestive organs.

Treatment.—One of the following lotions should be injected between the glans and prepuce, three times a day by means of a small syringe.

℞—Tinct. Myrrhæ . . . . . ℥j.
Liq. Calcis . . . . . ℥v.—M.

vel,

℞—Aluminis . . . . . ʒj.
Aquæ . . . . . ℥vj.—M.

When the stomach and bowels are disordered, a few doses of chloride of mercury and jalap, or salts and senna, should be prescribed.

DISCHARGE FROM THE VAGINA.

Formerly every purulent or mucous discharge from the vagina was supposed to be of an infectious and specific character. The fact is, that purulent and muco-purulent secretion is speedily excited in the mucous membrane lining the passage, by accident, by the friction of clothes, by cold, or by the irritation in the rectum produced by ascarides. It may also arise from the extension of intertrigo, to which some children from cold or from neglect are particularly subject.

Treatment.—The inflamed parts should be washed with warm water twice or three times daily, and the following lotion introduced between the labia, by means of lint moistened with it.

℞—Liq. Plumbi Diacetat. . . . . ʒj.
Aquæ Distillat. . . . . ℥vj.—M.

When the discharge resists this remedy, the following lotion should be injected by means of a bone or glass syringe, three times a day.

℞—Zinci Sulphatis,
Aluminis ā . . . . . ʒss. ad ʒj.
Aquæ Distillat. . . . . ℔ss.—M.

Should any case be found so obstinate as to defy this application, the following will not fail to remove the discharge :—

R—Argenti Nitratis gr. xv. ad ʒ ss.
Aquæ Distill. ℥ iv. M.

The following mixture may also be administered with advantage at the same time :—

R—Magnesiæ Sulphatis . . . . . ʒ vj.
Quinæ Disulphatis . . . . . gr. v.
Accidi Sulph. Dil. . . . . ʒ ss.
Tinct. Aurantii . . . . . ʒ j.
Aquæ q. s. ut fiant . . . . . ℥ vj.
Capiat cochleare i largum bis quotidie.

APHTHA PUDENDI AND SLOUGHING PHAGEDÆNA.

Young as well as adult females are liable to these diseases. I have here associated them, because I have in many instances, been able to trace the origin of the latter to the former disease, particularly in children. Aphtha pudendi is preceded by fever, commencing with chilliness and wandering pains. At the end of a few days the child complains of heat in the vagina, and pain during the passage of the urine. On examination, aphthous vesicles are discovered of various sizes, from that of a small pea, to that of a horse-bean. These vesicles are surrounded by a dark, inflamed base, and some of them on bursting, leave a white slough ; unless proper attention is directed to these aphthous eruptions, the acrimony of the urine increases the pain, and the subsequent ulceration. In mild cases, the parts heal by attention to cleanliness, and mild applications. In others, the aphthous ulcerations increase in their dimensions and coalesce, and deep ash-coloured sloughs appear in large patches, which sometimes occupy the whole labium on each side, attended with constant pain. The surrounding dark red inflammation now increases in extent, and the sloughing process rapidly spreads. An offensive discharge, excoriating the integuments on the inside of the thighs and between the nates, now adds to the distress of the patient, and the face assumes a pale, hollow, and cadaverous appearance. In some cases, the disease begins in the form of intertrigo, which spreads from the anus to the labia pudendi, where vesications soon appear, which terminate in sloughing ulcerations. Some of the sloughs separating hang in fragments, while the destructive process extends with unabated fury. At length delirium accompanied with typhoid fever, and sometimes with inflammation in the bronchial mucous membrane,

supervenes, and the patient falls into fatal collapse. Sometimes before death occurs the aphthous inflammation attacks the mucous coat of the intestines, and aggravates the case with troublesome and exhausting diarrhœa. The ulceration of the pudendum mentioned in the seventh vol. of the "Medico-Chir. Transactions," by Mr. Kinder Wood, appears to be the disease I have described; and in both the cases related by that surgeon, aphtha were present.

The cause of aphtha pudendi is the same as that of other forms of aphthous eruptions, namely, exposure to cold; and the striking difference which is observable in the progress of the disease in different individuals, is dependant on the different condition of the constitution at the invasion of the disease, and this will explain the reason of its greater frequency and severity with the children of the poor, who are often ill fed, and imperfectly clothed, and in a state of physical debility, which renders them unfit to contend against any febrile or inflammatory attack.

Treatment.—In healthy and robust children, the only treatment required will be a dose of salts and senna, followed by citrate of potash once in four hours, and the following liniment, which should be applied to the inflamed parts, whether originating in aphtha or intertrigo, several times a-day:—

R—Plumbi Oxydi Pulv.	℥ ss.
Ceræ Albæ	gr. xx.
Aceti Distill.	℥ ss.
Olii Olivæ	ʒ vij.
Cetacii	gr. xlv. M.

Primo oxydum cum aceto gradatim instillato in vase fictilino tuo, dein olei dimidium paulatim adde. His mistis et calefactis cetaceum olei alteram partem et ceram prius simul liquefactas adjice. Postremo assidue commoventur donec refrigerantur.

The more severe and dangerous form of the disease, ending in sloughing and corroding ulcerations, and appearing in cachectic children, will require a different mode of treatment, both local and constitutional. The ulceration and sloughing commence so early in those cases, often at the end of twenty-four or thirty-six hours, that it will be requisite to pay more minute and early attention to the state of the pudendal mucous membrane. As soon as the ulcers are discovered, they will be found covered with a white, closely adhering, thick, lymph-like substance, which is the first stage of the sloughing process, and resembles the eschar produced by a burn or scald. This is, in fact, a portion of dead cutis vera, with its rete mucosum thickened by the inflammation, the epidermis, which constituted the vesicle, having burst and disappeared.

In this incipient state of the destructive process, ung. hyd. nitrico-oxyd., spread thickly on lint, will generally arrest the local mischief; but, should this application not soon be found to stop its progress, the practice recommended by Mr. Welbank, in one of the early volumes of the "Medico-Chir. Transactions," must be adopted with promptitude. This is the application of undiluted nitric acid, which should be conveyed to and pressed upon the whole surface of the slough, about half a minute, with the assistance of a glass rod and lint, previously immersed in the acid. Sometimes sharp pain is felt, and sometimes scarcely any sensation except that of relief, by the contact of the acid. When the pain is considerable, ten or fifteen drops of tincture of opium may be given; but no outward remedy will be required, except a dossil of dry lint. As soon as the acid has been appiled, it is astonishing to observe the immediate and lasting disappearance of the purple-coloured inflammation, which surrounds the ulcerated and sloughy parts, strangling the capillary circulation, and rapidly extending death over the adjoining surface. It seldom happens that a second application of the acid is required, for not only is the external inflammation immediately arrested, but the surface of the ulceration, after the separation of the slough has taken place, assumes a healthy condition, and the healing process commences, and completes the cicatrization of the ulcer, requiring no other assistance than the constant contact of soft lint, immersed in cold or tepid water. This simple auxiliary exercises its beneficial effects on the principle of preventing a recurrence of inflammation, which is the great obstacle in all cases to the restoration of ulcerated or wounded parts. Infusion or disulphate of quina, taken three times a-day, will support the strength of the patient, and small repeated doses of opium may be required to allay the purging, when the intestinal mucous surface partakes of the aphthous inflammation. Nourishing diet will also accelerate the recovery of the patient, after the malignant inflammation has been subdued.

IMPERFORATE VAGINA, OR CLOSURE OF THE LABIA.

The adhesion of the sides of the labia, which constitutes this disease, has always appeared to me to have been produced by the organization of lymph effused by the contiguous inflamed surfaces in children, who have been neglected while suffering with intertrigo. The false membrane thus produced is at first so slender as to require very little pressure to effect its separation; but, when it is permitted to remain until an adult age, it acquires considerable thickness. The current of the urine preserves a small aperture at

the upper part of the membrane, on which account the closure of the vagina is overlooked, until it is discovered by accident. In some cases, occlusion of the labia is entire, when the attention of the attendants is directed to the seat of uneasiness by a painful retention of urine, and a distention and protusion of the membrane.

Treatment.—In most cases, the only operation required is the division of the transparent membrane, by means of a blunt probe. In some instances, the false membrane becomes so completely organised, as to resemble a congenital structure. In this case, it will require division by a sharp bistoury, guided by a silver director. After the division has been made, a little lint must be inserted between the bleeding edges of the wound, and renewed every time the bladder has been evacuated, until cicatrization has been completed.

DISEASES OF THE THYROID GLAND.

ENCYSTED TUMOUR ON THE THYROID CARTILAGE.

This is a very rare disease; but I have considered it necessary to notice it, as it may be supposed, by a superficial examination, to be a glandular or scrophulous tumour. The softness, the entire absence of external inflammation, and the perception of a cyst communicated to the finger of the surgeon, will distinguish it from other tumours.

Treatment.—The only cure is excision of the cyst, which must be effected by a crucial incision, and a careful dissection. The cyst will be found adherent to the cartilage, from which it must be entirely and cautiously removed. The hemorrhage will be found moderate, and readily restrained by a compress and adhesive plaster, applied over the flaps, which must be replaced to promote union or adhesion by the first intution.

This tumour assumes the appearance of a ganglion, when recent, in which state it has been punctured by Sir Benjamin Brodie and Mr. Lucas, with success.*

BRONCHOCELE.

THE most common disease in this gland is an enlargement or hypertrophy, to which delicate and scrophulous children are sub-

* "Lancet," No. 838, p. 922.

ject at all ages. It mostly, but not invariably, attacks females, especially those who inhabit mountainous and cold localities. Its origin is sometimes traceable to the vascular obstruction in the throat, accompanying the paroxysms of hooping cough, and to the same cause during the act of singing. I have also frequently observed bronchocele to proceed from cold, producing in the first instance inflammation in the tonsils. External injury will excite this disease, which I have often known to have been brought on in children by the pressure of the finger and thumb, practised in play. A melancholy instance of fatal injury, produced by this dangerous propensity in some children, occurred in a boy, who had a very large bronchocele. The inflammation, which succeeded the injury, produced so great an enlargement of the swelling, that the boy died the following day from asphyxia. I was not called in until cerebral apoplexy had taken place, in consequence of the obstruction to the pulmonary circulation. I lost no time in performing the operation of tracheotomy, which restored the natural colour of the face, and relieved the apoplexy; but the patient was too much exhausted to recover from the collapse of the vital powers, produced by his previous ineffectual efforts to carry on respiration.

Treatment.—When the swelling in the glands is suddenly produced by cold or accident, a few small leeches should be applied, and afterwards an evaporating poultice, or a fold of linen rag, moistened with cold water. Should difficulty arise in suppressing the hemorrhage, pressure cannot be applied; and therefore the proceeding recommended for restraining the bleeding occasioned by leech bites, must be put in practice. (See "Leech Bites"). The inflammation being thus relieved, the case must be treated in the same manner as chronic bronchocele. A great improvement has of late years been introduced by the substitution of iodine for burnt sponge, which, from the adulteration practised in its preparation, was a most uncertain remedy. One or two grains of iodide of potash dissolved in an ounce of water, and taken twice a day, will be found the most agreeable and efficacious remedy for this disease. The time required for the cure will vary from a few weeks to several months. In children only two or three years old, the disease will disappear by this treatment sometimes within a fortnight. When the disease is obstinate, increasing, or remaining stationary, a liniment, composed of two scruples of iodide of potash, or half a drachm of iodine and an ounce of lard, should be applied by friction every night to the swelling. A few cases may resist these combined remedies. Under these circumstances, one grain of iodine dissolved in five

minims of liquor potassæ, and diluted with an ounce or two of water, may be prescribed with success.

CELLULAR BRONCHOCELE.

This variety is found to consist of a single cell, or numerous cells, seated in the thyroid gland, and filled with fluid. An examination, which should be made in every case, will discover an irregularity and fluctuating feel in the tumour.

Treatment.—The same proceeding as that successfully adopted for the removal of certain ganglia is the most effectual. This consists in the puncture of the cell with a trochar, the evacuation of the fluid contents and the introduction of a seton, which may be effected by means of an eyed probe, or a large needle. Mr. Green has successfully practised this operation ;* and Mr. Selwyn, who passes the seton by means of a stocking needle, also recommends it.† Mr. Wardrop, who removed one of these tumours, found on dissection, that it consisted of many cells containing a dark fluid.‡ Before the surgeon operates, he should make a careful examination of the cyst; as a projection of the mucous membrane of the larynx or trachea, forming a kind of hernia, may exist, and be found penetrating the sides of the larynx, or the front of the trachea, between the cricoid cartilage and the first tracheal ring, a case of which has been reported by Baron Lacey.§

HERNIA OF THE LARYNX (See "Cellular Bronchocele.")

DISEASES OF THE CELLULAR MEMBRANE.

ŒDEMA (See "Ascites and Diseases of the Heart and Kidneys.")

ŒDEMA, OR INDURATION OF THE CELLULAR MEMBRANE, OR SKIN-BOUND DISEASE.

THIS is a firm, elastic, cold swelling, of a white or straw colour, produced by an effusion of serum, or a sero-albuminous fluid

* "South's Hospital Reports," No. 1. p. 77.
† "Lancet," No. 798, p. 433.
‡ "Lancet," vol. xiii., p. 829.
§ "Lancet," vol. xvii., p. 852.

within the cellular or adipose membrane, beneath the skin of certain infants. The integument is so much distended in the affected parts, that it appears bound down to the cellular membrane, whence it acquired, by Dr. Underwood, the name of skin-bound. The disease may extend over the whole body, or be confined to the face and extremities, which latter become quite stiff. The skin in all cases feels cold to the touch, and the patient makes a peculiar distressing sound in respiration, produced by œdema in the glottis, which by some has been compared with the noise made by mice.* The feeble state or absence of the pulse, the coldness of the skin, and the general appearance and manner of the patient, resemble the condition of a dying infant. The disease in general appears within ten days after birth; but some infants are said to have been born with it.† In some cases this disease is associated with diarrhœa, proceeding from inflammation in the mucous membrane of the bowels; and it is said often to terminate in mortification of the integument, especially on the soles of the feet.‡ In some cases dysphagia is an accompaniment, produced probably by infiltration into the cellular membrane of the pharynx.

The hardness and elasticity of the external œdema continue after death; and the cellular membrane, on being divided, effuses a pellucid, yellowish or bloody fluid, in proportion to the distension of the skin; and when pressure is applied to the divided parts, and the serum is entirely pressed out from the cellular and adipose membrane, the integument recovers its natural softness and laxity, and may be freely moved over the subjacent muscles, being found neither dry nor thickened, as misrepresented by Allard and several other pathologists. With respect to the serum, it is not found to differ from that which is effused in ordinary œdema; and Dr. Carswell is of opinion that when it contains an excess of albumen, that it will only be met with in that condition when the effusion has taken place in a sudden manner.§ The thoracic and abdominal viscera, as well as the large venous trunks, are found in a state of congestion or plethora, to which the serous infiltration in the cellular and adipose membranes and into the serous cavities and the viscera, discovered after death, may be attributed. In addition to these essential, or characteristic, morbid phenomena, other accidental appearances may be met

* Underwood mentions one instance, and another occurred in the British Lying-in-Hospital, in both of which the skin was hot.

† An instance is recorded in the "Ephemerides," Acad. Nat. Curiosor., cent. ix.

‡ "Underwood." By Dr. M'Hall, p. 234.

§ "Cyclopædia of Practical Medicine," p. 11.

with, resulting from concomitant diseases in the viscera of the thorax or abdomen, as inflammation in the serous or mucous membranes.

The pathology of this singular, and almost uniformly fatal disease, has been by no means satisfactorily explained. Billard attributes it to the debility, general plethora, and excess of venous blood in the tissues peculiar to new-born infants, and to the dryness of their skin before exfoliation of the epidermis occurs. I feel more inclined to ascribe the congestion in the internal organs, on which, the extravasation of the serous portion of the blood from the extreme vessels at the periphery of the body, and the want of animal heat, appear to depend, to a state of congenital enervation in the abdominal, ganglionic, nervous system. It is on this portion of the nervous centres that the vital functions are dependant; and when its energies are impaired either by congenital defect, or by disease exhausting the vitality of the heart or arteries, we find this tendency to hydropic effusion in the distant capillaries. Hence when the powers of life begin to decline, either from the embarrassment of the central organ of circulation, from long-continued cardiac disease, or repeated attacks of asphyxia produced by spasm of the glottis, we find sudden and permanent extravasation of a sero-albuminous fluid in the remote parts of the cellular membrane, and into the ventricles of the brain.

Treatment.—We are at present in possession of very little knowledge respecting the treatment of this disease. Palletta appears to have been somewhat successful with the application of leeches, which he recommends, on the supposition that local abstraction of blood may relieve the internal venous congestion. External warmth, applied by means of friction, hot flannels, and the vapour-bath, have also been advised. It has been observed in cases of recovery, that the restoration of the patient has kept pace with the return of the force and regularity of the heart's action. Hence sesquicarbonate of ammonia may afford relief; and when the œdema is complicated with gastric or intestinal disease, the attention of the medical attendant should be specially directed to such complication.

ANASARCA (See "Diseases of the Heart and Kidneys.")

ERYSIPELAS OF INFANTS.

THIS disease usually appears on the navel, the front and lower part of the abdomen, the thighs, or nates. It occasionally occurs on the hands, and other parts of the body. Had I not had con-

siderable experience in this form of erysipelas, the description alone given of it by writers would have convinced me that it is of the phlegmonous character:—"The part affected is of a *brawny hardness*, and *the colour dusky and purplish;* the pulse low and feeble."*

"Infantile erysipelas first appears in the form of a dark red, shining spot, which quickly extends in size, and becomes of a *purplish colour;* there is not a great deal of swelling, but the *skin is tense, and very hard.* When it commences in the belly, *vesications, destruction of the cellular membrane, and gangrene of the skin,* speedily follow. The genital parts are not unfrequently destroyed altogether; and we have sometimes seen the scrotum become black and slough away, leaving the testicles bare, and hanging loosely by the cords. In such cases, the fever is of a typhoid kind, and very severe, usually carrying off the child in a very few days." †

"It seizes the most *robust* as well as delicate children, and *in an instantaneous manner;* the progress is rapid; the skin turns of a purplish hue, and soon becomes exceedingly hard.

"The milder species of it often appears on the fingers and hands, or the feet and ankles, and sometimes upon or near the joints, forming matter in a short time. The more violent kind is generally seated about the pubes, and extends upwards on the belly, and down the thighs and legs; though sometimes it begins in the neck, and is equally fatal. The fact, indeed, seems to be, that it is generally far more dangerous when it seizes or spreads to any parts of the body, than when confined to the limbs. The swelling is but moderate; but after becoming *hard*, the parts turn *purple*, *livid*, and very often spacelate, especially in boys, when it falls on the scrotum," &c.‡

The above description of the infantile exactly corresponds with that of ordinary phlegmonous erysipelas, which commences with a diffused inflammation in the skin and cellular membrane, followed by hard nodules, which terminate in suppuration and gangrene.

Various remote causes have been invented for this disease: as, imperfect ablution, foul air, retention of the meconium, want of due cleanliness, the natural vascularity of the integuments, disorder in the mucous surfaces, &c. All these fictitious causes have no reference to the pathology of the disease, which consists of an obstruction in the vessels of the cellular adipose membrane, produced by external cold, applied either by damp napkins, or exposure to currents of air in private apartments or the wards of hospitals.

* Rees "On the Diseases of Children," p. 255.
† Maunsell and Eveson "On the Diseases of Children," p. 222.
‡ "Underwood," p. 131.

For a minute explanation of the process adopted by nature in the development of phlegmonous erysipelas, from its commencement in hard nodules to its termination in suppuration and gangrene, the reader is referred to the article, "Phlegmonous Erysipelas."

The abdominal efflorescence, which accompanies erythematous inflammation of the intestinal mucous membrane, and which is often confounded with true erysipelas, is a sympathetic disease, and differs from erysipelas as much in its progress and termination as in its nature and origin; and the superficial erysipelas of infants, described by authors, is of the erratic character, and has no analogy to the destructive disease under consideration.

Treatment.—Instead of trifling with the application of starch powder, or flour, as recommended by some writers on this subject, until disorganization of the cellular membrane, or gangrene, has taken place, we should make free incisions through the nodules, and indurated crimson coloured parts, deep into the cellular and adipose membrane, which decided practice will instantly arrest the local disease, and prevent the typhoid fever and destruction of parts, which would inevitably follow. This practice is applicable in every situation, in which the disease may appear; and will always prevent that dreadful destruction of parts, which authors describe as resulting from the disease. The amazing enlargement of the scrotum, produced by the induration and infiltration of the loose cellular membrane of this part, added to its dark purple colour, are calculated to alarm and deter an inexperienced practitioner from adopting the practice I have recommended, and found invariably successful. The incisions, however, must be deep and unsparing; otherwise the patient will be lost by impending gangrene, and its accompanying typhoid fever. Every hard crimson nodule, in particular, should be freely divided, as that is otherwise destined to certain destruction, and contains the elements of spreading mischief; as I have already explained, in unfolding the pathology of the disease in the article, "Phlegmonous Erysipelas." The only applications required after the incisions have been made, will be evaporating poultices, and afterwards folds of linen rag, moistened with warm water. The physician must not place confidence in the antisceptic properties of quina, or any other medicine, but should immediately avail himself of the surgical assistance which alone can save the patient. When proper local treatment is adopted in due time, little medicine will be required; but the vessels should not be permitted to remain unrelieved by the knife, until their contents have been effused and converted into pus; for this timid and dilatory practice will only assist nature in completing her work of destruction.

When the cutaneous efflorescence is of the nature of erythema, consequent on intestinal disease, the latter must be treated according to the directions laid down for the relief of erythematous inflammation of the mucous membrane of the intestines, to which the reader is referred.

The mild and migratory form of erysipelas, which is limited to the free surface of the cutis, and never descends to the subjacent textures, will only require a tepid lotion, composed of rectified spirit one part and water three parts, and the regulation of the bowels by some mild aperient medicine.

ACUTE ABSCESS.

The simple, acute or phlegmonous abscesses of children, observe the same progress as those of adults, and require a similar treatment. They commence in the adipose or cellular membrane with pain, swelling, and local heat, and make their way towards the surface by progressive absorption. The external parts at first feel hard, solid, and tumified over the seat of the disease; the hardness gradually disappearing in the surrounding parts. In the course of a few days the skin becomes red, and as the abscess approaches the surface, the red colour becomes more concentrated, and acquires a purple tint, in proportion as the abscess advances to maturity. At length the central is found softer and more pointed than the adjacent parts; and when the absorbents have removed all the intervening cellular membrane and the integument covering, the softened and acuminated part having become deprived of its nutrient vessels, a small vesicle, or eschar, is found, which on being separated by the ulcerative process, affords a small opening for the escape of the matter. This is the usual course of an acute abscess, whether it may be produced by cold, external injury, or any other cause. This abscess differs from that produced by phlegmonous erysipelas by being surrounded by a wall of lymph, which prevents its extension. The phenomena preceding the formation of pus, are the same as those which occur in the nodules of erysipelas, and in the parenchymatous structure of the lungs. The circulation in the vessels primarily affected is destroyed, and these vessels losing their vitality, give way to the pressure occasioned by the excitement and inflammatory impulse of the neighbouring arteries. The inflamed vessels surrounding the morbid part, form, by a deposit of lymph, a temporary capsule for the reception of the effused blood, the globules of which are destined to undergo a conversion into pus. Nature, having thus determined the inflammatory process, conducts the peccant matter to the surface, when that is the

nearest outlet; and having discharged, by an opening effected in the manner I have described, the contents of the abscess, reconstructs the cellular membrane, by elongating the vessels of the sac, and speedily fills up the artificial cavity.

Treatment.—When the surgeon is called in before the central effusion of blood or the nodule occurs, the obstruction in the vessels, which are the seat of the disease, may be removed by the application of leeches and evaporating cataplasms, and suppuration may thus be prevented. In case this desirable object cannot be attained, and the suppurative process is established, the best treatment will consist in the application of a domestic poultice made with bread and water, to which is added a little lard or oil. This should be renewed three times a day, and continued after the abscess has burst, until the discharge of purulent matter has ceased. In all cases, when the abscess is seated in any part of the body not exposed to view, it will be found the best practice to permit nature to make her own opening; but when collections of matter take place in any conspicuous part, they should be opened with a small lancet with a valvular incision, as soon as the superincumbent integument becomes of a deep red colour, and thin at the prominent part, intended by nature for the opening.

PARONYCHIA, OR WHITLOE.

Whitloe is of three kinds; the Superficial, Tendinous, and the Osseous. The first is the most common with children. It usually attacks such as are labouring under some derangement in the digestive organs; and after exposure to cold, commences its attack with heat, pain, and swelling in one of the fingers. In a few days a serous or sero-purulent effusion from the cutis vera, is observable under the epidermis, which is elevated, detached from the true skin, and rendered tense near the extremity of the finger. When this vesication is permitted to proceed, it detaches the epidermis to a great extent, before spontaneous rupture occurs; and the secretion of serum is succeeded by that of an offensive purulent matter from the surface of the true skin, which becomes deeply ulcerated. In those children, whose digital epidermis is very thick, the ulceration spreads beneath it, round the root of the nail, which is separated and succeeded by a new nail. In some cases infiltration of sero-albuminous fluid takes place in the cellular membrane, all around the affected finger, without any effusion under the epidermis. In these cases, in which the skin has a pink tint, the inflammation is of the erysipelatous character, and confined to the adherent or internal surface of the cutis vera and

to the subjacent cellular membrane. Until relief is afforded to this variety, the swelling and induration are immense, and the disease assumes a chronic character. It is attended with itching, soreness, and stiffness in the finger.

The *tendinous* paronychia commences with inflammation in the sheath of the flexor-tendons of the finger, accompanied by a characteristic crimson colour on the integuments. The disease is attended with severe pain and throbbing, and is exceedingly tedious, in consequence of the resistance of the firm, fibrous sheath to the exit of the matter deposited within it by the inflammation. At length a soft, prominent point is discoverable in the superincumbent integument, which gradually enlarges in proportion as the matter approaches the surface. This soft part ultimately bursts, a small black point or vesicle having previously appeared on the surface, in consequence of the loss of circulation, produced by the pressure of the adjacent matter. Some relief is now afforded, but the termination of the disease is far distant; for weeks, and sometimes months elapse, before the dead portion of the tendon or its sheath is exfoliated, during which time a copious flow of matter is continued, and fungi project through the opening. When a portion of the flexor-tendons sloughs away, the finger remains shrivelled and immovably contracted.

The third, or *osseous* species, is of a scrophulous nature in children, and commences in the cancellous structure of one of the digital phalanges. The affected part is indurated, swollen, and painful, and the bone becomes hypertrophied with a copious deposit of tubercular matter, the result of specific inflammation. As the enlargement of the bone advances, the cartilage of one or both of the articulating surfaces of the neighbouring joint becomes ulcerated, when the sufferings of the patient are increased. At length a scrophulous abscess forms in the joint, or under the periosteum of the diseased phalanx, which bursting, affords a copious discharge of matter. After continuing several months, during which fungi spring up through the articulation, or portions of carious bone are exfoliated from the phalanx, the discharge ceases, and the finger is left in a disfigured state with anchylosis, and some deformity of the phalanx. The origin of this disease in scrophulous children may be traced to chilblains, acute rheumatism, or some external injury affecting the finger.

Treatment.—The first species of whitloe may be speedily cured by an opening made by a pair of sharp-pointed scissors through the elevated epidermis, which should be removed, as far as it is detached from the true skin. When this operation is performed in proper time, the inflamed cutis speedily heals with the

assistance of ceratum calaminæ, spread on lint; but when surgical relief is delayed, and ulceration is permitted to take place beneath the scarf-skin, it will be necessary to apply ung. hydr. nitrico-oxydum daily, until cicatrization follows.

The erysipelatous variety, consisting of extraordinary hypertrophy, from infiltration in the cellular membrane of the finger, must be treated by the application of solid nitrate of silver, moistened with water, and rubbed all over the enlarged and indurated surface, twice or three times a week. This remedy acts like a specific in speedily removing this obstinate and disagreeable inflammation, and restoring the parts affected to their natural appearance and dimensions.

The second species must be cut short by a free horizontal incision through the tendinous sheath, which, by affording an opening for the escape of the incarcerated matter, will prevent the destruction of the tendon and its fibrous covering. After this operation, a common poultice must be applied, and continued until the discharge has ceased, when cicatrization will follow, leaving the finger flexible and with little disfigurement. When this operation has been neglected or not performed in due time, the poultice will be required, until the dead portion of tendon or its sheath has been separated, after which, lint dipped in warm water, and renewed three or four times a day, will soon effect a cure.

The third or scrophulous species, when originating in external inflammation from cold may be interrupted in its progress by the following embrocation:—

R—Tinct. Cantharidis . . . . ʒj.
Lin. Saponis C. . . . . ʒvi.
M. f. embrocatio singulis noctibus parti affectæ affricanda.

When the disease commences with rheumatic inflammation, five grains of carbonate, and half a drachm of sulphate of magnesia, with ten minims of tincture of colchicum, should be exhibited three times a day; and perspiration should be promoted on the surface of the part by the application of cabbage leaves. Sometimes these cases are complicated with remittent fever, associated with irritation in the intestinal, mucous membrane. In such complications the most decided benefit will result from the use of chloride of mercury and jalap, every third morning, until the discharges from the intestines become healthy, the medicines abovementioned being taken on the intervening days. When medical assistance is delayed until the bones and cartilages become diseased, the recovery of the patient will be tedious; yet even in these extreme cases manifest benefit will be conferred by judicious atten-

tion to the digestive organs; and I have never found iodine required for the cure of this form of scrophula.

Case.—Mr. H.'s child, ætat. 3, had been suffering three months with a disease in the bones and joints of the fingers of one hand, the result of acute rheumatism, which had affected those parts in common with one of the elbows and the instep. The latter had recovered from the rheumatic inflammation, but the phalanges and joints of the fingers were in a most diseased state. The bones of the fingers were so much enlarged that the hand was nearly as large as that of a grown-up rustic, and the least rotation or movement of the joints discovered, by the grating sound, a destruction of all their cartilages. Remittent fever was present, accompanied with extreme emaciation and tympanites. It is impossible to imagine a more melancholy and distressing spectacle, than this child afforded. I prescribed chloride of mercury with jalap, every third morning, and carbonate and sulphate of magnesia with tincture of colchicum twice a day, and the application of cabbage leaves to the diseased fingers. At the end of three months, the general health was completely restored, and the fingers reduced to the ordinary size, except near the joints, which were completely anchylosed where the phalanges were disfigured with permanent enlargement.

Repeated exfoliations of bone sometimes occur in these cases, while nature attempts the restorative process by producing granular vegetations, destined to be interrupted in their formative proceeding by the specific inflammation in the bone. In such cases, the rational and only successful local treatment will be found to consist in the constant application of folds of linen rag or lint, saturated with cold or tepid water, which, by producing evaporation and the abstraction of heat, powerfully counteract the inflammatory process, by which the scrophulous diathesis is unfolded.

CHRONIC ABSCESS.

This disease is met with in various parts of the body. Its most frequent seats are in the side or back of the neck, on the side of the thorax, or on the inner and upper part of the thigh, where, from its descending over the psoas muscle, and passing under Poupart's ligament, it has acquired the name of Psoas Abscess. A large, chronic abscess also sometimes appears on the loins, when it is denominated, Lumbar Abscess. The cause of the superficial abscess, is cold applied to the part, as, exposure to a current of cold air while the patient is in a state of cachexy, induced by some previous exanthematous disease, or by remittent fever. These

abscesses are neither attended with pain nor discoloration, until the superincumbent integument becomes nearly absorbed, when redness in the skin is perceptible, extending a little distance from the central point of the external surface of the swelling. Their contents are always composed of thick, healthy pus, and generally amount in quantity to about two or three ounces. In some instances, half-a-pint or a pint will be found within the sac of the abscess.

The lumbar and psoas abscess generally proceed from caries in the lumbar vertebræ, and their contents are such as are found in other scrophulous abscesses, being either sero-purulent, or serous, with masses of coagulable lymph floating within the fluid. Very slight causes will sometimes give rise to these diseases in scrophulous children, as, falls, over-exertion in walking or running, or exposure of the loins to cold.

Treatment.—Simple chronic abscesses should always be opened with a large abscess lancet, except when in sight, in which latter case the opening should be made in the course of the wrinkle of the integument, with a common bleeding lancet. The proper period for the operation is when redness commences, and the prominent part of the abscess feels attenuated. After the matter has been discharged, a little lint must be interposed between the sides of the orifice, and a common poultice placed over the seat of the swelling. These abscesses soon heal. The sides of the sac form granulations, which, inosculating on all sides, coalesce, and thus fill up the cavity, and restore the appearance of the part. When the digestive organs are disordered, some aperient medicine should be prescribed, and frequently repeated, until the general health has been restored.

Lumbar and psoas abscesses require a different proceeding. A valvular opening, according to the plan introduced by Mr. Abernethy, must be made, by drawing the integuments tightly upwards, and then insinuating the lancet directly into the sac. By this contrivance, an oblique or valvular opening will be effected, which will exclude the air, and obviate irritative fever. Some of these abscesses are found to contain kind, purulent matter, and to disappear entirely after the operation. In general, however, this fortunate result is not to be expected. Hence, we are usually required to repeat the operation from time to time, and to endeavour, by discovering the source of the disease, to obviate a recurrence of the secretion by appropriate general or local treatment. When caries of the bodies of the lumbar vertebræ exists, all our attempts to effect a cure will be vain. Repeated blistering over the supposed seat of the disease, or, seton, or caustic, may be

tried; and, should these fail, the only resource left will consist in change of air. In all these cases, as soon as the fluid has been withdrawn, the flap formed by the incision should be carefully closed, and its re-union promoted by strips of adhesive plaster, secured by a compress of linen, and a roller.

DISEASES OF THE EAR.

OTORRHŒA, OR DISCHARGE FROM THE EAR.

Scrophulous children are subject to a chronic and offensive discharge of purulent matter from the mucous membrane of the external auditory meatus. A degree of deafness accompanies this disease. On inspecting the passage, with the assistance of a pair of small forceps, which should be expanded after they are introduced, we shall discover nothing more than an inflamed state of the membrane, which is subject to great variation, according to the state of the digestive organs.

Treatment.—An injection, composed of ten grains of alum, or four of sulphate of zinc, to an ounce of water, should be used with a glass-syringe twice a-day, and every second morning the patient should take five grains of carbonate of magnesia, and the same quantity of rhubarb and sesquicarbonate of soda.

ABSCESS IN THE MEATUS AUDITORIUS EXTERNUS.

This commences with severe pain and swelling in some part of the auditory passage, preceded by shivering, and accompanied by a slight degree of fever. The phlegmonous inflammation which follows, is sometimes attended with simple erysipelas, commencing on the external ear, and spreading to the face or occiput. At the end of a few days, the abscess, which obstructs the passage, producing temporary deafness, bursts, and affords the child immediate relief.

Treatment.—When the surgeon is consulted immediately after the shivering fit, and as soon as the pain within the passage has commenced, a few leeches applied to the front of, or just below the ear, and the exhibition of a dose of salts and senna will prevent suppuration; and, if erysipelas should be present, citrate of potash should be taken once in four hours, and the swollen integument bathed with tepid water, or covered with an evaporating poultice,

the bowels being duly acted upon by aperient medicine every morning.

CARIES OF THE OSSICULA AUDITUS.

Scarlet fever, in its severe form, is one of the most common causes of this disease. The bones which are principally affected, are the malleus, stapes, and incus, which, together with the tympanum, are frequently so entirely destroyed, that a free communication between the meatus and the eustachian tube is the result. Hence, deafness, more or less complete, succeeds. After a long period, during which the caries and exfoliation of the bones are proceeding, a discharge of thin, offensive matter continues, more or less, until this process is concluded.

Treatment.—Warm water, and, afterwards, the following lotion, should be injected every morning into the auditory passage. The process of exfoliation occupies several years, during the whole of which time, till the discharge has ceased, this daily attention will be required to render the patient comfortable. After the injection has been used, a little lint should be introduced at the opening:—

R—Tinct. Myr. . . . . ℥j.
Liq. Calcis . . . . . ℥v.—M. f. lotio.

POLYPUS OF THE EAR.

After exfoliation of the carious bones of the ear has taken place, one or more polypous tumours generally remain, which, by the irritation occasioned by their pressure against the membrane of the meatus, produce chronic inflammation and purulent discharge. This disease continues in many cases from childhood to advanced age, unless some means are adopted to remove it.

Treatment.—The polypi, which have narrow necks, may be removed by a small pair of forceps. Those whose bases are broad, may be carefully dissected away by a small, narrow knife. To prevent a return of the disease, a strong solution of lunar caustic, or the nitrate of silver in a solid form, should be applied to the rudiment of the polype; but even this precaution will not always succeed.

DEAFNESS.

Loss of hearing in children most commonly results from the destruction of the ossicula auditus and the tympanum, from enlargement of the tonsils, and obstruction in the eustachian tube,

from ulceration or inspissated wax, or from polypous tumours or contraction in the passage. This infirmity is sometimes congenital, when it arises from some defect in, or the absence of, the portio mollis of the seventh or true auditory nerve.

Treatment.—Deafness, arising from the first and last causes, is irremediable. When it proceeds from enlarged tonsils, and consequent obstruction in the eustachian tubes, it will invariably disappear after puberty, provided the enlargement of the tonsils should subside. This desirable result may be expedited by the internal use of iodide of potash, given in the dose of one or two grains twice a-day, dissolved in half a wine-glassful of water. A practice, recommended by Sir A. P. Cooper, formerly prevailed, of puncturing the tympanum in those cases which were found to be connected with obstruction in the eustachian tube. This operation is, however, now universally thrown aside, in consequence of its failure. Mr. Curtis has succeeded in treating this obstruction by the repeated administration of emetics.* The same author has also met with a case of hardened wax, obstructing the external meatus, in a child three years old, which was removed by a syringe. Ulcerations, which are usually produced by herpetic eruptions, extending to the mucous membrane of the passage from the outer ear, will require the use of an injection, composed of three or four grains of sulphate of zinc, or of nitrate of silver, and an ounce of water, and the internal exhibition of two grains of pil. hyd. chloridi comp. every night. When contraction, proceeding from a thickening of the mucous membrane, produced by repeated attacks of intertrigo or psoriasis, is discovered, a little mercurial ointment should be introduced upon a small portion of soft bougie, and retained in the passage about half-an-hour, or an hour, every day, or every second day, the diameter of the bougie being gradually increased until that of the meatus is restored to its natural dimension.

When the sense of hearing is beginning to return, Mr. Curtis advises the constant use of acoustic tubes, which, according to a new plan, have two apertures, fitting the mouth and ear.†

DISEASES OF THE JOINTS.

Before Sir Benjamin Brodie directed his attention to the pathology of the joints, this subject was involved in considerable obscu-

* "Treatise on Diseases of the Ears." † Loco Citato.

rity, and the treatment conducted upon empirical principles. The "Pathological and Surgical Observations on the Diseases of the Joints," published by this eminent surgeon about twenty years ago, have conferred an important benefit on society, and enabled the profession to discriminate the diseases of the articulations with the greatest accuracy. As the present work is intended to comprehend the principal diseases to which children are liable, I have considered it proper to introduce the affections of the joints; but at the same time may observe, that if the reader wishes to pursue this useful and interesting part of surgery, I should not do justice to the excellent production, to which I have alluded, were I not to refer him to it for his attentive perusal.

INFLAMMATION OF THE SYNOVIAL MEMBRANES.

This disease is by no means frequent with children, unless in connexion with rheumatism. The knee-joint is its most common seat. It commences with pain, which is generally felt at one point, and is succeeded in a few days by swelling. This swelling in the knee is observable beneath the extensor muscles and on each side the patella, disfiguring the joint, and, on being examined with both hands, imparting a sensation of a distinct fluctuation. In some cases there is present external redness. The tumefaction of the joint will be found to proceed from an increased secretion of synovia. The knee is more or less in a semiflexed position after effusion has commenced, but this is most obvious during acute inflammation.

Children, especially those who are scrophulous, are very subject to capsular inflammation in the hip-joint. In this deep-seated part fluctuation is not perceptible, and therefore the first manifestation of the disease is found in the cellular membrane, which becomes amazingly tumefied, elevating the glutæi muscles and superincumbent integument. The swelling thus produced in the parts external to the joint affords a characteristic contrast with the opposite hip. In the advanced stage of the disease this tumefaction disappears; the cellular and adipose membrane and muscles having undergone absorption to such an extent as to produce a flattened appearance. The patient frequently complains of pain in the knee in the early stage of this hip disease. This arises from the morbid sensibility of the crural nerve, which, passing over the front of the inflamed joint beneath Poupart's ligament, distributes some terminating filaments about the knee. Every surgeon ought to be aware of this sympathetic or neuralgic affection of the knee, and when he discovers no organic disease in the joint, should

examine the hip on the same side, where he will find a manifest enlargement compared with the opposite joint, and a comparative elongation of the extremity. Before ulceration of the cartilages occurs, the patient can bear his weight on the limb without inconvenience; and this should be noticed as a criterion that the disease has commenced in the synovial membrane, and not in the articular cartilages.

When acute inflammation attacks the synovial membrane either of the hip or knee, symptomatic fever accompanies it, and continues several days.

The effusion, which is the result of synovial inflammation, sometimes disappears by absorption, and the joint recovers its shape and motion; at other times more or less thickening and induration of the capsule remain, followed by stiffness and articular deformity, and sometimes ulcerations of the cartilages.

The ordinary cause of this disease is cold, to which the knee-joint is peculiarly exposed by its want of muscular covering. It is, however, sometimes produced in the hip as well as the knee, by over-exertion of the capsule and ligament, as in ascending a steep hill, of which I have met with several examples in boys.

Treatment.—In the subacute form of synovial inflammation local remedies are chiefly required. Of these, leeching and cupping are the principal. Cupping is by far the more effectual; and, therefore, when the patient is of sufficient age and the disease severe, this should be recommended without delay. The operator must observe that little or no flow of blood will take place from the knee, unless he uses the precaution of elevating one side of the cupping-glass, to admit the current of the blood in the course of the arterial circulation, which, on account of the proximity of the integument to the bones, would be completely obstructed by the pressure from the circumference of the glass. After this abstraction of blood, a lotion, consisting of one part of rectified spirit and three of water, must be kept constantly over the knee by means of linen rag; and an evaporating poultice must be laid over the joint every night. This antiphlogistic treatment must be continued until all pain has subsided, when, if any swelling remains, the external parts must be blistered and afterwards rubbed with some stimulating embrocation, as, lin. camphoræ comp., or a liniment composed of camphor-liniment two parts, and oil of turpentine and compound camphor-liniment each one part. Sir B. Brodie speaks in high terms of a liniment consisting of olive oil three parts, and sulphuric acid one part; the oil being increased when the skin is very tender. Should stiffness of the joint still remain after the use of these applications, friction with the hand

dusted with fine flour, and continued several hours, will be found useful. During the continuance of the antiphlogistic proceedings the affected joint should be kept at perfect rest; but as soon as the stimulating treatment is commenced passive exercise should be practised and gradually increased.

With respect to the *hip-joint*, as soon as the inflammation in the synovial membrane has been subdued, the patient should no longer be confined to the horizontal position. The beneficial plan of treatment introduced by Mr. Liston, who has distinguished himself by his valuable practical writings on surgery, should be adopted. This consists of the adaptation of a strong leather splint to the thigh, extending from the pelvis to the knee. This splint, having been previously softened by warm water, must be bound closely to the thigh and external hip by means of a long roller. In the treatment of my own patients, I have made what I consider a great improvement, which consists of two pieces of worsted webbing, such as girths are made of, and leather straps fastened to the top of the splint, which, being fixed across the pelvis by means of a buckle, retain the splint so effectually that the patient is enabled to walk with comfort. The splint, with this appendage, is one of the greatest improvements in modern surgery, as it enables the patient to enjoy moderate exercise in the open air, and greatly expedites and facilitates the cure.

In the acute form of synovial inflammation much benefit will be derived from medical treatment. The most active and constitutional remedy will be found to consist in a draught composed of five grains of carbonate and half a drachm of sulphate of magnesia, with ten minims of tincture of colchicum, repeated once in four hours.

SPECIFIC INFLAMMATION OF THE SYNOVIAL MEMBRANES.

"In the origin of this disease there is a slight degree of stiffness and tumefaction, without pain, and producing only the most trifling inconvenience. These symptoms gradually increase. In the greater number of cases, the joint at last scarcely admits of the smallest motion, but in a few cases it always retains a certain degree of mobility. The form of the swelling bears some resemblance to that in cases of inflammation of the synovial membrane, but it is less regular. The swelling is soft and elastic, and gives to the hand the sensation as if it contained fluid. If only one hand be employed in making the examination, the deception may be complete, and the most experienced surgeon may be led to suppose that there is fluid in the joint when there is

none; but if both hands be employed, one on each side, the absence of fluid is distinguished by the want of fluctuation.

"The patient experiences little or no pain until abscesses begin to form, and the cartilages ulcerate; and even then the pain is, in many instances, not so severe, as when the ulceration of the cartilages occurs as a primary disease; and the abscesses heal more readily, and discharge a smaller quantity of pus than in cases of this last description. At this period the patient becomes affected with hectic fever, loses his flesh, and gradually sinks, unless the limb be removed by an operation."*

The slow advance of the swelling, and stiffness of the joint, elasticity of the tumour, and its want of fluctuation and the presence of hectic fever, distinguish this from simple, synovial inflammation.

The cause of this disease is constitutional, and the appearances found, on examination of the joint, consist of a yellow or brown coloured gelatinous, specific deposit, adhering generally or partially to the synovial membrane, ulceration, or destruction of the cartilages and caries of the bones.

Treatment.—The fatal tendency of this, like all other specific affections, as, tubercles, cancer, and fungoid diseases, renders all means hitherto discovered totally unavailing. Its slow progress, however, will admit of some benefit and comfort being conferred by the occasional use of fomentations and poultices: but after hectic fever has established itself, it will be the duty of the surgeon to propose amputation, to save the life of the patient.

ULCERATION OF THE CARTILAGES OF THE JOINTS.

This is by no means so frequent a disease in children, as inflammation in the synovial membranes. It begins with occasional pain in the joint. The hip-joint is the most subject to it. After a while, the uneasiness is found to increase regularly every night, the child being frequently disturbed by sudden, convulsive movements in the muscles of the leg and thigh, accompanied with severe pain. As in synovial inflammation, the principal suffering is sometimes experienced in the knee, and, in some cases, it extends to the leg and foot. The least motion of the joint, or pressure on the cartilages, increases the suffering of the patient. Hence, when the child is placed horizontally, and his leg is pressed upwards, or moved in the most gentle manner, he feels severe pain, which occasions him to cry for a considerable time, and he is so appre-

* "Brodie on Diseases of the Joints," pp. 103, 104.

hensive of a return of his sufferings, that he moves his hands in all directions, to prevent any future examination. This morbid sensibility of the joint, occurring so early, constitutes a valuable distinction between this disease and simple capsular inflammation, in which latter case considerable rotation and pressure on the cartilages may be exercised, without exciting any painful sensation. On pressing the joint, either in front or at the back part, much tenderness is discoverable, and we sometimes find inflammation and suppuration in the inguinal glands. As the disease progresses, the posterior part of the hip loses its natural prominence, and becomes flat, and the glutæi muscles feel soft, and appear expanded in breadth. In short, the external parts appear wider and more flat on the diseased than on the other side, in consequence of the morbid condition of the acetabulum, and the dislocation of the head of the former. The habit the child acquires of resting his weight on the sound limb, and merely using the other to produce an equipoise when erect, and the constant decumbiture at all other times on the sound side, together with the curvature, which we always find the patient to assume to procure the most easy position of the afflicted limb, gradually produce distortion of the lumbar vertebræ, and a corresponding disproportion in the height of the two shoulders. In the last stage of the disease, when the head of the thigh bone has been destroyed, and has escaped from the socket, the limb becomes much shortened, and the toe turned outwards, or inverted. At this period, abscess is generally met with, denoted by an increase of the pain, and the altered position of the trunk, which is bent forward by the patient for the purpose of relieving pressure, and the effects of suppurative inflammation. Copious discharge of matter from the abscess, and hectic fever, threaten to exhaust the patient. Nevertheless, children rarely die from this disease, although they often continue many months lingering in a state of uncertainty, until the ulcerated bones are united by anchylosis. Some are so fortunate as to escape this destruction of the joint, and to recover, with considerable and useful motion of the limb.

Ulceration in the cartilages of the *knee-joint* commences by degrees, as in the joint of the hip. The first symptom is slight pain, which is increased at night by the warmth of the bed, and disturbs the patient from his sleep. He seems afraid of bearing his weight on the joint, and avoids every movement of it, keeping the limb in a bent position. At first the joint is free from swelling, which supervenes at the end of some weeks or months. In the meantime, the pain increases, and, when we examine the tumefaction, we discover that it differs from the preceding diseases of this

joint, by presenting no fluctuation nor elasticity. It is found to consist of inflammation and deposit of lymph in the external cellular membrane. After ulceration of the cartilages has proceeded to a certain extent, the knee becomes dislocated by the action of the flexor muscles, which draw the head of the tibia into the ham, leaving the femoral condyles projecting in front, and a permanent deformity of the limb. In the progress of the ulceration, inflammation may be extended to the synovial membrane, and followed by effusion, or pus may be deposited, and distend and penetrate the capsule.

Other joints are subject to articular ulceration. Those of the fingers are the most commonly found affected in children. These cases are tedious, but they generally end in anchylosis. In these small joints the process of ulceration is readily discoverable by the pain felt on the slightest motion at the commencement, and by a grating sound perceptible from the most gentle rotation of the cartilages after the disease has made some progress.

Treatment.—As we have no specific for this disease, its treatment must be conducted upon general principles. A febrile state will require the exhibition of saline and antimonial medicines, and severe pain must be relieved by some preparation of opium, care being taken to preserve the bowels in an open condition.

The diseased joint must be kept in a state of absolute rest as much as possible, by confining the patient to a sofa or bed, and by the constant use of a light, firm splint. For this purpose, the leather splint before described for the treatment of inflammation in the synovial membrane of the hip-joint, will be found the best. In some instances I have found the repeated application of leeches and the warm bath exceedingly serviceable at the commencement of the disease, which, with the assistance of the leather splint, have speedily removed all the symptoms. Blisters dressed with savine-cerate, will also be found beneficial. When caustic is required, the hollow space behind the larger trochanter will be found the most convenient; and when the splint is formed, a round or oval opening should be made in it, opposite this part, to be in readiness for the caustic application. Instead of introducing peas or beans into the ulcers produced by the caustic, Sir Benjamin Brodie recommends the surface to be rubbed over with caustic potash twice or three times a week; believing that the renewed excitement thus produced, is more beneficial than the mere discharge of matter. When any marked increase of pain, indicating renewed inflammation of the ulcerated surfaces within the joint, is present, leeches should be repeatedly applied, and afterwards a blister over the front of the joint; and blisters may

also be laid upon the thigh or knee, in case no relief is obtained by the former means; or a seton may be introduced through the integuments over the anterior part of the joint by means of a curved seton-needle, to the extent of an inch and half, or two inches.*

When the articular cartilages of the knee are the seat of ulceration, the same general principles must regulate our treatment. The limb must be preserved in a state of rest, and the caustic must be applied on each side of the patella. Those joints which are surrounded by tendons must only be subjected to repeated blistering, on account of the danger of inflicting irreparable injury by the use of any cautery. Local irritation from blisters and caustics long continued, produces in some patients, febrile excitement, which will require their temporary discontinuance; but proper discrimination must be exercised by the surgeon, in deciding between the constitutional disturbance proceeding from this cause, and from extensive suppuration within the joint.

When the matter has made its way through the capsule, and escaped into the cellular membrane between the muscles, which it is apt to do from the hip-joint in various directions, the best practice is to open the abscess with an abscess-lancet, and to apply a warm poultice, or flannel moistened with warm water. Whether the puncture heals afterwards or not, is of no consequence; and therefore any attempts to evacuate the sac by forcible compression will end in disappointment.

I have only met with one case in which suppuration connected with ulceration of the cartilages of the hip-joint proved fatal. In that case pulmonary phthysis was the immediate cause of death.

SCROPHULOUS DISEASE IN THE JOINTS.

This commences with inflammation in the cancellous structure of the bones in scrophulous patients, which terminates in the deposit of scrophulous or tubercular matter. When this occurs in the vicinity of a joint, its cartilages ulcerate, and all the symptoms and consequences described in the last chapter are observed to follow. The alteration produced in the bones by this disease consists in an increase in their vascularity, and a remarkable deficiency of phosphate of lime, which constitutes their natural firmness. Hence they become so soft that we can cut them with a knife, and tubercular matter resembling soft

* "Sir B. Brodie," loco citat., p. 187.

cheese may be noticed throughout their structure, as far as the disease extends. After this specific affection has proceeded to the joints, ulcerations will be found commencing in patches in the cartilages on their adherent surfaces. While this process is advancing, inflammation takes place in the cellular membrane external to the joint and the bone, producing serous or albuminous effusion, and frequently small, superficial scrophulous abscesses. In more protracted stages of the disease, serous infiltration, producing œdema, succeeds to this elastic and firmer tumefaction. At length, suppuration commencing in the joint, the matter penetrates the capsule, and makes its way, descending by various sinuous and circuitous passages, to the surface of the limb. So destructive of the texture of the bones is this disease, that in some cases it is found to destroy all connection with the cartilage, which is found loose within the joint. After the increased vascularity of the diseased bone has existed a certain time, and fulfilled its destined office of depositing specific matter within the cellular structure of the bone, the vessels diminish in size and in number, and certain portions of the bone, losing their accustomed nutrition, die and exfoliate in fragments. The remarkable hypertrophy of the extremity, occasioned by the effusion into the cellular membrane, particularly when connected, as it generally is, with soft, scrophulous tumours and abscesses on the surface, is a prominent character of this disease, and distinguishes it from all other articular disorganizations. Another characteristic mark consists in the appearance of the fluid evacuated from the articular abscess, which resembles whey, with portions of tubercular or curd-like matter. The duration of the disease varies, being dependant on the number of abscesses which successively form, and the constitution of the patient. In most cases, however, the patient preserves his lymphatic plethora, and rarely experiences any considerable emaciation. One of my patients, a young gentleman, who was afflicted with this disease in the hip-joint, which ended in anchylosis, scarcely experienced any emaciation, although he was confined two years to a mattress, during the whole of which time he was not moved more than a quarter of an inch from the position in which he was first placed.

In this scrophulous affection the pain is not considerable, except from the formation of the successive abscesses, and it is often referred to the knee as in other species of hip-disease. The enlargement of the hip and the apparent elongation of the leg in the early period of the attack occur as in the other affections of the joint, and the same shortening and displacement follow. The

length of time, during which the tortuous sinuses continue to discharge and annoy the patient, even after he has recovered the motion of the joint, and is able to walk considerable distances, is almost incredible. I have now a young farmer under my care, who has a sinus of this kind on the top of the thigh, left by scrophulous disease in the hip more than ten years; notwithstanding which he is able to walk without inconvenience, and has the usual plethoric appearance of an adult scrophulous person.

Treatment.—As the inflammation in this species is of a specific character, bleeding will be found of little use. Our principal object must be, by affording to the joint a state of absolute rest, to prevent, as far as possible, extension of the disease from the cancellous to the cartilaginous structure. When the disease is in the hip or knee, continued decumbiture on a thick hair-mattress, placed upon a level surface, should be enforced. One of the best contrivances for this purpose is a high bedstead, or couch, with a smooth, boarded floor. Its height should be about three feet, which will enable the surgeon or attendants most conveniently to remove and apply dressings, and render any other assistance the patient may require; and it should have easy castors, so that it may be gently moved to different parts of the room, to vary the scene or the light, and to enable him to enjoy such amusements as may consume his time, and not interfere with the cure. The leather splint will also, in many cases, be a great comfort to the patient; especially when he is allowed to take exercise, after the swelling and tendency to suppuration have subsided. It is not advisable for the surgeon, at this period, to make frequent examinations with the probe, as slight inflammation thus produced may give rise to fresh abscesses and prolong recovery; and when rough spiculæ of bone are perceptible within the sinuses, it is better to leave their exit to the safe operation of nature than to risk inflammation by premature attempts to extract them. In many cases, indeed, the bone, denuded of its periosteum, produces healthy granulations, which by their pressure promote absorption of the thinner exfoliations, and afterwards construct a new periosteal membrane.

During the treatment of this disease much assistance will be afforded by pure air, and plain, nourishing, unstimulating diet. Hence a residence in the country, or at the sea side, is desirable. For the relief of hectic perspiration the compound infusion of roses will be found the most grateful medicine, which may be taken almost ad libitum. The periodicity of this fever may tempt the surgeon to prescribe in active doses some preparation of quina, or

the arsenite of potash. Such practice, however it may appear to diminish the force of the circulation on the periphery of the body, will inevitably increase the tendency to internal suppuration or tubercular deposit. The same objection does not apply to light preparations of iron, such as pil. ferri. comp., or the compound mixture of that mineral; and it must not be forgotten, that however beneficial mercury may be in small doses rapidly introduced at the very commencement of the disease, it will in every stage afterwards be found decidedly injurious: the only curative principle on which this medicine can ever operate in tubercular diseases being that of arresting the subacute inflammatory action of the capillary arteries, over which bleeding has no control, before the specific deposit has commenced.

CARIES OF THE VERTEBRÆ.

This may happen in the cancellous structure of the bodies of the vertebræ either posteriorly or laterally, or in the articulating surfaces, from the same kind of ulceration to which the cartilages in other joints are subject. The symptoms of these diseases are so similar that they cannot be discriminated in their primary stage. In general the complaint first made is that of pain in some part of the vertebral column. This may be accompanied with, but is usually followed by, a partial paralysis in the lower extremities and in the bladder. This paralytic affection is first noticed by the patient tripping as he walks along, and by frequent irregular involuntary motions in the muscles of the extremities, the chest, or abdomen. In the course of five or six months the curvature of the spine is observable, and about the same time, or soon afterwards, external swelling, denoting the formation of matter, is found near the seat of the disease, or presenting itself in the loins, or beneath Poupart's ligament, or through the inguinal canal. In some cases the matter has been found within the vertebral canal, pervading it through its whole length.* When the caries originates in or extends to the spongy bodies of the vertebræ, the projection is generally angular; but the curvature from this cause is sometimes lateral.

Very slight accidents will occasion this disease in scrophulous children; and I am acquainted with one family in which the disposition to spinal curvature appears to be hereditary. A fall on the back, or a slight strain of the ligaments, or decumbiture on

* Sir B. Brodie.

one side from pulmonary phthysis, or any other long confinement, are sufficient in some children to produce it.

Treatment.—At the onset of the disease leeches should be repeatedly applied on each side of the spine opposite the seat of the pain, until this symptom and the tenderness have been relieved. Blisters should afterwards be prescribed, and the patient should be confined to the horizontal position on a hair mattress, placed upon a bedstead, or frame made on purpose, with a boarded floor instead of sacking. He should lie on the back as much as he can, and when turning on his side care should be taken that his spine is kept straight and his head as little elevated as possible. When this treatment is adopted sufficiently early, caries and suppuration, and subsequent deformity, may almost always be prevented. When the surgeon is not consulted until distortion has taken place, in addition to the confinement to the horizontal position, he should recommend the application of hydrate of potash for the space of three inches on each side the spine at the affected part; and the necessary irritation of the ulcerated surfaces must be afterwards kept up by repeated friction of the hydrate. When lumbar or dorsal abscess points externally, a valvular opening should be made, and after the matter has been evacuated, the aperture should be closed, and re-union promoted by lint, adhesive plaster, and bandage, as directed for the relief of psoas abscess. Should the matter collect again, it may be repeatedly removed by the same proceeding, until anchylosis of the carious vertebræ has been completed, when its formation will spontaneously cease.

LATERAL CURVATURE OF THE SPINE.

The lateral distortion of the vertebral column appearing in females from the age of nine to fourteen years is the result of an erroneous system of education, which consists in too exclusive attention being paid to mental cultivation at the expense of the physical growth and strength of the pupil. A constrained position being enforced until the muscles of the spine are fatigued, the child is induced to seek relief by leaning to one side; and this habit at length becomes so confirmed, and the ligaments connecting the vertebræ are so much extended on the convexity of the spinal curvature thus artificially produced, that at length they lose their power of recovering the natural perpendicularity of the vertebral column. The back-boards formerly in fashion, and all other contrivances intended to prevent deformity, interfere with the free motions of the muscles, which are so admirably designed by nature to antagonize and to relieve each other by a succession of move-

ments which, while they are accompanied by agreeable sensations, insure the growth of the spinal column in the natural rectilinear direction. The departure from the straight line is generally unnoticed until the curvature of the spine has produced a corresponding deformity in the sternum, a preternatural elevation of one shoulder, and a want of correspondence in the position and external appearance of the scapulæ. The pelvis is seldom if ever distorted, except from rickets. When the disease has proceeded to this extent, we shall commonly find the spine presenting a double curvature, resembling the letter S. The deformity thus produced is not the only consequence of this erratic evolution of the spine. The dimensions of the chest are diminished, the process of respiration impeded, and the decarbonization or depuration of the blood in its circulation through the lungs interrupted. The compression which these organs undergo prevents their natural vegetation and full development, and predisposes them to inflammatory and tubercular diseases; and the disadvantage under which the muscles of the back labour from the crooked shape of the spine disables the patient from enjoying proper exercise on foot or horseback without experiencing premature fatigue. Fortunately nature has set some bounds to the duration of this infirmity, for we find it seldom proceeding beyond the age of puberty, when the bones become consolidated and the muscles acquire their full vigour.

Treatment.—Numerous mechanical contrivances have been invented for the purpose of extending the spine and forcibly removing its curvature. These are now fortunately condemned by all intelligent surgeons, and universally discontinued on account of the permanent mischief they produced. These were succeeded by a system of uninterrupted decumbiture on a level surface, which was carried to such an extent as to be found not only injurious to the general health, but to produce a deficiency of earthy matter in the bones. This latter result might have been anticipated, had those who pursued this plan reflected that nature, who forms nothing superfluous, would conclude that it would be useless to waste the vital powers in secreting phosphate of lime, while the patient was restrained from the natural use of his muscles of progression. To this succeeded the more rational treatment of invigorating the spinal column by exciting into regular and proper action the muscles by which the different vertebræ move on each other. The late Mr. Shaw invented an ingenious machine upon this principle, by means of which the muscles of the spine were kept in constant action in the right direction. It consisted of a frame, supporting a mattress, on which the patient lay, and which, by means of a screw, might be raised to any elevation, and it was

divided into compartments, which, moving on rollers, had a constant tendency to extend the spine with an uninterrupted and gentle force proportioned to the angle at which it was raised. This machine has another advantage over the ordinary practice of lying on a level surface, namely, that it enables the pupil to employ the time required for its use by reading without fatigue. For a more particular description and plan of the machine, I must refer the reader to Mr. Shaw's book and to the excellent plates which illustrate it.* Mr. Shaw has also described various kinds of exercise adapted for promoting the regular action of the muscles connected with the spine, of which one of the most useful and most readily obtained is a cord passed over a pulley placed above the patient with a weight at the opposite end, which being properly adjusted to her strength, and moved upwards and downwards, affords the muscles agreeable employment, and preserves the vertebræ from falling into any deviation from their proper direction. These exercises and mechanical aids must, however, never be adopted without medical or surgical examination and advice; as any distortion proceeding from caries or inflammation of any part of the vertebræ, would be greatly aggravated by the motion of the diseased parts. The mode by which incipient lateral curvature may be detected, is the following:—The patient standing firmly and as erect as she can on both feet, the surgeon should rub the skin covering the spinous processes smartly, and with some force and pressure. In a short time he will perceive a red line, formed by the projection of the spinous processes. While this red mark remains, if he will suspend a plumb line opposite the centre of the back of the head, he will soon ascertain the existence and direction of the spinal curvature, and be able accordingly to direct the treatment to be pursued. In slight cases, which may be entirely removed by early attention, the patient should lie down about an hour every afternoon, to relieve the spine from the fatigue produced by any occupation in the morning; and every night the following embrocation should be applied to the distorted portion of the spine:—

℞—Lin. Camph. Comp.
Lin. Sapon. C. aa ℥j.—M. fiant embrocatio.

It will be found very advantageous to the patient to remove all pillows intended to elevate the head, which should be placed in bed on a level with the rest of the body. The common prac-

* "On the Nature and Treatment of Distortions," by John Shaw. Longman and Co., 1823.

tice of raising the head above the level of the chest has a direct tendency to bend the spine and increase the evil intended to be remedied.

When girls are permitted to enjoy regular exercise and amusements in the open air, and are not restrained by tight clothing, nor confined too long to any mental occupation, before their physical development has been completed, they entirely escape these personal deformities, which neither attention to dress, nor fashion, however they may conceal them, can ever afterwards succeed in removing. The vices of fashionable education, as it exists in crowded and wealthy cities, have not only a pernicious effect upon the growth of the fibrous and bony structures, but seriously interfere with, and delay, that important climacteric, which in healthy females is associated with the rapid development of one of the most important functions in the animal economy. The excellent remarks of Dr. Ashwell, in his work "On the Diseases of Women," are so applicable to this subject, that I am inclined to extract them:—

"Chlorosis is a rare affection in rural districts, where female youth are much in the open air, where it is not unfashionable to walk and run, and where it is not considered a gross violation of good breeding to sport and play with activity and vigour. Such girls acquire energy of system, each organ is developed, the blood is abundant and of excellent quality, nutrition is healthy, and puberty is attained without difficulty." *

In some cases the lateral curvature is produced rapidly during recovery from scarlatina or some other exanthema. I recollect a remarkable distortion thus produced in a few weeks in a girl, recovering from scarlet fever, in consequence of the fatigue she felt twice daily on ascending a steep hill in the way to a day school, before her physical strength had returned. So, also, a state of anæmia will frequently predispose to this infirmity, by depriving the blood of its due proportion of hæmatosine and fibrine. In both these states, abstinence from long walks and all bodily fatigue must be insisted upon, and appropriate remedies administered. The scarlatinous anæmia must be treated by the administration of a few grains of chloride of mercury, every third night, followed the next morning by a dose of salts and senna, and by half a grain of sulphate of quina, three times on each of the intermediate days. The anæmia arising from delayed or interrupted menstruation, may be removed by a continued employment of oxyde of iron, conjoined with rhubarb or aloë, when the bowels are constipated.

* "A Practical Treatise on the Diseases peculiar to Women." 1844, pp. 23, 24.

The dress of all girls, until they attain the age of fourteen, ought to be so loose as to prevent any restraint in their movements. Their time should be judiciously divided between study and amusement; and they should never be confined to any one employment, as, writing, reading, drawing, music, or needle-work, more than one hour at a time, without some intervening relaxation. When the general health is attended to, a proper time allowed for athletic exercises, and the studies and pursuits judiciously varied and adapted to the condition, faculty, and appetite of the individual, nature will always conduct the structure of the spine as well as of any parts of the frame without requiring any artificial interference.

ACUTE RHEUMATISM.

Children are not so subject to this disease as adults, which is probably owing to their greater predisposition to bronchial and intestinal affections, and their comparative immunity from exposure to cold. It generally attacks the adherent surface of the synovial membranes, and when severe, their free surfaces also become its seat. In the former, which is its ordinary form, a sudden effusion of sero-albumen occurs in the cellular membrane external to the joint, accompanied with severe pain and extensive swelling. The swelling is pale-coloured and elastic, but not so tender as that produced by gout. Symptomatic fever is present, and the urine is high-coloured, and deposits an amorphous sediment of a light brown colour. The inflammation is apt to migrate to other fibrous structures, especially the articular capsules or the pericardium, deserting the joints originally invaded. This disposition, which acute rheumatism manifests, to attack the pericardium, renders it in children a very serious disease, requiring constant attention to secure its safe and speedy removal. The duration of rheumatic inflammation is uncertain; the disease sometimes disappearing at the end of a few days or a week, and at others, under improper treatment, continuing several weeks or months.

The cause of this disease is cold, which either acts directly on the fibrous structure surrounding the larger articulations, or by transition from the mucous and fibrous coats of the intestines. This affinity between dysentery and rheumatism, points out the most natural, safe, and expeditious current by which we can direct or divert its migrations. As the inflammation and accompanying vascular excitement subside, the urine recovers its natural colour, and throws down a copious deposit of turbid mucus; and the natural secretions from the mucous covering of the body are

restored, manifesting their return by a peculiar acid smell, arising from an excess of uric acid.

The external inflammation of the synovial membranes, as I have before observed, occasionally transfers itself to their free or internal surface, from which is secreted sometimes an immense excess of synovial fluid, constituting what is called inflammation of the articular capsule. This form of the disease is more painful and obstinate than the original malady, and commonly requires some surgical assistance for its removal; for it is dependant in this transition-state on vascular arborization of a chronic character, which is not affected by internal remedies. (See "Inflammation of Synovial Membranes.")

Treatment.—The following treatment, which acts upon the principle of directing the circulation from the affected joint to the mucous surface of the intestines, in imitation of the natural mutation of dysentery into rheumatism, in the course of a few days will be found to conduct the disease to a safe termination :—

R—Magnesiæ Sulphatis	℥ ss.
Magnesiæ Carbon.	gr. v.
Tinct. Colchic.	M. xv.
Aquæ Menthæ Piper.	℥ ss.

M. ft. haustus quartis horis sumendus.

The only local remedy required will be cabbage leaves, and when they cannot be procured, an evaporating poultice. Dr. Williams recommends a continuance of colchicum for the space of ten days after the external symptoms have disappeared, with the view of completely eradicating the disease.*

Case.—An infant, eighteen months old, was attacked with acute rheumatism on the hip, produced by lying on the damp ground. After the disease had existed one week in this part, it suddenly descended to the knee, where it extended itself, producing an immense swelling and unremitting pain. Being consulted, as soon as the knee became diseased, I prescribed the sulphate and carbonate of magnesia and cabbage leaves, and on the third day, the child was perfectly restored.

When intra-articular effusion occurs, it is sometimes removed spontaneously by the migration of rheumatic inflammation to some distant joint or other fibrous structure. In general, however, some local remedies will be required, as leeches and evaporating lotions, assisted by confinement to bed; the disease being in fact, of the same character as synovial inflammation induced by any other cause. (See "Inflammation of the Synovial Membranes.")

* "London Med. Gazette," No. 943, p. 1483.

GOUT.

This, like the preceding, is a disease of the fibrous structure; but it differs from rheumatism by selecting the smaller articulations for its attack, and by a dark, pink, efflorescence on the surface. The seat of articular gout is the ligamentous or white fibre connecting the affected joint, and the external redness indicates the locality of the deeper seated inflammation. This characteristic discoloration is a little elevated, limited in extent, and so exquisitely tender to the touch, that the least pressure even from the superincumbent sheet is sufficient to excite severe pain, which is increased by the excited and irritable state of the patient. At the beginning of the attack, a febrile state of the system prevails, and the urine is deficient and high coloured, and deposits a pink, amorphous sediment, which adheres to the vessel in which it is deposited. The patient complains of constant pain, accompanied with loss of sleep and appetite. The duration of the first attack is short, seldom extending beyond two or three days; but the disease possesses the same migratory character as rheumatism. Hence, when it suddenly recedes, it is liable to attack other fibrous structures, as, the heart, pericardium, or the dura matral covering of the brain.

This disease is both hereditary and acquired, in the adult; but in children it is always connected with a congenital organization, predisposing to its invasion, which only requires for its excitement the application of cold or external injury.

Treatment.—The same internal remedies as those I have recommended for rheumatism will be found equally efficacious in the treatment of gout. Cabbage leaves will also afford more local relief, than any other external application. When these cannot be procured or are objected to by the patient, a spirit lotion, as recommended by Sir C. Scudamore, will be a pleasant substitute. This lotion consists of one part rectified spirit, and three parts water. By this treatment, the external disease will be removed in a few days. In some cases pulv. ipec. comp. with potassio-tartrate of antimony, may be given with advantage at bedtime, to allay pain. The carbonate and sulphate of magnesia, and the colchicum must however be continued twice a-day for the space of a week or ten days after the local disease has retired.

The disease of the internal organs produced by the immigration of gout, are, in children, always of an inflammatory nature, and must therefore be treated by the same means as primary inflammations, without regard to the name of the original affection. Much injury has been inflicted by that system of therapeutics,

which adapts remedies to the designation of a disease, instead of the pathological condition of the locality affected.

BURNS AND SCALDS.

Slight accidents of this nature only produce inflammation in the skin, while the more severe injuries destroy that as well as the subjacent textures; and, unless great care and circumspection are employed, while cicatrization is conducting the slow process of imperfectly repairing the loss of integument, contraction will occur, producing great deformity or inconvenience in some situations, particularly the neck, forearm, or hand. When the burn or scald destroys a large extent of integument over the abdomen, the mucous membrane of the intestines sympathises with the external inflammation, in the same manner as it does with the rashes of some of the exanthemata. The same sympathy exists between the covering of the thorax and the mucous or serous membranes within it. Hence we may expect, in such cases, bronchial, pleuritic, or pericardial inflammation, and, when the face or head is extensively injured, meningeal inflammation may follow. The immediate effects upon the circulation and excitability, vary according to the age of the patient, and the depth and extent of the surface injured. Infants and very old persons are remarkably intolerant of extensive burns or scalds, falling into irrecoverable collapse either immediately or within a few days after the accident. When an extensive portion of skin is destroyed, the patient will be found either suffering intolerable pain, or exhibiting collapse of the vital powers, unconscious of pain, with a cold skin, entire absence of pulsation at the wrist, and a cadaverous countenance. In the latter case, the shock imparted to the abdominal ganglionic nerves, suspends the action of the heart and the generation of animal heat, and, in still more severe injuries, the functions of the sensorium are interrupted or destroyed. After this alarming collapse has continued a few hours, the case will be hopeless. One of the most frequent effects of internal inflammation, is a diarrhœa, produced by a species of muco-enteritis, which sometimes resists all remedies. The next in frequency, is chronic pleuritic inflammation, terminating in serous effusion in the chest, and in anasarca. When the serous membranes of the brain are inflamed, delirium is present, terminating in serous apoplexy.

Treatment.—The slighter burns or scalds will be most expeditiously relieved and cured by the instant application of undiluted oil of turpentine, which has the effect of preventing vesication. This remedy acts upon the principle of gradually

reducing the external stimulus. The burnt or scalded parts may be first bathed with this application for a few minutes, and afterwards exposed to its action about half an hour, or an hour, by confining to the skin linen rag dipped in the fluid. After the rag has been removed, the turpentine will evaporate, and the redness or swelling occasioned by the vascular congestion of the skin, will spontaneously disappear in a day or two. The same means may be employed, in the first instance, for those injuries which are attended with partial destruction of the skin; and, after the pain has been subdued by the turpentine, a warm, evaporating poultice may be applied, until the isolated portions of the dead skin are detached, when the ung. hydrarg. nitrico-oxyd. should be applied, until cicatrization occurs. The nitric oxyde has the effect of preventing a sloughing and chronic ulceration, by stimulating the capillary vessels, and promoting the effusion of coagulable lymph. Burns or scalds, extending over a large portion of the surface, are best treated by the immediate application of flour, or cotton-wool, which must be renewed as often as any discharge appears, so as to exclude the external air. These remedies have the effect of affording present relief, by preventing the contact of the air, and afterwards promote the scabbing process, by absorbing the purulent secretion from the skin as fast as it is generated.

The pain accompanying severe burns, may require the exhibition of opium; and a temporary collapse, that of sesquicarbonate of ammonia, or brandy, and hot flannels, sprinkled with aromatic spirit of ammonia, to the epigastrium. After re-action has been established, citrate of potash, and gentle aperients, may be indicated; and the best remedy for the purging, produced by secondary muco-enteritis, is a small dose of opium, with acacia, three or four times a-day, and a few grains of chloride of mercury, combined with three times as much jalap, every third morning, to carry off the accumulated mucous secretion, and relieve the accompanying remittent fever.

While the cicatrization of the integuments about the neck, the elbow, or fingers, is proceeding, contractions likely to produce deformity, or interfere with the free motion of the articulations, must be obviated by attention to position, and appropriate surgical appliances.

CHILBLAINS.

External cold has an effect similar to that of external heat, namely, that of exciting inflammation, vesication, or the death of the part exposed, in proportion to the suddenness and intensity of its application. The first effect of cold is that of suspending the

capillary circulation in the affected part This suspension of the current of blood, in the extreme vessels of the extremities, which are the parts in this climate chiefly attacked, is aacompanied with loss of sensation, in consequence of a temporary paralysis produced in the sentient nervous fibrils, as well as in those which animate the minute arteries. On the same principle that artificial, exalted temperature can only be safely reduced to the natural standard by stimuli, as, turpentine, camphorated spirit, &c., lowered in strength, the torpid condition of the remote branches of the sanguiferous and nervous systems must be removed by a progressive application of heat, commencing with a temperature but little elevated above that of the frost-bitten part. When these precautions are used, and these principles acted upon, both burnt and frosted parts may be perfectly restored, provided their vital principle has not been destroyed. Hence, the safest practice to pursue in the treatment of frost-bitten parts, is to apply, first, snow, or water containing ice, afterwards, cold water alone, then water slightly warmed, and afterwards gradually heated to 98 degrees. The whole proceeding must be conducted deliberately, and with great circumspection.

When this precaution is neglected, as is the case when chilblains are produced, and when the frozen parts are injudiciously and suddenly exposed to the heat of a warm bed, a heated room, or a fire, violent re-action in the circulation is produced, as may be discovered by the heat and swelling of the parts affected. Different results follow, according to the degree of this excitement. In some cases, the force of the circulation is so great as to lacerate the small vessels, already enfeebled by their temporary enervation, when, blood oozing out in small quantity, nodules are produced, feeling like large shot or peas under the finger, and terminating in abscess. In other instances, lymph is deposited in the cellular membrane, beneath the adherent surface of the skin, forming chronic enlargements; and, in others, serum is infiltrated between the free surface of the cutis and the epidermis, constituting vesications.

Treatment.—The first form of chilblains, which I have described as consisting of abscess, should be treated by the application of a common poultice, until the abscess has burst, after which the ung. hyd. nitrico-oxydi will be the proper dressing, until the healing process is completed.

The second, or most common form of the disease, namely, swelling, hardness, and external redness, accompanied by itching on the patient approaching the fire, may be removed in a few days by immersing the hands or feet, whichever may be affected, in

warm water every night, and afterwards rubbing a little of the following embrocation on the inflamed parts:—

R—Tinct. Cantharid. . . . . ʒ ij.
Lin. Sap. Comp. . . . . ʒ xij.—M. f. embrocatio.

The best mode of treating the vesications is to open them with sharp-pointed scissors, and to remove the whole of the loose epidermis. The surface may afterwards be dressed with cerat. calam.; and when by a secretion of white mucus, a kind of muguet is found on the surface, the ung. hyd. nitrico-oxydi will be found the most effectual application.

HEMORRHAGE FROM LEECH-BITES.

When leeches are applied to the integuments, on any part of the front of the neck, or any other loose part, to which pressure cannot be applied, the bleeding from the wounds made by these animals will often be found troublesome and alarming. I have never been able to rely upon astringents in these cases, nor upon any other expedient than the following, for which we were first indebted to Dr. Armstrong. This consists in passing a very fine sewing needle through the lips of the wound, and twisting some thread or silk behind the needle, after the manner of the twisted suture. The sharp end of the needle should be cut off with a pair of nippers, and, on the third day, the needle should be removed, the thread being left behind adhering to the skin. Another method has been recommended, which consists in elevating the bleeding orifice with the finger and thumb, and tying some thread round it, as round a wart.*

Mr. Gosset advises another plan, which is to fix a card, of the size of half-a-crown, by holding it on the bleeding surface a few minutes. It is supposed that the blood glues the card to the skin, and I think, if this expedient succeeds, that it may owe its success in some measure to atmospheric pressure.

To prevent as much as possible so unpleasant an occurrence as dangerous bleeding from the bites of leeches, I always prescribe the smallest, when there is a necessity for applying these animals to the throat, in which situation, from its constant motion and great vascularity, there is the greatest reason to apprehend hemorrhage.

WARTS.

These are excrescences or exuberant growths of the papillæ of the dermis or true skin, and are covered with the epidermis,

* "Lancet," vol. xviii., p. 845. † Ibid., New Series, vol. ii., p. 194.

which they extend and carry before them. There are several species, the principal of which are the round, soft, and the ragged wart. The usual seat of warts is some part of the hand. They sometimes appear on the eyelids, and other parts of the body, and are particularly apt to affect children.

Treatment.—The soft warts will be found to retire, from the application of solid nitrate of silver, dipped into cold water, and rubbed over the surface. At the end of a few hours the epidermis becomes black; and, if the wart does not entirely disappear, the black patch occasioned by the caustic should be cut away by a sharp knife, as soon as it begins to exfoliate at its edges. After this, the nitrate must be repeated from time to time, until a perfect cure is obtained. These warts may sometimes be cured by holding the hand under a stream of cold water, until severe pain from the coldness of the water is produced.

The large, ragged, or rough wart, consisting of numerous papillæ congregated and hypertrophied, will be most expeditiously removed by undiluted nitric acid. One application will almost always be found sufficient.

Warts on the eyelids should be removed by nitrate of silver.

CORNS.

These are invariably the result of undue pressure from tight shoes. They consist of a thickening and induration of the epidermis, and are of three kinds,—Fibrous, Soft, and Laminated.

Treatment.—The principle on which a permanent cure of corns must be conducted, is that of removing all pressure. I have known the largest and most troublesome corns spontaneously cured by a long confinement to bed, occasioned by accident or disease.

The shoes of children should be made so wide and easy across the toes, as to prevent any painful or perceptible pressure upon them. When this rule is disregarded, corns will be continually appearing, and lay the foundation of future inconvenience or misery. A very painful corn may be relieved by a piece of thick leather, or several layers of it secured round the toe, a hole being cut out and left for the corn. The expedient is a substitute for an easy shoe, and will enable the child to walk during the cure.

DISEASES OF THE BRAIN AND NERVOUS SYSTEM.

ENCEPHALOCELE, OR HERNIA OF THE BRAIN.

THE only species of this disease, of which I shall have occasion to treat in this work, is that which is congenital, or which appears

spontaneously soon after birth. Of the latter variety, two cases have been recorded: one by Dr. Bennett, which made its appearance at the end of the first month; and the other by Breschet, which showed itself first at the end of three months after birth.

This disease consists of a tumour formed by a portion of the brain protruding through an aperture in one or more of the cranial bones. These bones are formed by an ossification, which begins in the centre. This process, however, is subject to great variety. The opening, through which the cerebrum or cerebellum makes its escape, may be round or irregular; but, in every instance, it appears to occur from congenital defect. There seems to be great doubt whether in these cases there is not a deficiency of the periostal membrane as well as the bone; as it never yet has been clearly demonstrated on account of the compactness of the tendinous expansion of the occipito-frontalis muscle, from which the pericranium, if it existed, would be inseparable. The size of the tumour varies from that of a nut to that of an infantile head. This malformation is sometimes complicated with spina bifida, hare-lip, club-foot, or with a deficiency or softening of the spinal medulla. The external character of encephalocele, is that of a soft, circumscribed tumour, covered by the integument, which is usually destitute of hair. In some cases the cerebral pulsations have been felt, and an alternate elevation and depression similar to that which is observable in hernia cerebri. External pressure diminishes the swelling and suspends the intellectual faculties, producing coma or convulsions. When serum is present in large quantity, the pulsations of the brain may not be perceptible. The disease generally proves fatal at an early age; inflammation in the brain or copious effusion taking place, the integuments giving way and convulsions with death rapidly succeeding. The only disease with which this may be confounded, is serous hernia or fungus of the dura mater. This latter, however, rarely, if ever occurs in infancy, and is always preceded by pain, is gradual in its growth, and firm to the touch; and the former, when it exists, will require the same treatment as hernia of the brain.

It may be needless to mention the cerebral hernia through the œthmoid bone, which has sometimes been mistaken for nasal polypus; as surgeons are rarely called upon to explore the nostrils of young children for the purpose of discovering polypi.

Treatment.—Four different proceedings have been adopted with the intention of curing this formidable disease, viz. *ligature, excision, puncture,* and *compression*. The first of these has been found uniformly unsuccessful, and is therefore now discontinued. The success of excision and puncture has been only partial and

unsatisfactory; and that by compression, although by far the most safe expedient, has hitherto succeeded only in two instances. When, therefore, the tumour may be compressed without interfering with the functions of the brain, pressure may be safely and usefully applied, either to cure or retard the growth of the swelling. This may be effected by a piece of ivory, silver, or lead, supported by a bandage. When pressure cannot be endured with safety to the cerebrum and much fluid is accumulated, it may be advisable to employ puncture, and protect the swelling from external injury by some defence, as a piece of hard leather, previously softened in hot water, and adapted to the tumour.

CONGESTION OF THE BRAIN.

Attention is first attracted to a constant and irresistible sleepiness, interrupted by frequent vomiting, which occurs whenever the patient is moved. The vomiting appears to be preceded by vertigo, like the vomiting from intoxication. The child is vertiginous, whenever he is elevated, and is therefore always found reclining on the lap, or annoyed with constant vomiting when made to sit up in the nurse's arms. The skin is cool, and the countenance cadaverous, and when relief is not afforded to the congested vessels of the brain, the skin soon becomes quite cold, and the child often expires within twenty-four hours. The stomach in this disease is acted upon indirectly by the brain through the paria vaga, and careful discrimination is required to distinguish it from sympathetic diseases, particularly cholera, dysentery, and diarrhœa. The symptoms of cholera are sufficiently marked to prevent mistake; and they are always antecedent to the cerebral attack; beginning with vomiting, purging, and severe pain and cramp in some of the muscles. Dysentery manifests itself by severe griping preceded by borborygmus, and followed by mucous or bloody stools and tenesmus. The presence of both of these diseases is too obvious to escape notice. Diarrhœa may appear without detection, as it consists of a simple mucous or serous discharge from the bowels without pain, and is frequently unnoticed in consequence of the erroneous but general opinion that such a purging arises from dentition. When the two last diseases are injudiciously treated by large doses of opium, the intestinal affection is suddenly interrupted, and cerebral congestion is the consequence. Whether this congested state of the vessels of the brain be primary or secondary, it will be found a dangerous and often fatal disease. When it terminates in death, the symptoms are

those of serous apoplexy, sometimes accompanied with convulsions and hemiplegia.

Effusion of serum is discovered after death in the ventricles of the brain, with or without venous extravasation.

The idiopathic, or primary, cerebral disease must be treated immediately by the application of leeches to the temples, which will presently relieve the stupor and sickness. Afterwards, ten or fifteen grains of sulphate of magnesia, should be administered in infusion of roses, once in four hours. The same treatment must be pursued when the disease has been induced by the injudicious exhibition of opium, for the treatment of antecedent dysentery. Should the sulphate of magnesia be returned from the stomach after the brain has been relieved, a few minims of tincture of gentian may be added to each dose. The collape of the vital powers, which proceeds from cholera, and simulates cerebral congestion, can only be treated with any prospect of success by opium and ammonia, and the use of the warm bath. Abstraction of blood in such a case would exhaust the vital powers, and be followed by speedy death. When this state of exhaustion has continued twelve or twenty-four hours, it is apt to be followed by fever of a typhoid or remittent character. This state of exhaustion or anæmia, has been particularly alluded to by that distinguished physiologist, Dr. Marshall Hall, who cautions the practitioners against the common, routine practice of bleeding children in all cases of stupor and convulsions, without ascertaining the physiological condition of the brain.

MENINGITIS, OR ACUTE INFLAMMATION OF THE MEMBRANES OF THE BRAIN.

Inflammations of the cerebral membranes are generally grouped together without any distinction being attempted between them by writers on the subject. I propose dividing them into Inflammations of the Dura Mater, of the Arachnoid, and Pia Mater, or the immediate coverings of the brain.

Inflammation of the dura mater commences with acute pain on the top of the head, accompanied with intense external heat over the seat of the pain. The patient feels terrified with the pain, and his eyes have a wild expression. The pulse is accelerated and quick in its action. The tongue is covered with a white fur. The bowels are confined, as in all diseases affecting the membranes or substance of the brain. The pain and heat increase, and observe either a remittent or intermittent character, and a sensation of great weight or pressure on the head approaches. The patient

has no inclination to sleep. In a day or two the pain and heat, especially the latter, become intolerable, and the temperature of the painful part, which is circumscribed, feels intense to the hand placed on the head. The remittent or intermittent nature of this disease is peculiar to meningeal inflammations. We discover it in typhus fever, where the pia mater is affected, and in madness, when the arachnoid is the principal seat of the inflammation. As the disease increases, the intellectual functions become disturbed from extension of the disease to the subjacent membranes. The loss of sleep continues unabated, light is offensive to the eyes, the least noise adds to the pain in the head, and produces a throbbing in the head and jerking in the pulse. At length the disease assumes more and more the character of inflammation of the serous membranes of the brain, constant delirium succeeds, and coma, with convulsions, terminates the patient's existence.

The ordinary causes of inflammation in the fibrous envelope of the brain in children, are exposure of the uncovered head to a burning, meridian sun, or a translation of inflammation from other fibrous structures, as from the joints or the fibrous coat of the colon, when dysentery is improperly treated, or, lastly, concussion of the brain.

A little attention will prevent any mistake in the diagnosis. The striking features of the disease are the intense heat and distracting pain confined to a portion of the dura mater, which is *always circumscribed,* and the sense of weight in the part affected. It must also be observed, that although these symptoms are subject to remissions or intermissions, yet, unlike the sudden and intercurrent pains arising from inflammation in the arachnoid and pia matral membranes, they are never entirely absent. With respect to external heat, tubercular meningitis, which is the most common meningeal inflammation in children, has some affinity to this disease; but in the former, there is an absence of the violent pain, which characterises inflammation of the dura mater.

Inflammation of the arachnoid and pia mater, acute meningitis, or acute hydrocephalus.—This disease begins with total loss of sleep, increased sensibility to light and sound, frequent convulsive actions of the muscles, redness of the eyes, and a contracted state of the pupil. The child rolls his head about or hangs it on one side, is restless, and requires constant motion in the nurse's arms. The strenuous effort of the child to exclude the light from the sensitive retina, produces almost constant frowning. Some delicate children, possessing extraordinary refinement, and indicating premature development of intellect, appear thoughtful, fix their attention long on one object, and utter a kind of moaning,

distressing to the attendants as well as the anxious parent. A remarkable excitability prevails in the nerves of sensation, and the voluntary muscles are occasionally thrown into convulsions, and, in some children, spasm of the glottis, forms an alarming complication of this disease. In some cases the stomach, through the agency of the pneumo-gastric nerves sympathises with the brain, and rejects its contents. Others utter a shrill cry frequently, at the same time elevating their hands towards the temples, as if conscious of the seat of the disease. The face, in the earlier stages of the disease, is remarkably pale; and this circumstance, connected with frequent vomiting, misleads the attendants, who suppose the stomach to be directly the seat of the malady. This pallor of the countenance is occasioned by the increasing determination of the blood from the periphery to the diseased internal organ, and is a sure indication of approaching mischief. At this stage of the disease, the pulse will be found to intermit, in consequence of the commencement of serous effusion intercepting the influence of the cardiac branches of the pneumo-gastric nerves, which exercise the important function of regulating the action of the heart. At length the pupils, losing their sensibility, begin to dilate, successive convulsions occur, sometimes general, but most commonly on one side only, while the other is observed to be paralysed. Now respiration becomes interrupted; the child remaining some time without inspiring, and afterwards taking several inspirations with great rapidity. The bladder becomes paralytic, and, being over distended, eneuresis succeeds. The muscles of the eyeballs are convulsed, and produce a squint; each eye generally looking towards the nose. The interruption in the respiration becomes more obvious and constant, and a flushing or purplish colour of the face comes on, occasioned by the interruption to the respiratory process, and to the return of blood from the brain. This dark red colour of the face and expansion of the countenance succeeding to the previous pale and contracted visage, mislead the attendants, who generally entertain false hopes of recovery. This state of constant paralysis and convulsion is followed by rapid collapse; the pulse, observing an inequality corresponding with the irregular respiration, becomes more and more feeble, the stools, as well as the urine, are involuntary, the skin is covered with a profuse, hot perspiration, and rapid dissolution follows; the hemiplegia on one side the body, and the constant convulsions on the other, continuing to the last moments of existence.

The age at which this disease usually commences is from the fifth to the seventh month; at which period a remarkable determination of the blood and increased vascular growth concur to sup-

port the process of primary dentition necessary for the increasing corporeal strength, and the rapid development of the brain proceeding at that time, for the purpose of rendering it an organ properly adapted for the manifestation of the expanding intellectual faculties. Under these circumstances, the brain is exposed to the dangers of plethora and undue excitement, which will naturally explain its peculiar liability to congestion and inflammation at the period of dentition.

The principal appearances found on dissection, are effusion of serum within the ventricles of the brain, or between the arachnoid and pia matral membranes, which are injected with prominent blood vessels. The cerebral substance may be sound or soft, and resembling cream, in the vicinity of such parts of it as are found to have participated in the hydropic disease.

Treatment.—Inflammation of the Dura Mater is exceedingly treacherous at its commencement, and may delude the inexperienced practitioner; for when general bleeding, which has little control over the disease, is had recourse to at this period, the blood will be found neither cupped nor buffed. Hence the disease may be permitted to proceed to an alarming extent before its nature is discovered. Six or eight leeches should be applied to the part affected, and a grain or two of chloride of mercury, according to the age of the child, and the eighth or tenth of a grain of opium, should be given once in four hours, until the gums become sensibly affected. Immediate relief for the excruciating pain and intolerable heat will demand immediate attention. These symptoms can only be effectually relieved by the application of ice, broken and deposited within a large bladder, which the patient is delighted to keep constantly on his head. When ice cannot be procured, a mixture of chloride of soda and nitrate of potash, in the proportion of three to four ounces of each to a pint of cold water, may be placed in the bladder; the ingredients being renewed, after all the caloric of the water has been absorbed by the salts and replaced by that from the head. The ice and freezing mixture sometimes appear, from constant use, in some degree to lose their beneficial effects. In such cases, I always find a common, evaporating poultice, made with bread and water, and applied in a tepid state, afford, as the disease abates, the greatest comfort. While these applications are being employed, the patient must sit upright in bed, which he willingly does on account of the enjoyment he feels from the artificial abstraction of heat. In the meantime, the chloride of mercury will be found operating a cure of the inflammation. But should the disease assume, as it is apt to do, a regular intermiscence, after its remittent and severe form has been

subdued, disulphate of quina, or arsenite of potash, may be given with the certainty of removing it, especially when assisted with the external application of croton oil, a few drops of which may be rubbed once or twice on the scalp over the seat of the pain. This and all other external stimuli must, however, be avoided, until all heat on the head has been removed.

The treatment of Inflammation of the Arachnoid and Pia Mater should be commenced by bleeding with leeches applied to the temples, or by opening the jugular vein. All coverings of the head should be removed, and a lotion composed of rectified spirit one part and water three parts, kept constantly applied, when any external heat is perceptible. The bowels must be freely relaxed by chloride of mercury and jalap, or salts and senna. In this form of meningeal inflammation the preparations of mercury given with the intention of affecting the constitution, a practice which was formerly extensively adopted, will be inadmissible. As far as my own observation has extended, mercury has appeared to me to promote serous effusion, its action on the cerebral being probably different to that it exercises on other serous membranes. The absence of demonstrable absorbents in the brain and its immediate covering may possibly counteract any beneficial operation the medicine may produce; the effused serum and lymph continuing the pressure on the cerebrum and impairing its functions, instead of being speedily removed, as in other parts of the body, by obvious absorbents pari passu with the recedence of the inflammation. I am aware that Morgagni believed he had succeeded in finding and injecting absorbents in the brain. That absorption occurs in the brain under some circumstances there seems to be no doubt; but it appears to me questionable whether absorbents have ever been observed in any part of the brain except its membranes. Potassio-tartrate of antimony should be given in nauseating doses, with the double intention of irritating the mucous membrane of the stomach, and thus inviting the undue sanguineous current from the brain, and retarding the general circulation. The decided benefit resulting from the use of digitalis in the treatment of epilepsy, so long known and lately confirmed by Dr. Starkey, of Cork, in a paper in the "Lancet" for 1831, suggested to an eminent provincial surgeon, lately deceased, the practice of exhibiting it in almost incredibly large doses in the most advanced stage of meningitis. I am of opinion that this medicine administered in gradually increased doses until its effects have accumulated, *after the inflammatory symptoms have been modified by bleeding and purging*, may prevent fatal effusion of serum in the brain by its property of retarding the action of the heart, and affording the

distended vessels of the delicate cerebral membranes an opportunity of recovering their natural dimensions. For an account of my own success with digitalis in the treatment of epilepsy, see that article. From a paper on the same subject, published by Dr. Corrigan, it appears that the Irish peasantry have been in the habit from time immemorial of administering immense doses of digitalis for the cure of epilepsy. The effects of such over-doses are most alarming, as "most violent vomiting, followed by cold sweats, feeble and irregular pulse, and these symptoms again by intense gastritis, accompanied by great sinking of the vital powers, and double vision, which continued for several days."* It seems to me probable that the vomiting accompanying congestion and some cases of inflammation in the pia mater in its early stage, may be designed by nature to retard the circulation and diminish the pressure on the brain, and therefore the cautious administration of digitalis, which will artificially produce these salutary effects, will, I apprehend, be likely to be attended with good results. In all cases, however, in which I have witnessed the operation of digitalis, I am inclined to concur with Dr. Withering in believing that its good effects in curing dropsical effusions are confined to those cases in which there is an absence of a tight and cordy pulse. After the proper antiphlogistic means have been used, from five to ten minims of tincture of digitalis may be given to a child once in four hours, until its effects are decidedly produced upon the heart and brain, which effects should be maintained by varying the dose or prolonging the intervals of its exhibition, until the symptoms of meningitis and its results have disappeared. Even these doses would be considered immoderately large under any other circumstances. From the experience I have had with cerebral epilepsy, I believe that the nervous system is more tolerant of this medicine in cerebral than in any other diseases, which circumstance will account for the incredible doses which I have heard have been given in the last stages of meningitis.

Drs. Maunsell and Evason extol the use of iodine, and Dr. Roeser has published a case successfully treated by iodide of potash.† Dr. Christie has also added a cure effected by this remedy.‡ Mr. Fludder has likewise twice succeeded with this medicine.‖ The practitioner must be careful to distinguish simple from tubercular meningitis, which will be spoken of in the next

* "Dublin Hospital Gazette," and "London M. Gaz.," No. 942, p. 1478.
† "Hufeland's Journal," April, 1840.
‡ "Lond. and Edinb. Monthly Journal of Med. Science," M., 1843.
‖ "Med. Gazette," Sept. 30, 1842.

article, as the specific nature of the latter disease will defy all attempts to effect a cure after its character has been unfolded.

TUBERCULAR MENINGITIS.

Most cases of fatal meningitis are of the scrophulous or tubercular character in children. The disease attacks the child while appearing to be in the enjoyment of perfect health. It commences with slight headache, vomiting, constipation, and some acceleration of the pulse. The intellect is unaffected, and the appetite not much diminished, for the vomiting of food or bile seldom continues more than a few days. The patient also complains but little of thirst. The costive state of the bowels increases, and the pulse soon becomes intermittent. The child appears faint, makes a peculiar grunting noise, occasioned by respiration being intercepted by pressure on the pneumo-gastric nerve, and he presents a dejected countenance. He grinds his teeth at intervals, avoids the light, and refuses to fix his attention on his playthings or other objects, appearing as though his intellect was obscured, The moaning is afterwards exchanged for the irregular respiration observable in simple meningitis. A slight degree of drowsiness now comes on, from which the patient starts at times with surprise. His countenance changes colour, being at one time pale and at another flushed, and his upper eyelids appear paralyzed and only half opened, while the eyes are moved about by a convulsive motion of their muscles. As the disease proceeds, a purging sometimes succeeds to the previous constipation; the sleepiness passes on to stupor, interrupted by delirium, restlessness, and shrill cries. At this stage of the disease hemiplegia, or some other form of partial palsy, commences, attended with rigidity of the trunk and convulsive movements on the opposite side, to which succeed forcible contraction of the muscles of the lower jaw and subsultus tendinum. At the same time the pupils will either be found dilated, or one dilated and the other contracted, and both of them distorted, producing disagreeable squinting. In this state the sensation and perception are entirely lost, and the stools and urine involuntary, and after continuing in a dying condition, with flushed face and colliquative perspiration, the patient is carried off mostly with an epileptic convulsion.

The foregoing group of symptoms presents a striking analogy with those of the simple form of meningitis. The tubercular species may always be distinguished by the intense heat felt on the forehead or upper surface of the head, as soon as the inflammation and symptomatic fever have unfolded themselves. The pain, too,

is more constant, and the delirium more decided; to which may be added that it is more apt to attack children beyond the age of dentition than the simple form of the disease.

The morbid appearances consist of a deposit of tubercular matter in the form of opaque, white or semi-transparent, round or flattened granules dispersed in different parts; sometimes isolated, and at other times united into groups. Inflammation, denoted by a secretion of concrete pus or false membranes is also present in the pia mater, which is found thickened, yellow, or greenish, and often adhering to the cerebrum. The arachnoid has a peculiar glutinous feel, and a white cream-like softening is found in the central parts of the brain, extending mostly to the septum lucidum, but seldom to the inferior walls of the ventricles, which contain an effusion of serum, varying considerably in amount in different cases. Tuberculization in an advanced state will also be discovered in other organs. The tubercular disease in some cases extends to the dura mater. In a boy three years old, who died of this disease, I found the inner surface of the dura mater thickly studded at its upper part with opaque tubercles of the size of duck-shot. In this case the external heat was almost as remarkable as in simple inflammation of the dura mater.

Treatment.—We have unquestionably no specific remedy for this fatal disease. Its treatment, therefore, must be conducted in the same manner in the commencement, as that recommended for simple meningitis, to which the reader is referred. When the patient has been suffering under other tubercular diseases, and the symptoms clearly indicate tuberculization in the membranes of the brain, the case will be without hope. After local bleeding has been had recourse to, and evaporating lotions have been applied to the head, and the constipated state of the bowels removed by sulphate of magnesia and infusion of senna, little will remain for the practitioner to do, except to regulate the temperature of the patient's apartment, to keep the surface of the head as cool as possible, and to prescribe the most unirritating food, as milk either alone or thickened with arrow-powder gruel, or tea or coffee mixed with milk. All preparations of mercury must be prohibited, as soon as the tubercular deposition has commenced, as they will infallibly increase the disease and expose the patient to much suffering, by their sensible affect upon the mucous membrane of the cheeks or gums. When the other viscera appear, from the previous health of the child, to be sound at the onset of the attack, mercury given in small and frequent, repeated doses, with the intention of diffusing the circulation in the very first stage, before inflammation has commenced, may prevent that process,

and thus divert the diseased action. The period to which I allude, is while the symptoms indicate only a congested state of the vessels, *before heat and pain have manifested themselves*, and while the pulse remains free from interruption and before deposit of serum, lymph or tubercle has occurred. With respect to iodine that has been found as perfectly useless as mercury, after the tubercular matter has been separated from the blood.

SUBACUTE, OR CHRONIC MENINGITIS, OR CHRONIC HYDROCEPHALUS.

This disease is sometimes congenital, and sometimes acquired. A congenital case occurred in my practice, in which the head of the fœtus was so distended with serous infiltration, that it equalled in size that of an adult. The accurate description of congenital hydrocephalus given us by Boyer, which exactly corresponds with the case I allude to, may be taken as an extreme example of the disease.*

The process of this disease, when it commences after birth, is so slow that we seldom have an opportunity of observing its progress, until our attention is directed to the preternatural dimensions of the head. Hydrocephalic children are quiet and serious, and sometimes stupid and repulsive, and occasionally screaming, as if they suffered pain. In general they appear stupid, and incapable of diverting their attention like other children to surrounding objects, and when asleep appear to be in a kind of stupor. They vary with respect to their intellects and their perceptions; some answering questions with quickness, while others occupy a long time in receiving impressions on their minds, and in answering the most simple questions. They sometimes squint or have the pupils preternaturally fixed and dilated, and paralysis, more or less complete, is observable in the extremities. When the bones of the head are greatly separated, and the effusion of serum is rapidly proceeding, the child often screams from the sudden distention which results. The processes of digestion and assimilation generally go on as in health.

Chronic hydrocephalus may be distinguished from a preternatural development of the cranial bones, by their advanced ossification, and by the comparative diminution or atrophy of the face existing in the latter disease; from rickets, by the deformity being confined to the frontal and parietal bones, while the fontanelle is found unossified in that infirmity, and the co-existence of

* "Traité des Maladies Chroniques," p. 212.

an enlarged and softened state of the bones in other parts of the body; and from hypertrophy of the brain, which is very rare, by the absence of rickets in other parts, by the regular ossification of the cranial parieties, and by the disappearance of the symptoms of hydrocephalus in that disease.

The dropsical effusion may be found between the duplications of the arachnoid membrane, or what is called the bag of the arachnoid, in which case the substance of the brain may be more or less obliterated. In other cases the sinuses will be found so amazingly distended with serum, that the division of the hemispheres is partially or entirely destroyed. Schmalz and Gölis have described a singular variety of cerebral dropsy, in which the fluid is contained in a large cyst. The quantity of fluid found within the cranium varies from a few ounces to eight or ten quarts. The bones of the cranium may be exceedingly thin, or maintain their natural thickness.

One of the most frequent causes of this disease is the development of a scrophulous or cancerous tumour, which, according to Whytt, when it is seated in the pituitary gland, or in other parts contiguous to the ventricles of the brain, by compressing the neighbouring trunks of the absorbent veins, prevents the process of absorption of the fluids, which the small arteries are constantly exhaling; in the same manner as schirrus of the liver, spleen, or pancreas, produces ascites. This explanation has also lately been adverted to by Barrier, as too much overlooked. It must, however, be observed, that such tumours must have acquired a certain bulk, and be seated, as they generally are, in the basis of the brain; otherwise their presence would not be sufficient to occasion venous obstruction. Barthez and Rilliet express their doubt whether this compression is always exercised by these cerebral tumours; as they have constantly found the passage of the veins open and unobstructed. They admit, however, that this compression may be produced upon the right sinus, and that the facts quoted by Barrier cannot be contradicted. At the same time they say it is not less true, that in a great number of cases the compression is exercised altogether on the cerebral veins, and often just as they penetrate the sinus. Hence, they believe, that most frequently the cause of the chronic hydrocephalus, is an obstruction in the veins of Galen or of the right sinus.*

Treatment.—This may be divided into medical and surgical. The former comprehends the internal use of such medicines as are adapted for the removal of chronic inflammation, or the promotion

* "Barthez and Rilliet," t. i., p. 808.

of venous absorption. Of the former class of remedies, that which has been principally extolled is mercury. Gölis, in particular, appears to have been very successful with this treatment with the young patients at the institution for diseased infants at Vienna. This plan consists in the exhibition of chloride of mercury twice a-day, and the external friction of mercurial ointment on the head previously shaved, and afterwards carefully covered with flannel. He recommends a regulated temperature and nourishing diet; but condemns the use of fermented liquors and aliments containing fat. Under this treatment, persevered in during some weeks or months, Gölis found the size of the head diminished one half, and one radical cure performed. Gölis, however, confines this treatment to such children as are descended from sound parents; and recommends decidedly scrophulous, arthritic, rickety, and scorbutic children, to be treated only on general principles. To the statements of Dr. Gölis, respecting the mercurial treatment, I may add the experience of Dr. Marshall Hall, who succeeded in two cases with the exhibition of bichloride of mercury, in doses of one-thirteenth to a sixteenth of a grain.*

Digitalis has been very extensively employed in the treatment of this disease, given in moderate doses; Dr. Underwood states, that it cured a boy about fourteen years old;† and Dr. Marshall Hall, also found it useful in prudent doses, joined with calomel. To produce the violent effects, on which its curative powers depend in the treatment of epilepsy, it thould be given in full doses, so as to oppress the circulation and to prolong the depression of the vital powers. Its use, however, should be confined to those cases, which appear to be free from tubercular disease, otherwise the patient might be exposed to extreme misery without any prospect of benefit. (See "Meningitis.")

Iodide of potash, and a combination of iodine and mercury, have been highly spoken of by Drs. Maunsell and Evanson, both in the chronic as well as the acute form of hydrocephalus.

From the above account of the use of internal remedies, it will be inferred, that comparatively little good can be effected by them in the majority of cases.

As to external applications, which are sometimes had recourse to when rational medicine fails, I think every practitioner, before he submits his patient to the useless torture of caustic and irritating appliances, should read the following humane observations of Gölis on this subject:—

"Employer à cette période les sétons, les cautères, les frictions

* "Underwood on the Diseases of Children," by Dr. M. Hall, p. 307.

† Ibid. p. 303.

irritantes, c'est tourmenter inutilement le jeune malade. Une pareille conduite fait peu d'honneur au savoir et à la moralité du médecin; car lorsque la maladie est necessairement mortelle, les traitements pénible ne sont que le resultat de l'ignorance médicale, ou d'une brutale inhumanité."

Compression has been tried in six cases reported in a memoir published in Germany.* In three of these some diminution in the bulk of the head was effected, after a continuance of the pressure by adhesive bandages during three months. This result is not sufficiently encouraging to recommend its adoption by British practitioners. A case is related by M. Hirsch, in which success followed this treatment, after the internal use of digitalis and other medicines. In this case, however, the cure was proceeding before the compression was adopted. To these may be added two successful cases, published by Mr. Barnard, of Bath.† Five cases have also been cured by the application of adhesive straps, and compresses moistened with cold water.‡

Puncture of the cranium has been followed in England by such success, at least in the practice of Dr. Conquest, that I shall be fully justified in recommending its adoption in all cases, which would be fatal if left to nature. Out of nineteen operations Dr. Conquest has succeeded with ten, which is the largest proportion of cures recorded from any other surgical proceeding. Accident appears first to have suggested this operation; a cure having been performed by a thick nail, which by a fall of the patient was forced through the dura mater :—

"Henry Cowan, son of a cabinet-maker, was observed, soon after birth, to have an unusually large head; the circumstance excited little notice, until it began to increase, and had acquired a great magnitude. Symptoms of pressure on the brain then appeared, the child becoming drowsy, and losing the use of his limbs. At the age of fifteen months he fell and struck his head against the floor; on taking him up a short thick nail was observed sticking in the cap, which was wet and bloody. A surgeon was sent for, who, on his arrival, extracted the nail, which he said had pierced the dura mater at the upper third of the lambdoidal suture on the left side, and introduced a probe, on the removal of which a jet of water issued from the puncture. A poultice was applied, and fluid continued to ooze from the opening for four days, amounting in quantity, as the parents suppose, to fill three pints. At the end of that time the wound

* "Medic. Ann.," 1838, bd. iv., heft. 1.
† "Med. Repository," September, 1825, and "Lancet," No. 137, p. 52.
‡ "Lancet," No. 841, p. 82.

healed, without the occurrence of any bad symptom, the child regained the use of his limbs, and rapidly recovered."*

A case is also related as having followed a fracture of the cranium.†

In France the operation of puncture has not been so successful as in this country; having failed, when practised by Dupuytren, Professor Buschet, and Dr. Malgaigne. Mr. West has collected fifty-six cases in which puncture has been performed, which he has published in the "London Medical Gazette" for April, 1842. From a perusal of them it will be found that the operation itself is by no means dangerous; but the cases best adapted for it are those resulting from inflammation.

Operation.—Dr. Conquest's operation is performed in the following manner. The child being properly secured, his head must be supported by an assistant. The surgeon then introduces a fine trochar in the sagittal suture, midway between the crystagalli of the œthmoid bone and the anterior fontanelle, to avoid the longitudinal sinus. The instrument must be plunged two inches deep into one of the ventricles, and if the fluid, which is generally pale or straw-coloured, does not flow, its exit should be assisted by the introduction of a probe. As much fluid must be drawn off as the child can bear, the assistant compressing the head while the serum escapes. After the operation is over, the head must be strapped with adhesive plaster to prevent collapse, to keep up suitable pressure on the brain, and to keep the head in its diminished state. The operation sometimes requires repetition several times.‡

CEREBRAL APOPLEXY.

Children of all ages are subject to this disease, the symptoms of which are suspension of the external senses more or less complete, accompanied with slow or intermittent pulse, and generally with stertorous breathing. The pupils are mostly dilated; but in some cases they are contracted. The skin retains its accustomed warmth. The attack is sometimes sudden, and at other times gradual. In the former case it generally results from cerebral hemorrhage, in the latter from serous effusion. In some instances the patient is afflicted with hemiplegia on one side, and convulsions on the other. When this occurs as a sequel to other

* Communicated by H. Greatwood, Esq., M. R. C. S., in the 291th Number of the "Lancet," p. 238.

† Wochenschrift für die gesammte Heilkunde.

‡ "Lancet," No. 759, p. 890.

diseases, as, remittent fever, hooping cough, or peritoneal inflammation, it is always fatal; and it is highly dangerous when it attacks children disposed to frequent syncope, from which it may always be distinguished by the presence of pulsation at the wrist, and warmth on the surface. The duration of the disease is uncertain; it sometimes subsides speedily, and sometimes continues several days, when it usually terminates in death. In the latter case the pulse becomes rapid and irregular, and the skin hot and covered with copious perspiration, and the stools and urine involuntary.

The erroneous theory which formerly attributed apoplexy to determination of the general current, or pressure of the blood on the brain, has been lately dispelled, and the more rational cause of interrupted circulation substituted. On this subject Dr. H. Clutterbuck has published a short essay, which must carry conviction to every reflecting mind.* No other hypothesis than that of interruption to the cerebral circulation can explain the cause of effusion of blood and serum, which are met with after death. The cause, in fact, is precisely the same as that which occasions pulmonary apoplexy, namely, an obstruction in the minute arteries, which, unable to resist the current of the arterial circulation, either relieve themselves by serous or sanguineous effusion, or by rupture and extravasation of blood, which first produce suspension, and afterwards obliteration of the functions of the brain. Whether these phenomena are occasioned by poison acting specifically on the vessels of the brain, or by hypertrophy of the heart or the bronchial glands, obstructing the return of venous blood, or fracture and depression of one of the cranial bones, producing an interruption in the cerebral circulation, the effect is the same.

The following are the pathological conditions of the brain and its meninges ordinarily found after death from cerebral apoplexy in children. Some of the French pathologists† endeavour to connect the symptoms with the morbid appearances. There are, however, such extreme obscurity and so many contradictory facts connected with cerebral diseases, that any attempt, in the present imperfect state of our knowledge of the pathology of the nervous system, to establish certain signs by which some of the lesions of the cranial contents may be discovered during life, will be found exceedingly difficult, if not impossible.

* "Cyclopædia of Practical Medicine," Art., Cerebral Apoplexy.
† "Barthez and Rilliet."

HEMORRHAGE OF THE DURA MATER.

We sometimes find effusion of blood between the dura mater and the inner surface of the cranium, unaccompanied with fracture. This is not distinguishable during life by any symptom, but has been found connected with softening of the intestines, and hypertrophy of the spleen.*

A kind of ecchymosis, or circumscribed collection of blood between the dura mater and its arachnoid coat, is also occasionally met with. This, however, like the former, is of no practical importance.

HEMORRHAGE INTO THE BAG OF THE ARACHNOID MEMBRANE.

Between the proper arachnoid, and its portion reflected upon the under surface of the dura mater, large collections of blood are sometimes effused in a liquid state, which afterwards separate into serum and crassamentum, the coagulum assuming the shape of the part in which it is deposited, and gradually presenting the appearance of a false membrane, either resembling a serous or a fibrous structure. The most simple form under which the solid portion of the blood appears, is that of a purple or nearly black coagulum, which is either soft and friable, or solid and elastic. These coagula sometimes extend over both hemispheres, and are generally attached by a slight cohesion with the arachnoid surface of the dura mater, and, when very thin, and deprived of their hæmatosine, they become transparent, and resemble the arachnoid. These pseudo-arachnoid membranes after a length of time become thick and opaque, and resemble the dura mater, and, on being examined, they will be found to consist of successive laminæ.†

The cause of this sanguineous effusion in children, is a kind of exhalation from the minute vessels of the arachnoid, from the cause I have mentioned, viz., interruption to the cerebral circulation.

The symptoms are obscure. When the flow of blood is sudden, it may produce paralysis on the side of the body opposite to the seat of the effusion, and, when considerable and general, convulsions or death may almost instantly succeed. Cases, however, will occur, which it will be difficult to diagnosticate with accuracy from chronic hydrocephalus, especially when the practitioner cannot obtain a correct history of the commencement and progress

* "Barthez and Rilliet," ii., p. 31. † "Barthez and Rilliet."

of the symptoms. In such obscure cases, Barthez and Rilliet propose the introduction of a fine instrument, for the purpose of exploration.

Hemorrhage of the pia mater is much more uncommon than the preceding. The symptoms are, general convulsions, followed by opisthotonos, dysphagia, dilated pupils, and intermitting pulse. Sometimes hemiplegia follows the first attack.

The morbid appearances are, coagula, extending more or less over the surface of the brain, beneath the pia mater, with or without collections of coagulated blood within the ventricles.*

Cerebral hemorrhage.—This may be primitive or secondary. The symptoms of the former may be those of epilepsy or hemiplegia, with permanent contraction of the fingers of the affected side, preceded by vertigo or double vision.

The post mortem appearances resulting from this form of apoplexy, present themselves in numerous small points, of a red or brown colour, on the cerebral tissue, both medullary and cortical, sometimes extending to the pia mater. These points are formed of sanguineous clots, occasionally surrounded by small, yellow areolæ, consisting of softened cerebral substance. This capillary apoplexy is sometimes limited in extent, and forms nodules, which, being of a regular and round shape, show themselves on the neighbouring cerebral substance, from which they seem to be completely distinct. At other times, the diseased appearance is profusely scattered on the cerebral hemispheres, giving them a spotted aspect. Sometimes apoplectic cells appear in the same subject, in the internal structure of the brain, filled with black, soft coagula, or liquid blood. These sanguineous cells occupy different parts of the cerebrum, and are more commonly met with in that structure than in the cerebellum. In connection with these appearances, we find generally some congestion in the vessels of the pia mater, and in the sinuses, and we occasionally meet with tubercular meningitis.†

The secondary acute or cachectic form, frequently takes place suddenly, or in a latent manner, without our being aware of its existence, or it may be accompanied with symptoms differing from those of apoplexy.

Ventricular hemorrhage differs from the foregoing by the effusion of blood being found in the ventricles, instead of the cerebral substance.

Hemorrhages within the encephelon, may be referred to the improper and intemperate treatment of the diseases of the hairy

* "Barthez et Rilliet." † "Barthez et Rilliet."

scalp, to vascular plethora, to the compression of the vena cava superior, occasioned by enlargement of the bronchial glands, to hypertrophy of the heart, or of the abdominal viscera, to anæmia or cachexy, connected with tubercular disease, or to violent mental excitement, or pain.

Fracture of the Cranium, with depression of the fractured bone, is another cause of apoplexy. So also may be the inhalation of carbonic acid gas.

Treatment.—Apoplexy, occasioned by the first mentioned cause, should be treated by bleeding and purgatives, and by the application of a large blister to the head. The best mode of abstracting blood will be from the jugular vein.

When the disease proceeds from vascular plethora, recourse must also be had to bleeding, which must be repeated as soon as re-action or an inflammatory state makes its appearance. These cases are preceded by vertigo, an intermitting pulse, a state of oppression, resembling debility, and other symptoms of cerebral disturbance. After the effusion of blood has occured, the circulation appears to be partially relieved from its temporary stagnation in the capillary vessels of the cerebral membranes, and a state of excitement follows, the pulse recovering its regularity, and the phenomena of inflammation succeeding. The tongue is coated with a thick, white fur, the animal temperature is exalted, and the blood, on coagulating, presents a surface buffed and remarkably cupped. In this case, the sanguineous exhalation or hemorrhage from the minute arteries of the arachnoid, or of the pia mater, unmasks the latent inflammation, by relieving the temporary interruption to the cerebral circulation, in the same manner as venesection relieves pulmonary plethora, and obviates fatal effusion. This febrile and inflammatory condition will require the co-operation of the potassio-tartrate of antimony, in nauseating doses, with citrate of potash, and the bowels must be properly acted upon by salts and senna.

As the enlargement of the bronchial glands in children is commonly of a scrophulous or tubercular character, we shall have little chance in attempting their relief.

Apoplexy, from enlargement of the heart, will seldom be found to occur in children, unless it has been preceded by repeated attacks of epilepsy, during which a suspension in the heart's action will present itself a considerable time. These paroxysms of epilepsy, accompanied with this peculiar state of the circulation, should be considered by the medical attendant as admonitions threatening hydrothorax, or serous or sanguineous effusion into the ventricles of the brain. The proper treatment of this species

of apoplexy, or epilepsy, which latter is only a slighter degree of the same disease, and arises from the same cause, consists in the exhibition of sesquicarbonate of ammonia, in repeated doses of three or four grains each, as soon as the patient can swallow; and, after the paroxysm has subsided, the cardiac disease should be attacked by digitalis, and chloride of mercury. Sometimes in these cases the patient remains many hours or days in the horizontal position, unable to sit up or move in bed, until the heart has recovered its impulsive power, so as to carry on the circulation while the patient is erect. In such cases, the best remedy will be found in tincture of digitalis, which must be given in the dose of five minims, once in four hours, until the artery at the wrist imparts a vigorous stroke to the finger. Whenever epilepsy or apoplexy occurs from this cause, a very doubtful prognosis should be given, as a long continued inaction of the heat, arising from enervation or over-excitement, is seldom followed by permanent recovery.

The treatment of apoplexy from anæmia requires great caution; for bleeding in this case would be fatal. The condition of the patient is the same as that of which I have just spoken. The deficiency of fibrine and hæmatosine in the blood, connected as it usually is with defective assimilation and deficient vital energy in the heart and arteries, predisposes the central organ of the circulation not only to irregularity, but also to temporary cessation of its action. This state produces the same effect as extreme exhaustion of the heart from bleeding, that is, an interruption to the circulation in the brain, and suspension of the functions of the sensorium. The treatment, in the first instance, must be the same as for the preceding variety; and after the patient has recovered from the fit, the case should be treated according to the directions contained in the articles on "Purpura Hæmorrhagica, or Functional Diseases of the Heart."

Apoplexy occasioned by violent passion, or any kind of mental emotion, will require loss of blood and cold applications to the head.

When the disease arises from severe pain, its immediate cause is the circulation of venous blood in the brain from cessation in the action of the heart. In some cases of this kind, the appearance produced on the cutaneous capillaries, resembles that which accompanies asphyxia from the inhalation of carbonic acid gas. The skin is more or less discoloured, and stertorous breathing succeeds.

Case.—Master H., four years old, while playing in a garden, forced a stick into a hive of bees. The insects instantly swarmed upon him, and stung him in such numbers, that he fell into a

state of asphyxia, with stertorous respiration, and the skin as black as that of an Ethiopian, the effect of the circulation of venous blood in the brain. I placed the boy immediately in a warm bath, and detained him in it about fifteen or twenty minutes, at the end of which time sensation began to return, and the discoloration of the skin to disappear. In all cases of apoplexy arising from severe pain, whether accompanied or not with convulsions, the warm bath will be found the most efficient remedy; but when we are called in to a patient suffering with asphyxia, and the respiratory process has not returned, we should, while the patient is in the warm bath, establish artificial respiration by introducing the nozzle of a pair of bellows into one nostril, and alternately inflating the lungs, and expelling the air by compressing the chest. Should the aploplectic state, which will succeed to the asphyxy, continue, the jugular vein should be opened, and, as soon as the patient can swallow, a full dose of castor oil, or salts and senna, should be administered. Before the warm bath can be procured, external friction with warm flannel should be employed.

The treatment of apoplexy from a fracture of the cranium, must be commenced by the elevation of the depresssed bone by means of the elevator; any obstruction to this proceeding being previously removed by Hey's saw, or the trephine.

MEDULLARY MENINGITIS, OR INFLAMMATION OF THE MEMBRANE OF THE SPINAL MARROW.

The spinal cord consists of cortical and medullary matter resembling the brain, and is covered by similar membranes, namely, a dura mater, arachnoid, and pia mater, which are prolongations of the cerebral tunics. The arachnoid is both a reflected and investing membrane, as in the brain; one portion being connected with the inner surface of the dura mater, and the other forming the immediate covering of the pia mater. This large mass of brain-like matter constitutes one of the great nervous centres, from which proceed, in pairs, nerves of common sensation, or rather of perception, or what are called *excitor nerves*, and nerves which produce motion in the voluntary muscles, or *motor nerves*. This important nervous centre is also connected with certain cerebral nerves, as the fourth, the portio dura of the seventh, the par vagum and the spinal accessory of the eighth, which perform some associated functions with the spinal nerves. Hence the diseases of the spinal cord and its investing membranes become objects of extreme interest to the pathologist.

Inflammation of the medullary membranes commences with

the general symptoms of inflammation, as intense, febrile heat, thirst, loss of appetite, and constipation. In a few days, rigidity of the neck, lower jaw, and the trunk comes on; the child having a constant tendency to throw himself backwards, even in the horizontal position, so that the back of the head is brought into contact with the spine. In some cases, the mastoid muscles are in a state of constant contraction and the chin prolonged, and in others the muscles of the spine are so contracted as to constitute opisthotonos, or tetanus. The least attempt made by the attendants to relax the contracted muscles produces great pain. Pressure on the spinous processes will sometimes occasion pain also, and in many cases the tetanic contraction is preceded by frequent attacks of severe pain in the course of the spinal column, extending to the lower extremities, which are often convulsed, as in chorea. The presence of violent pain is an indication of inflammation in the theca or external membrane. Dysphagia and paralysis of the intercostal muscles, producing difficulty of breathing, are likewise present in some cases, and convulsive movements in the upper as well as the lower extremities. The duration of the disease varies from three days to one or two months. One of my patients died on the third day, and another at the end of one month. In the latter case the disease was secondary; having been produced in a boy ten years old by rheumatic inflammation, translated from the muscles of the lower extremities to the fibrous coat of the spinal marrow. The convulsive movements of the lower extremities constituted regular chorea, and continued about ten days before death.

The age at which children are liable to this disease, varies from three to ten or twelve years.

The common causes of spinal meningitis are accidents and cold. The case to which I have alluded, also proves that the disease is sometimes produced by the metastasis of rheumatic inflammation.

The pathological appearances resemble those of cerebral meningite, and the products of inflammation will be found in one of the medullary membranes, particularly in the cavity of the arachnoid, or in the pia mater, in the form of sanguineous injection, folds of false membrane, or small purulent deposits, covered with a vascular network. The arachnoid membrane is sometimes raised by a quantity of serous fluid, in which false membranes are found floating. Softening of the medullary substance is always found proportionate with the degree and extent of the membranaceous inflammation.*

* "Hache Journ. Hebdom." tom. xi., 1833, pt. 266, and "Durand Clin. Des Mal. des Enf.," p. 185, 1841.

Treatment.—Leeches must be plentifully applied on each side of the spinal column, as far as the external tenderness and the pain extend; and when the former symptom is not discoverable, the local abstraction of blood must be effected as near the origin of the inflammation as the affected spinal nerves may indicate. The treatment must be decidedly prompt and antiphlogistic; and when the pain is severe and frequently recurrent, and inflammation of the fibrous membrane is thereby indicated, one or two grains of chloride of mercury should be administered once in four hours, until the gums become sensibly affected. When the inflammation is confined, as is generally the case, to the arachnoid or the pia mater, and symptoms of effusion occur, mercury will be improper for the reason I have stated, when speaking on the treatment of cerebral meningite. A lotion, consisting of one-fourth of rectified spirit, and three-fourths of water should be applied to the surface of the back over the affected part of the spine, or an evaporating poultice or a sponge repeatedly dipped in cold water. The bowels must be freely relaxed, and the febrile state relieved by citrate of potash and potassio-tartrate of antimony. When by these active means, employed sufficiently early, the inflammatory symptoms have been subdued, repeated blisters may be applied.

SOFTENING OF THE SPINAL MARROW.

In the preceding article I have stated that all severe cases of medullary meningitis are accompanied with softening of the spinal medulla. When the disease becomes chronic, we observe paralysis and atrophy in the lower extremities, either partial or complete, in addition to symptoms of chorea. In such cases the paralyzed muscles are deprived of their healthy temperature, as well as their proper action.

In the *acute* form of this disease the symptoms resemble those I have described in the foregoing article. The muscles of the extremities are found convulsed, or rigid and immovable, the teeth set, the eyes fixed, and the intellect impaired; and when the disease increases deglutition becomes difficult, severe pain in the back is felt, and tetanus is established. The muscles of the spine bend the body stiffly backwards, and those of the abdomen become flat and rigid, so that the child feels as stiff and inflexible as a piece of wood. The upper extremities are also variously contracted. In all cases the pulse is greatly accelerated, from the continual agitation or tetanic contraction of the muscles. The bowels are constipated in consequence of the exhaustion of the

nervous energy, and the skin is in a state of profuse perspiration, attended with some increase of the natural temperature. After the disease has advanced to the last stage, the heat and perspiration increase, the face becomes flushed in consequence of the interruption of the pulmonary circulation from pneumonia, which has now commenced; the intellectual functions are destroyed, the stools and urine are involuntary, and the patient dies exhausted. When the medullary disease occupies only the upper portion of the nervous column, the legs may escape, and the chorea may be confined to the upper extremities.

Chronic softening of the spinal marrow is denoted by weakness of the lower limbs, which can with difficulty be moved forward by the patient even when supported. Sometimes one limb, or a portion of it, only is paralyzed. In this case the extremity, or the diseased portion of the spinal medulla, when it is only partially affected, is in a state of atrophy, the muscles being much softer and smaller than those of the opposite extremity. In some cases, when the muscles have continued long in a state of paralysis, the antagonist muscles acting with uncontrolled force produce a permanent contraction. Hence when the abductor muscles of the thigh become paralytic, the adductors acquire the habit of drawing the legs inwards, and crossing each other in walking, and become permanently contracted. The intellect is seldom affected; but in some cases the stools and urine are involuntary, and the children are idiotic.

On examining the spinal marrow after death, we find it in different states of softening, from that almost resembling a fluid, to that which permits the finger to press upon it, and only presents a kind of indentation. On dividing the pia mater, the softened marrow escapes, or appears flat, and loses its proper cylindrical shape, and the slightest pressure reduces it to a soft pulp. On pouring a little water upon the diseased portions with a gentle force, the softened particles are elevated by it, and when all consistence is destroyed, we find nothing but a vascular web, the marrow appearing like a soft, white or yellow mass. In some cases only the cineritious, in others only the medullary, portion, and sometimes the whole, is diseased. The softening is not found to extend through the whole column; but it often appears in distinct portions, leaving the intervening parts in a state of natural firmness. Blood is occasionally discovered within the pia mater, from which it had escaped, and sometimes that membrane is thickened. Corresponding disease is found in the cerebral membranes, when the intellectual functions have been interrupted.*

* "Barthez and Rilliet."

This diseased condition of the spinal marrow is sometimes produced by cold, sometimes by accident, and sometimes it is congenital. In all cases, except such as are congenital, the softening is the result of inflammation after birth. In those examples of connate paraplegia, or partial contortions and contractions of the lower limbs, it is supposed by some that their affections are the consequence of intra-uterine disease, or imperfection in the development of the nervous system. The origin of the disease in two boys, who came under my treatment, was accident; a wagon-wheel having passed over the spine of one, and the back of the other being injured by a slight fall produced by a gentleman's carriage, which pushed him down in the street.

Treatment.—In the acute form of the disease leeches or cupping should be prescribed, and the bowels evacuated first by an enema, and afterwards by a full dose of castor oil, or chloride of mercury and jalap. When consulted at the commencement of the complaint, we may give chloride of mercury with a large dose of opium once in four hours. A child, four or five years old, may take a grain of the former, and a quarter or half a grain of the latter at each dose. Should it be found impossible for the patient to swallow, five or ten minims of tincture of opium should be injected with a little gruel into the rectum, and a scruple of ung. hydrarg. rubbed well on the inside the thigh once in four hours. It must be observed, that a greater dose of opium should not be injected per anum, than it might be safe to administer by the mouth; for the peculiar sensibility of the rectum to the influence of that medicine, renders its effects equally potent, when introduced in that manner, as was pointed out by the late celebrated Dupuytren. After the disease has existed several days, I should have great doubts respecting the propriety of risking the use of mercury, particularly when there is reason to expect effusion within the arachnoid, or pia-mater, for the reason I have adduced in the article, Cerebral Meningitis.

Considering the specific action which strychnine or nux vomica exercises on the nerves, proceeding from the spinal marrow in cases of paraplegia or complete paralysis in the lower extremities, I wished to try its effects in a case of tetanus, in which the spinal nerves are affected in an opposite manner to that of paralysis. An opportunity soon offered itself:—

Case.—Michael Quin was admitted under my care an in-patient in the Bridgnorth Infirmary, with idiopathic tetanus, which succeeded to trismus, and had existed a few days. Mr. John Roycroft, the house surgeon, prescribed on his admission large doses of opium and potassio-tartrate of antimony, and a

liniment composed of turpentine and cantharides. The following day the symptoms were stationary, and continued with little alteration, notwithstanding the continued use of opium, antimony, turpentine, the warm bath and purgatives, until the fifth day, when the following was his state:—His body was rigidly bent backwards, his jaw locked, his pulse rapid, his respiration hurried, his face almost of a purple colour. I prescribed five grains of pulv. nucis vomicæ in two pills, once in four hours. The next day the patient could with difficulty and with assistance be raised up in bed, the body still remaining stiff and inflexible. He was better in all respects, free from pain, and able to move the lower extremities without difficulty as he lay in bed. The bowels were daily moved by salts and senna. On the third day after he commenced the nux vomica, he was attacked with violent spasms in the dorsal muscles, which twisted his body and raised him from his bed, and continued until the fourth day, when the pulse was reduced to its natural standard, the respiration and appearance of the face became natural, and the skin in a state of kind perspiration. All pain subsided, and the muscles of the face and forehead became quiescent. These muscles had, up to this time, been in constant contraction. From this period all the symptoms rapidly subsided, and in a few days the patient was able to move spontaneously out of bed, and the condition of the skin, the appearance of the face, the pulse, and the state of the bowels became perfectly natural. The dose of the nux vomica was increased during the cure to seven grains and a half, which dose was repeated all the time afterwards, once in four hours. This case was watched and attended to with peculiar interest by Mr. Roycroft, now practising with deserved reputation at Ballinrobe, in Ireland, to whose attention and humanity the patient was greatly indebted for his recovery.

In the chronic form of the disease no medicine is so efficacious as nux vomica or strychnine, especially when the disease is not of too long standing, and the muscles not reduced to a state of extreme atrophy.

Case.—A boy, about fourteen years old, was thrown down by some horses, which pulled a loaded wagon over his back. He was taken up in a state of paralysis in the lower limbs, and was attended by a surgeon, who applied leeches and blisters. As the paralysis continued unrelieved during several weeks, I was consulted, and prescribed the tenth of a grain of strychnine, and afterwards the sixth of a grain three times a day. At the end of ten days the boy was able to walk, and soon afterwards completely recovered.

Case.—A boy, four years old, whose case was alluded to before, was knocked down by the splinter-bar of a gentleman's carriage, and picked up unable to walk. The nature of the injury was not observed until paraplegia was complete, and too much time had elapsed for any benefit to be expected from local treatment. At the end of one year I saw the patient, and found him unable to stand without assistance, the left leg being paralytic, and the right leg and thigh cold, and in a state of such extreme atrophy and muscular debility that they appeared to hang suspended from the joint. He had no control over this extremity, and when he attempted to advance it, he was obliged to rotate the hip backwards and forwards, to produce a swinging motion in the limb, before he could proceed, even while supported by an assistant, in the same manner as an infant when learning to walk. I prescribed the eighteenth of a grain of strychnine, which was gradually increased to a sixth, twice a-day. At the end of a fortnight the boy was enabled to elevate the right thigh upon the pelvis, so as to throw the leg forward, and could walk without assistance by holding a table, or any piece of furniture. He was observed during the night to have frequent spasms in the muscles of both legs. After continuing this medicine a month, no further progress was made, and therefore the medicine was suspended.

Sometimes only one muscle, as the gastrocnemius, is affected with paralysis, and the external parts with coldness. At other times the peronæi muscles are the seat of the disease. In the latter case the child is observed to turn the foot inwards as he walks, and the leg affected appears much less than the other. In all such cases we shall find the stomach and bowels more or less deranged. The patients should therefore take, every third morning, a purging dose of chloride of mercury and jalap. In addition to this constitutional treatment, some mechanical support must be provided to prevent distortion, until the paralyzed muscle has recovered sufficient strength to counteract the opposing and devious efforts of its antagonists. In some cases the contractions produced by the constant uncontrolled action of certain muscles proceed so far as to prevent progression, and require a surgical operation. When such cases are of many years' standing, there is not much chance of benefit being afforded by strychnine, nor by any internal remedy. The only relief we can give to such patients is that of dividing the contracted tendons.

Case.—An idiotic girl, six years of age, was observed at the proper time of walking to be unable to bear her weight on her legs. When she was brought to me for examination, I found the legs crossed each other every time she attempted to step forward, and

she was still unable to support her body, in consequence of which she was during the day placed in a go-cart, which is an old-fashioned contrivance intended to support children and prevent them from falling while learning to walk. I divided the tendons of the semimembranosus and semitendinosus muscles, and the tendinous expansion of the biceps, in the manner recommended by Stromyer. This operation had the desired effect of removing the infirmity as far as the crossing and retraction of the legs were concerned, so that the child could afterwards elevate and advance the legs in a straight direction. This defect or disease in the spinal marrow, producing the paralysis of the muscles which were designed to move the legs outwards, must have been congenital.

PARAPLEGIA. (See "Medullary Meningitis," and "Softening of the Spinal Marrow.")

HEMIPLEGIA. (See "Meningitis," and "Chronic Meningitis.")

SPINA BIFIDA.

While the rudimental ossific process is proceeding during the first month of the intra-uterine existence of the fœtus, it is liable to be arrested, when spina bifida will be the result. The deficiency of bone in the vertebral column may be either anterior or posterior. Its most common situation is, however, in the posterior part of the lumbo-sacral region, the spinous processes being deficient at the part. The interruption to the process of ossification is supposed by Cruveillier to be occasioned in some instances by adhesions between the integument and the membranes of the medulla spinalis before the formation of the cartilaginous laminæ has been established. In a great majority of cases the nerves are found in connexion with the sac, and Cruveillier is of opinion that the chord as well as the nerves is connected with the sac when the disease exists in the usual situation. The sac contains a fluid, which is sometimes effused within the bag of the arachnoid, and at other times between the arachnoid and the chord. In the former case the chord and nerves remain undisturbed, but in the latter they are found to project backwards in connection with the adherent arachnoid, the nerves passing across the tumour to their respective foramina. When the nerves are exposed to much pressure or become softened, paralysis of the lower extremities or of the sphincter of the bladder or anus is the consequence.

The tumour varies in size from that of a nutmeg to that of a large orange, and is either covered by the integuments, or, these being deficient, it presents the appearance of a red fungus. The covering is occasionally so thin as to become transparent, and in all cases the tumour recedes while external pressure is applied; but such compression is apt to occasion convulsions.

In general, children die from the disease at an early period, and it is occasionally associated with hydrocephalus or encephalocele. In most cases sloughing of the integument occurs soon after birth, when speedy death ensues, attended with convulsions. In a few rare instances the sides of the sac become indurated, and the patients grow up to maturity, the tumour remaining stationary.

Treatment.—The treatment which has been found most successful is that of puncture, but this simple operation has sometimes proved fatal.* A fortunate result has succeeded to puncture in several recorded cases.† This operation should be performed on one side of the tumour by means of a small grooved needle to prevent injury to the nerves, and the fluid should be allowed gradually to escape. The disease has been cured by Sir A. P. Cooper by gradual pressure applied by means of a mould of plaster of Paris, lined inside with lint, and retained by a roller.

Dubourg has twice accomplished a cure by removing the sac with the knife and uniting the wound by harelip pins and ligature.‡ There is great danger by such a rash proceeding of producing convulsions and death, in case the nerves and spinal column should be adherent to the sac.

In many cases all that need be done will consist of the application of gentle pressure by means of a linen truss and compress, especially when the infant experiences convulsions, or the least distress from experimental pressure.

A short summary of the principal features of spina bifida, and some sensible pathological remarks on the disease will be found in the "Med. Gaz." for July 5, 1844, by Mr. Hewett, curator of the St. George's Pathological Museum.

PARTIAL PARALYSIS. (See "Softening of the Spinal Marrow.")

* See "Fatal Cases from Puncture," in the "Lancet," vol. xiii., p. 308; and vol. xx., p. 475.

† See "Lancet," vol. xi., p. 800; and "New York Journal of Med.," for Sept. 1843; and "Med. Chir. Trans.," vol. ii.

‡ "Gazette Medicale," and "Medical Press," vol. vi., p. 117.

GENERAL CONVULSIONS, OR EPILEPSY.

I HAVE already spoken of some partial convulsions under the heads of "Flatulence, or Inward Fits," "Spasm of the Glottis," and "Dysentery." The convulsions I am now about to treat of are those general convulsions which affect more or less all the voluntary and some of the involuntary muscles, accompanied with temporary suspension of the intellectual faculties. Zangerl, who published an excellent monograph at Vienna in 1834,* has divided convulsions into various species, according to the cause: as, for instance, Primitive or Secondary, Acute or Chronic, Periodical or Irregular, Partial or General. They may all, I think, with propriety be arranged under the general term, Epilepsy. The convulsions may occur suddenly, or be preceded by some premonitory symptoms; they may affect the muscles on one side of the body exclusively, or each side alternately, or both sides at the same time. In some instances, as in adults, the head is at the commencement drawn to one side; but in general that only happens when the muscles on one side of the body only are convulsed. During the fit the eyes are variously affected, being sometimes distorted so as to present the appearance of squinting; at others they are fixed, as though they were directed towards one object in a straight line; at others they are turned upwards or downwards; and the pupils are sometimes dilated, at others contracted, and sometimes one pupil is dilated and the other contracted. The muscles concerned in respiration are thrown into disorder; the abdominal muscles are contracted, and the diaphragm is sometimes immovably fixed with spasm, the muscles of the larynx closing the glottis, and producing temporary suffocation. At other times the muscles of respiration are simultaneously thrown into rapid and tumultuous action, while the teeth are firmly forced into contact, and the saliva, being moved backwards and forwards between the aperture of the teeth and mixing with the particles of air, produces a frothy appearance, or what is commonly called a foaming at the mouth. When the pressure on the brain is more than ordinary, stertorous breathing is produced, which sometimes terminates in apoplexy, whereby either in a short time the patient is sometimes destroyed or paralyzed during the remainder of his life, and impaired with respect to his intellectual faculties, or rendered by some organic disease in the brain subject to irregular or periodical epilepsy. When respira-

* Liber die Convulsionen in Kinderlichen Alter.

tion is suspended any considerable time, the tongue, face, and the eyes become red and injected, and the whole surface of the body assumes a purple colour, in consequence of the process of decarbonization of the venous blood being interrupted, and the child sometimes dies from this cause. This usually happens at the commencement of some eruptive fever, or when some antecedent morbid action suddenly subsides, and is translated to the brain, while the patient is plethoric and robust. When the infant appears unusually pale, and the face assumes a cadaverous aspect from the retreat of the blood from the periphery of the body; and when at the same time the surface is comparatively cold, and the albuginea, or white part of the eye, appears of a pale or light blue colour, the eye itself being sunk within the orbit, it will be found either that the patient had been previously labouring under a lingering and exhausting disease, or in a state of anæmia from some other cause. These opposite appearances and conditions should be particularly noticed by the physician, as the proper treatment both at the time of the attack and afterwards will be equally opposite. In the former case the action of the heart and arteries is violent before the respiration has been suspended, the face is expanded and often turgid, and the animal heat excessive; and when the fit has subsided, a general and copious perspiration follows. In the latter form of the disease the appearance of the child is like that of a person who is suffering with convulsions induced by hemorrhage. The face is contracted, the skin cold, and the natural pink colour of the skin is exchanged for that of a person who is fainting.

The effects of convulsions are often overlooked when they occur to very young infants. The consequences I have already mentioned, as, hemiplegia, or idiotcy, are most apt to follow the first species, in which the vascular congestion or excitement has been obvious, and in which the rupture of a blood-vessel may be apprehended. The consequences of the other species are such as may be expected where the blood has been deprived of a portion of its fibrine, namely, serous effusion either into the brain, cerebellum, or medulla spinalis. Hence we often find, as its sequelæ, amaurosis, or partial paralysis in one of the extremities, which may escape notice until the child may have begun to walk, when a distortion of the foot and a wasting of the paralyzed muscle become apparent. The patient, on recovering from the first species of epilepsy, resumes his natural appearance, the blue or purple colour gradu ally retiring; and on the subsidence of a fit of the other species of the disease, the pallid and withered aspect is by degrees exchanged for the usual appearance of the face and integuments antecedent to the attack. The termination of both these attacks is usually in

temporary stupor or sleep. Dr. Locock* and others have endeavoured to draw a line of distinction between these two species of convulsions, by representing that in the first the fontanelle will be found projecting, and in the latter flattened or retracted. During the intervals I consider this distinction an useful guide in practice, and with its aid I have frequently been enabled, in conjunction with other circumstances, to pronounce a positive opinion on the presence or absence of incipient, chronic hydrocephalus; but when the patient is struggling with a paroxysm of convulsions, I think the physician cannot safely rely upon such a distinction alone, because although in the second species the disease may be produced sympathetically by the excito-motory system acting on the cerebro-spinal centres, and transmitting thereto through their nervous fibrils some distant irritation, the deficient supply of blood existing within the cranium at the time may occasion a temporary depression of the fontanelle.

When general convulsions occur during a very early period of infancy, they are for the most part occasioned by irritation or violent pain in some part of the alimentary canal. At this age any indigestible substance taken into the stomach is liable to cause epilepsy, by producing vascular congestion, and cerebro-spinal irritation. In such cases I have always observed the mouth puckered by a strong contraction of the orbicularis oris muscle, while the jaws have been widely separated, and the chin elongated by a spasmodic action of the digastric and genio-hyoid muscles, and the voluntary muscles of the extremities have been at the same time in convulsive motion. When the congestion and consequent irritation have existed in the lower part of the intestinal canal, I have often noticed the convulsions in the extremities, to alternate with opisthotonos, or fixed convulsion in the muscles of the back. As long as the congestion and cerebro-spinal irritation continue, the patient will be liable to repeated attacks of convulsion.

The period at which the convulsions of infants most frequently take place is that, at which the primary teeth are about to discover themselves. This period varies according to the constitution of the individual, from the third to the eighteenth month. At this epoch, which is always watched with some anxiety, an increased current of blood is invited towards the head, for the purpose of supporting the process of dentition, and the development of the intellectual faculties, which are then unfolding themselves with great activity. This state of orgasm, or sudden excitement, is accompanied with an increase of temperature about the head,

* "Cyclopædia of Practical Medicine," Article, "Infantile Convulsions."

which is modified during the night by a copious perspiration through the pores of the skin, covering the head and face. While the circulation in the brain remains in this excited state, a slight degree of congestion or inflammation is sufficient to occasion cerebro-spinal irritation, particularly in those infants, who, from their natural conformation, consisting of a large head, short neck, and capacious chest, are predisposed to cerebral diseases.

Infantile convulsions are sometimes produced by poisons, by fright, by extreme cold, &c.

Epilepsy seldom returns periodically, until after the child is seven or eight years of age; such is at least the result of my own observation.

Treatment.—In the treatment of convulsions, our first object should be to endeavour to remove them, and the next to prevent their return. An infant labouring under the congestive or inflammatory form of the disease, if robust, and if from the blue or purple colour of the face and the rest of the body, apoplexy is apprehended, should be bled to a moderate extent, by an opening made in the jugular vein. He should also be placed in a warm bath, while cold water is poured on his head, until it becomes cool; and the warm bath and cold effusion on the head should be repeated as often as the convulsions and heat of the head return.

Should the gums be inflamed and rendered prominent by the pressure of subjacent, deciduous teeth, they must be lanced by crucial incisions; and, as soon as the patient can swallow, a purging powder, composed of chloride of mercury and jalap should be given. In cases of constipation of the bowels, relief may be afforded by an enema of gruel or warm water; and the operation of the powder, when tardy may be accelerated by castor-oil or sulphate of magnesia and infusion of senna, administered at the end of two or three hours. The various antispasmodics as they are called, such as musk, assafœtida, castor, &c., on which the ancients used to rely, and which are still adopted by some routine-practitioners, ought to be entirely discarded; as their use is not founded on any rational or sound pathological views, and they divert the attention of parents and nurses from the necessary parts of the treatment. After the purgative medicines have operated, the evacuations should be examined by the medical attendant, and when found disordered, a regular system of treatment should be pursued, with the intention of restoring the healthy state of the intestines. Convulsions occurring during any stage of dentition, will be found to be connected with a torpid and costive state of the bowels, on account of the temporary determination of the circulation, and excitability to the head and the alveolar processes

in particular, and the consequent defect of the natural secretions in the stomach and bowels. The young physician must not, therefore, be misled by any preceding or attendant purging as a symptom of dentition: for should dysentery or diarrhœa be present during that process, he may rest assured that they arise from muco-enteritis, which will require appropriate remedies. Sometimes the constipated condition of the bowels is occasioned by improper food, or by the maternal or nurse's milk. In either case a dose of castor-oil, sufficient to relax the bowels, should be given the infant every morning, until a healthy state is restored; and the food should be improved by adopting a thinner diet, or by changing the milk with which he is suckled. In these cases convulsions are apt to follow a severe attack of spasmodic colic, when the most appropriate relief will consist in the immediate exhibition of a full dose of castor-oil.

In the adynamic or anæmial form of the disease, or that which is induced by pain or irritation, when the patient is feeble or in a state of exhaustion from loss of blood, or from a long continued disease in any of the organs of supply, he should be immersed in a warm bath, and cold water should be sprinkled on the face and chest to excite the respiratory nerves. After which, when the fit is slight, an inspiration will generally take place. While in the bath a little sal volatile or sesquicarbonate of ammonia, dissolved in cold water, may be given with advantage. At the end of ten or fifteen minutes the infant should be removed from the bath, and if he has not recovered from the fit, frictions with hot flannel should be applied, and in case the bowels are confined, a dose of castor-oil given, as soon as deglutition has been restored. Should the circulation remain feeble, a little warm wine and water must be administered. When the peculiar convulsions in the muscles of the mouth, and those attached to the os hyoides, which I have described, are present, there will be reason to presume that some undigested substance remains in and irritates the stomach. In this case a feather passed into the pharynx may excite vomiting, or an emetic may be advantageously given for that purpose. I have known epilepsy accompanied by this particular convulsion which I have related, continue a week, until an emetic I had prescribed enabled the stomach to reject a piece of orange-peel, which had occasioned all the mischief. During the intervals of these convulsions, their exciting cause must be inquired for and removed; otherwise, effusion of serum endangering life will be apt to occur within the brain from repeated attacks. These are the species of convulsions, which attend spasm of the glottis, when it is accompanied or followed by epilepsy; and it is a most important matter,

as far as the safety of the patient is concerned, for the medical attendant to understand that in such cases abstraction of blood must be studiously avoided, otherwise the child will be inevitably plunged into a state of collapse, which will not only increase the convulsions, but terminate in the death of the patient. As these convulsions usually occur in the decline of some exhausting disease, they are full of danger, and therefore ought to be treated on the most scientific principles. In addition to a proper attention to the state of the bowels during the intervals, some plan of treatment must be adopted, and the child should enjoy the advantage of pure air. Disulphate of quina, and, in some cases, oxyde of iron will be found serviceable in this state.

Periodical epilepsy, to which children only above seven or eight years of age have appeared in my practice to be liable, is a very tedious and obstinate disease. Nevertheless, most cases admit of cure, when not dependant on organic disease in the brain, either by the ammonio-sulphate of copper, or digitalis. The dose of the former medicine is one grain twice a-day during two days; and afterwards two grains at night and one in the morning, in the form of pill. One grain of the powder of digitalis may be given every night and morning to a child of the age above stated. The manner in which these medicines operate in curing epilepsy is, I apprehend, by exciting nausea, which directs the determination of blood from the brain to the stomach. When the full effect of the digitalis has been obtained, it should be occasionally intermitted; but it must be observed, that in epilepsy and some other cerebral diseases, the stomach seems to possess a peculiar tolerance of this medicine, of which great and salutary advantage may be taken, when effusion is about to occur. The nausea excited by digitalis in this and other cerebral diseases is indirect; its first operation being on the brain and thence communicated to the cardiac and gastric branches of the pneumo-gastric nerves. The effects of this indirect action on the heart and stomach are to delay the motion of the former, whereby cerebral congestion is obviated, and to suspend digestion, and thereby to diminish the supply of the circulating fluid. The beneficial purposes, to which this property of digitalis may be applied in the treatment of cerebral diseases has been alluded to in the treatment of hydrocephalus internus.

OPISTHOTONOS. (See "Convulsions," "Cerebral Apoplexy," "Medullary Meningitis," and "Softening of the Spinal Marrow.")

TETANUS. (See "Medullary Meningitis," and "Softening of the Spinal Marrow.")

TRISMUS NASCENTIUM, OR, THE LOCKED JAW OF INFANTS.

This disease, which consists of a permanent spasm of the muscles of the lower jaw, attacks infants within the first eight or ten days after birth. It is most common in very cold and in tropical climates, and appears either in an acute or chronic form; the former proving fatal within thirty hours, and the latter extending, in some cases, to the eighth or ninth day. The acute variety commences with severe and irregular spasms of the temporal and masseter muscles, accompanied with foaming at the mouth, closure at the jaws, and strong contraction of the flexor muscles of the thumbs. The face, and sometimes the whole body, is swollen, and of a dark brown or purplish colour. As the disease proceeds, the respiration becomes hurried, and the patient is exhausted with the muscular spasm, and with pneumonia, or hepatization of the lungs, the result of obstructed pulmonary circulation. The bowels are always constipated.

The chronic variety commences with dysentery, and is attended with a cold, exsanguineous state of the skin, whence it has been popularly denominated the "white locked-jaw." This form of the disease is tedious, and attended, as when dysentery is uncomplicated, with rapid emaciation, which renders ordinary treatment insufficient, and terminates in death.

The pathology of trismus is imperfectly understood. Dr. Clarke supposes that the predisposing cause exists in the unwholesome atmosphere of crowded hospitals;* and Colles has carried his views of infection still further, by expressing his suspicion that this species of trismus is of the traumatic character, and that it is produced by the action of the hospital air upon the ulceration left by the separation of the funis.† The latter hypothesis has not been supported by anatomical investigation, and is insufficient to explain the origin of the disease. The fact of locked jaw occurring principally in tropical and the coldest hyperborean regions, is sufficient to induce us to believe that it is the result of exposure of the face, or of the whole surface of the body, to a sudden change of temperature, which produces inflammation in the neurileme of the infe-

* "Trans. of the Royal Irish Acad.," vol. iii.
† "Dublin Hospital Reports," vol. i.

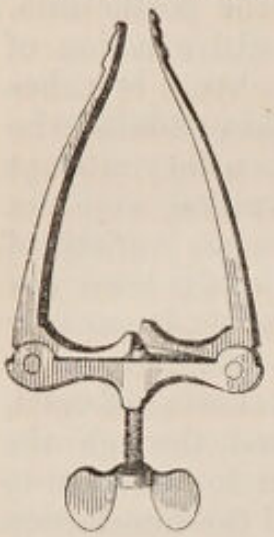
rior maxillary branch of the fifth pair of nerves. These being excitor as well as sensitive nerves, produce contraction in the muscles supplied by the cervico-facial division of the portio dura, or proper facial nerve. The same kind of convulsive action of the muscles supplied by the temporo-facial and stylo-hyoid branches of the portio dura takes place from exposure to cold in adults, who from this cause suffer most excruciating torture, when they attempt to masticate or swallow, and would die from innutrition, were not appropriate remedies speedily applied. In the acute variety of trismus, the spasmodic contraction of the muscles of the lower jaw continues almost without interruption, and the larynx is partially closed. Hence the lungs, labouring to conduct the pulmonary circulation, become congested, hepatized, and sometimes inflamed, and the consequent transmission of venous blood through the arterial capillaries of the face and the obstruction to its return to the heart, produce the dark purplish colour and the tumefaction of the face. The tumid state of the rest of the body is also referable to obstruction in the large venous trunks conveying the blood to the right auricle of the heart.

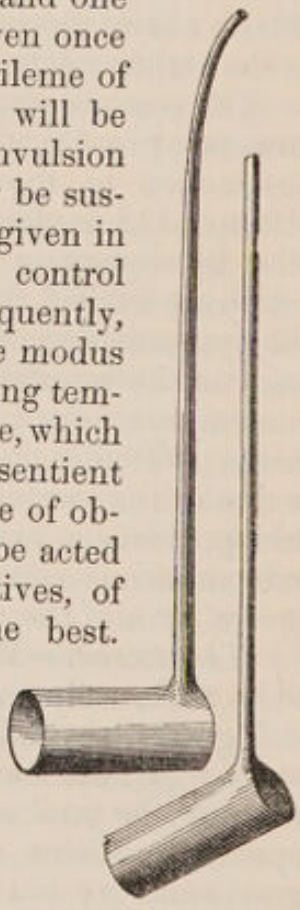
The complication of dysentery with the chronic variety of trismus, is a proof that the origin of both diseases is from a sudden obstruction to the cutaneous transpiration. Dr. Mason Good attempted to explain the spasm of the temporal and masseter muscles, by supposing that the irritation of acrid matter within the intestines excited the motor muscles through the instrumentality of the sympathetic nerve.* The locked jaw has, however, no dependance on the intestinal disease; being only an accompaniment, and contemporaneous and homogeneous in its origin. The rapid emaciation, which is one of the characteristic symptoms of this variety, is due to the morbid condition of the intestinal mucous membrane, and presents a remarkable contrast to the congested state of the sub-cutaneous cellular tissue, accompanying the acute and more severe form of the disease.

Treatment.—Most writers represent the locked jaw of infants to be necessarily and uniformly fatal. Viewing this disease physiologically, the following is the plan of treatment I should recommend:—In the acute variety, the first step to be taken must be to separate the jaws a little, so as to admit the introduction of some opening medicine, as croton oil, &c. This proceeding will require great caution; but it may be accomplished by insinuating between the jaws the instrument represented on the next page, and carefully separating its rami to a little distance by means of the screw.

* "Study of Medicine," vol. iv., p. 347.

As soon as sufficient space has been thus procured, a wedge-shaped piece of cork should be passed between the gums, so as to admit the introduction of the canula, which must be passed onwards until its point reaches the back of the fauces behind the glottis.* A teaspoonful of castor oil, or a drop of croton oil, suspended by a little mucilage, or a portion of the yolk of an egg and some water, should now be poured into the cup-like extremity of one of the canulæ, which, being elevated, will deliver the contents into the pharynx, whence it will be propelled by the natural efforts into the stomach. Milk may also be thus introduced from time to time, and the jaws should be kept separate by the cork. As soon as the bowels have been acted upon, the tenth of a grain of extract of belladonna, and one minim of liquor potassæ arsenitis should be given once in four hours. The inflamed state of the neurileme of the inferior maxillary branch of the trigemini will be relieved by the arsenite of potash, and the convulsion of the muscles of the lower jaw will probably be suspended or removed by the belladonna, which, given in gradually increased doses, exercises a special control over the branches of the facial nerve, and, consequently, over the muscular fibres of the lower jaw. The modus operandi of the former medicine is that of exciting temporary inflammation in the gastric mucous surface, which diverts the circulation and excitability from the sentient nerve of the face, and interrupts the recurrence of obscure remissent excitement. The bowels must be acted upon daily by the repetition of suitable purgatives, of which castor or croton oil will be found the best. Indian hemp has been much used in traumatic trismus, but not with much success.





The chronic, or dysenteric, form of the disease will be most successfully treated by ten grains of sulphate of magnesia, and one tenth of a grain of extract of belladonna, gradually increased to one-fourth or one-half of a grain once in four hours; and when tenesmus is severe, by the exhibition of five grains of chloride of mercury. The subsidence of tetanic spasm,

* These instruments may be had at Evans and Co., 10 Old Change, London.

connected with dysentery and tenesmus, will, in most cases, be speedy and permanent from the internal use of a large dose of the chloride; but should that fail, a drachm of sulphate of magnesia should be administered.

In both varieties of trismus, I think it probable that a few leeches may be applied, with advantage, to the lower part of the occiput, with the view of relieving inflammatory action, should any exist, in or near the pons varoli, whence all motor nerves originate.*

I have not had any experience with the use of opium in the treatment of infantile trismus, on account of the tendency of this medicine to produce convulsions in very young subjects. Dr. Brun speaks in favour of its administration, in connection with calomel, castor-oil, and turpentine.†

INCUBUS, OR NIGHT-MARE.

This is a species of disagreeable dreaming, during which the patient fancies himself about to fall from a precipice, or pursued by a ferocious animal, or a robber or assassin, and unable to move and make his escape. Short, painful and horrible dreams of any kind constitute this disease. In some cases, nocturnal attacks of epilepsy follow in those who are plethoric, and predisposed to cerebral disease. When epilepsy has once occurred from this cause, it will be liable to occur whenever the stomach is overloaded, and the digestive process interrupted.

Night-mare consists of a convulsive action of the muscles of the larynx, and of locomotion, produced by vascular congestion and irritation from undigested food, communicated to the brain and spinal cord by the excito-motory nerves. Hence, children, whose reason and experience are immature, and whose nervous system is more sensitive than that of adults, and who are more apt than the latter to load their stomachs with pastry, unripe fruit, and other indigestible food, are most subject to the attacks of this disease.

Treatment.—Strict attention to diet, and the state of the bowels, is generally all the treatment required. Pastry, fruit of all kinds, and all other aliments which are not easy of digestion, and supper, must be regularly avoided. An active dose of salts and senna, given before bedtime, will obviate the disease, when it has been ascertained that the patient has exceeded the prescribed

* "See an ingenious paper on the "Source of Convulsions," by T. Wilkinson King, Esq. "Med. Times," Oct. 26, 1844, p. 76.

† "Dublin Med. Journal," vol. viii.

rules of diet; or, taken the next morning, will prevent its recurrence the following night.

When the tongue is furred, and the child is labouring under loss of appetite and muscular atony, a few grains of chloride of mercury should be given, with three times the weight of jalap, proportioned to the age of the patient, every third morning, until his appetite and health are restored. In one of the medical periodicals, a surgeon, I think, in the navy, states, that a large dose of bicarbonate of potash, or sesquicarbonate of soda, taken at bedtime, will always prevent the attack. This practice may be found useful when acid fruit has been taken, and there may not be time nor opportunity to administer an active purgative before bedtime.

SINGULTUS, OR HICCOUGH.

This consists of a convulsion of the diaphragm, and is most commonly excited in infants by over distention of the stomach. The phrenic nerves, which consist of bundles of excitor and motor filaments, derived from the cervical medulla, are designed to regulate the action of the diaphragm, and are essential to life. Hence, when the diaphragm is interrupted in its descent by distension of the stomach, produced either by excess of food or flatulence, the motor-filaments of these nerves excite the muscle into convulsive action. The same effect is occasionally incited by an enlarged liver, by peritonitis in its last stage, and by laryngitis, or other disease interrupting the respiratory function. When produced by laryngitis or croup, it continues uninterruptedly, until the patient is exhausted. On examining the thorax of an infant, who died from incurable hiccough at the age of seven months, I found the neurileme of the left phrenic nerve, as it passed over the pericardium, in a state of acute inflammation, with lymph interposed between its delicate membranes. In the advanced stage of acute peritoneal inflammation, a tympanitic distention of the abdomen occurs, which probably occasions hiccough, by producing undue pressure against the diaphragm. The same effect results from the generation of carbonic acid in the stomach, when it is loaded by a large mass of indigestible food.

Treatment.—Hiccough is generally so simple and harmless a disease in infants and children, as to require little or no attention. When it can be traced to a loaded stomach, a few drops of liquor potassæ, diluted with water, or a dose of Dalby's Carminative, will remove it, by absorbing the redundant gaseous product in the stomach. Underwood, in his "Treatise on the Diseases of Children," extols the use of acids for this disease. The hiccough,

which is symptomatic of peritonitis, or the last stages of typhus, is irremediable. When the disease is obstinate, and suspected to arise from chronic inflammation in the membranes of the upper portion of the spinal medulla, leeches and a blister to the neck may be recommended with the prospect of success.

CHOREA, OR ST. VITUS'S DANCE.

This distressing affection most frequently occurs from the sixth to the fifteenth year. Both sexes are subject to it. The disease may be either functional or organic. The symptoms consist of involuntary, and often grotesque, motions of the voluntary muscles, which in all parts of the body are more or less liable to its invasion. It generally commences with a twitching of the extremities, which either impede progression, or interfere with the voluntary movements of the hands and arms. Sometimes the occipito-frontalis muscle is spasmodically affected; at others, the muscles of the eyelids and face, which are variously distorted. The muscles of the pharynx and larynx are also subject to the disease; and those of the trunk are sometimes forced into various contortions. These are the usual symptoms of the functional species. The organic form of the disease succeeds to spinal meningitis, or inflammation of the pericardium, and is confined to the muscles of the trunk and extremities.

Chorea is sometimes fatal. In such cases, the disease will be found to depend upon organic disease in the brain or spinal column. (See "Medullary Meningitis.")

Among the various causes of the simple or idiopathic chorea, may be mentioned, neglected constipation of the bowels, anæmia, and chlorosis. The first variety may be distinguished by the periodicity of the principal paroxysm, and by concomitant affection of the nerves of sensation, as well as those of voluntary motion. Hence, in these cases, frequent migratory pain is complained of in the muscles and other fibrous structures.

The second, or anæmic variety, is discovered by the bloodless appearance of the patient, by frequent attacks of syncope, and by a hurried state of respiration, and by palpitation of the heart, excited by the least corporal exertion. This, as well as the next variety, is most apt to attack females.

The chlorotic variety partakes of the nature of hysteria, being accompanied more commonly than the other forms of this disease with dysphagia, aphonia, interrupted articulation, or globus hystericus.

Both the functional and organic form of this disease proceeds

from an excited state of the motor nerves, originating in the spinal marrow. In the functional species, the excitor fibrils are acted upon by the morbid state of the intestinal or uterine mucous membrane. To the former state, may be attributed the neuralgic and intermitting character of the symptoms, which, like dysentery, and most forms of quotidian ague, proceed from derangement in the functions of the ganglionic system of nerves.

Treatment.—The variety arising from constipation should be attacked by the exhibition of castor-oil, or chloride of mercury and jalap, which should be repeated every second or third morning. The neuralgic and periodical symptoms will be removed by five minims of liquor potassæ arsenitis, given in some convenient vehicle, three times a-day.

The anæmii and chlorotic varieties will be most successfully combated by two grains of sulphate, or twenty of oxyde, of iron, repeated three times every day. These medicines operate in a curative manner, by restoring the hæmatosine and fibrine of the blood, and invigorating the abdominal ganglionic nerves.

When a proper discrimination of the different forms of the functional species of this disease is exercised, there will be found no difficulty in effecting a cure.

The organic species of chorea demand attention to the nervous centres, whence the disordered motor nerves proceed. It seldom happens, however, that symptoms of chorea are discovered in these cases before fatal disorganization has taken place. Leeches, blisters, and, in the early stage of the disease, mercury, will be found the most appropriate remedies.

SPECIFIC DISEASES.

SCROPHULA.

Two distinct classes of children are the subjects of this disease. One class consists of those who have light eyes, light coloured or red hair, a transparent skin, and a superfluity of lymph. Such children are especially prone to diseases of the mucous membranes, as, bronchial catarrh, diarrhœa, and dysentery; and the slightest external injury is followed in them by inflammation and a deposit of tubercular matter.

Case.—A delicate female child, three months old, of fair complexion, while playing in the nurse's arms with a small stick, gently

touched the cheek below the eye. In the course of three weeks a dark, ecchymosed tumour appeared in the seat of the injury. This was followed by a chronic, scrophulous abscess, accompanied with considerable effusion of serum under the integuments adjoining the lower eyelid. At length the skin became thin and of a dark red colour, and it was agreed in consultation that a small opening should be made into the abscess for the purpose of discharging its contents. Before the time appointed for the operation had arrived, the swelling was observed to recede, and the redness of the integument to diminish. The operation being postponed, the tumour entirely disappeared, and shortly afterwards a similar tumour was discovered in the cellular membrane above the inner elbow. After continuing several months and threatening to burst, this abscess also subsided, and was followed by others in different parts of the cellular and adipose membrane; and several years elapsed before the scrophulous diathesis disappeared.

Case.—A young gentleman, whose subcutaneous membrane was loaded with fat, while running up a steep hill, felt great fatigue and exhaustion. At the end of a few days several small, dark, soft, nodular tumours were observed beneath the integuments of the hip and thigh. These swellings suppurated and discharged tubercular matter, and were followed by scrophulous inflammation in the hip-joint, which continued two years, and terminated in anchylosis. In this case also the scrophulous disease was hereditary, the father having when young been afflicted many years with scrophulous disease in the tibia.

Children of this class are often distinguished by their obesity and clumsy conformation; their lips being thick, their cheeks having a brawny appearance, and their lower extremities being ponderous and disfigured by fat. Their intellectual faculties are also dull. Others, on the contrary, are elegantly formed, and possess an extraordinary refinement in their sensations and perceptions.

The other class of scrophulous children have a dark complexion, dark blue eyes, and long eyelashes. They are feeble and indolent, and their intellectual faculties are comparatively degraded.

A scrophulous diathesis is not only hereditary, but acquired; and this remark applies equally to some of the inferior animals as well as to the human subject. Hence horses and cows deprived of fresh air, and confined to a cold and moist atmosphere, and crowded together, become subject to tuberculization in the lungs.* Hence also we may trace the generation of scrophulous and tubercular

* "Youatt," "Jenner," &c.

diseases to the damp, dark, and crowded habitations which prevail in populous places, and are inhabited by the poor and destitute. Solar light and a pure atmosphere exercise a remarkable influence on the animal as well as the vegetable creation, and seem to be intended by nature to animate the nervous system and insure the purification of the blood in the great pulmonary elaboratory. The digestive and assimilative processes are also impeded by unwholesome localities; the proper proportions of the elements of the blood are disturbed; and a morbific condition of the circulating fluids is acquired. Inflammation excited by accident, or any other cause, produces results differing widely from those, which take place in healthy subjects; and when the scrophulous action is once excited, it invades the false as well as the natural membranes of the body. Pathologists differ in their opinions respecting the origin of the tubercular matter constituting scrophula, some believing that it consists of a degenerate kind of pus, while others maintain that the globules of tubercule differ from those of healthy pus, especially by the irregularity of their shape.* The disturbance in the elements of sanguification, whether the result of hereditary malformation or of a vicious cultivation of the animal economy, will explain the disparity found between the globules of healthy and scrophulous blood, as well as between the products of inflammation in sound and morbid constitutions. In speaking of phlegmonous erysipelas, I have unfolded the different stages of inflammation from the obstruction in the vessels of the part, to the extravasation of blood globules, constituting nodules, and their ultimate conversion into pus. Daily observation proves that this transition, the same in its nature but more slow and uncertain in its progress, takes place in scrophulous abscess, the process being modified only by the elementary change in the blood. These remarks apply more especially to the cellular structure, as will be shown when I come to treat of keloide or schirroide, one of the modifications of scrophulous inflammation. With respect to the serous and mucous membranes, a similar modification of the inflammatory process may be observed in scrophulous patients. In the former will be found often, in the same subject, as the product of inflammation, accretions of white tubercular matter, having a firmer consistence than healthy pus, and effused in the same manner as pus on the surface of the membrane, and lymph at first transparent and afterwards appearing as if infiltrated with skim-milk. If we carefully trace the progress of the morbid process, we shall discover capillary arteries ramifying through this opaque

* Lebert, "Muller's Archives," 1844.

false membrane, uniting the outer coats of the intestines perhaps with the peritoneum, or with each other, or the costal and pulmonary pleuræ, and ultimately depositing tubercular matter, and constructing tubercles of various colours and dimensions. Tuberculization in the mucous membranes is accomplished by the same kind of inflammation as that which produces the deposit of simple muguet, the difference consisting in the condition of the circulating fluids, which vitiate the inflammatory product.

Having before entered upon the subject of tubercular formations in the lungs and other organs, I need not enlarge upon it here, as my object is principally to direct the attention of the profession to what I believe to be the remote and immediate causes of the disease, namely, imperfect sanguification and the supervention of inflammation from cold or other exciting cause. The parts of the body most exposed to the influence of cold are the skin and the external glands. A peculiar disease affecting the adherent surface of the cutis vera, namely, scirrhoide, &c., will be described in the next chapter. Scrophulous inflammation in the lymphatic glands, as, in the axilla, the neck, and groin, is distinguished by its slow and indolent progress, and by the vast extent to which the accompanying swelling of the glands advances.

The external appearance of these glandular swellings is at first pale. Sometimes they acquire a certain bulk, and become stationary during many years. At other times they proceed slowly by suppuration, the skin becoming of a dark red colour, and very thin, and ultimately bursting. Whether an opening is effected spontaneously, or by art, the discharge will be found at first thin, and afterwards intermixed with masses of tubercular matter, resembling pus. In some cases the opening is extended by absorption, in others it may heal by immediate union of the integument, the subjacent parts remaining in a morbid state, and soon distending the skin with fresh accumulation of scrophulous deposit. When the integument is destroyed to any considerable extent, we observe it hollowed out at the edges, as if eaten and undermined by an insect, while the centre of the ulcer is elevated into irregular prominences. The discharge from the ulcerated surface is copious and constant, except at intervals, when cicatrization is attempted by membraneous bands, projecting in various directions, and having no connection with the ulcerated surface. In some cases surfaces of large extent will be found covered during a single night with a fine pellicle, destined to disappoint the patient by a subsequent excoriation.

Treatment.—The modes of treatment are preventive and remedial. The former consists in attention to food, which should

be nutritious, and clothing, which should be warm. Pure air and light are also necessary preventives. Children, who are prone to scrophula, should be removed from elevated and exposed, to sheltered, situations; and care should be taken to keep their feet dry, and to protect them from the easterly wind. Their exercise should be regular and moderate. When derangement in the stomach or bowels is discovered from any cause, it should be removed immediately by a proper dose of salts and senna, or rhubarb and magnesia. The slightest external injury should be relieved by leeches and other antiphlogistic treatment, otherwise a slight bruise may terminate in scrophulous inflammation in the cancellous structure of the adjoining bones; or effusion of blood beneath the skin may be followed by scrophulous abscess in the cellular membrane, instead of being absorbed as in healthy children. Glandular swellings should be treated by leeches and evaporating lotions or poultices, assisted by gentle purgatives. An ointment, composed of one scruple of iodide of potash and half an ounce of lard, may be rubbed every night upon the swelling. When the inflammatory process, on which, as I have before said, tuberculization is dependant, can be thus subdued, the swelling will be found to retire. On the contrary, when inflammation is allowed to proceed, and redness and fluctuation are perceived, if the tumour is seated in the neck, or any other conspicuous part, the plan of making a small puncture in the course of a wrinkle in the skin, as recommended by Sir A. Cooper, should be adopted. When ulceration is established, and the patient is annoyed with copious discharge, the most speedy cure will be effected by the constant application of linen rag dipped in cold water, and the internal use of purgatives. In such cases the most efficacious medicine is composed of ten grains of powdered jalap and forty of supertartrate of potash, which should be given every morning, or every second morning. This dose will be proper for a child about ten years of age. In all forms of tubercular disease, the internal use of mercury will be found injurious, unless exhibited as a purgative, or at the commencement of the inflammation, before the specific suppuration has been established. Some practitioners recommend a protracted use of sarsaparilla and liquor potassæ. Such medicines are quite unnecessary, when proper attention is paid to diet, and suitable purgatives administered. Preparations of iodine have been much extolled, particularly by Lugol, for the cure of scrophula. The use of this medicine is, I fear, much too promiscuous. It is only advisable before suppuration or softening has taken place, when in many forms of this disease it will be found beneficial. When time is required to effect recovery, a

change of air, as from a northern to a southern climate, should be recommended. A residence at Brighton, or some other part in the south of England, will be found highly advantageous, as a winter and vernal residence.

CANCROIDE, KELOIDE, OR SCIRRHOIDE.

I have separated this from the common forms of scrophula, on account of its uncommon and singular appearance. It is not peculiar to children, though they are liable to it; and as it is seldom seen, and, I apprehend, imperfectly understood in this country, I have introduced in this place an essay which I wrote upon the subject in 1839:—

"This singular disease was first described by Alibert, under the name of *cancroide*, a corrupt term, derived from the Latin word *cancer*, and the Greek word, εἶδομαι, *to be made to resemble;* which should have been *karkinoide*, from καρκῖνος, *a cancer*, and εἶδομαι. The word *keloide*, which is derived from κήλη, *a tumour*, and εἶδομαι, has been adopted by Biett, in his 'Clinical Lectures on the Diseases of the Skin.' *Scirrhoide*, derived from σκίρρος and εἶδομαι, signifies, *a malady resembling scirrhus.*

"It begins with slight elevations in the skin, which, increasing in size, terminate in tumefactions of an oval shape, with a depression in the middle, or in angular or longitudinal tumours, resembling the cicatrices of deep burns; they are hard and gristly in feel and appearance, and the epidermis covering them is attenuated and wrinkled; their colour is either pale-white, pink, deep red, or brown, and they project one or two lines above the level of the adjoining skin, their circumference being more elevated than their centre; their diameter seldom exceeds a few lines, but occasionally extends to half an inch or an inch, and in some instances to five or six inches or more. In general this disease is accompanied with deep, shooting pain; its progress is very slow, and it sometimes becomes absorbed, leaving a white, hard, cicatrix behind it, resembling a part which has been tied with a string. It has been met with in various parts of the body, but most frequently on the extremities and front of the chest. In one instance I have observed it on the head; and in two cases it has terminated in extensive scrophulous ulcerations.

"*Diagnosis.*—According to my own observation, this complaint resembles cancer only in appearance; it may be distinguished from the latter by the comparatively sudden manner in which it makes its attack, by its not invading the absorbent system, and by the absence of the cancerous diathesis. There is certainly one form of carcinoma greatly resembling this disease. This is the angular

scirrhus found in the female breast in advanced life, presenting an irregular puckering of the integuments, of a pale complexion, like the cicatrix following a clumsy attempt to unite a lacerated wound by the first attention. In this case the indurated part, instead of being elevated above the surrounding skin, as in keloide, is depressed; the disease is of many years duration and incurable, and is accompanied in its progress with scirrhous tubercles and with cancerous cachexy, which, whether the ulcerative process may occur in the part or not, ultimately destroys the patient. Tubercles are sometimes found in extensive scirrhoids. These, however, are not situated in the absorbents, do not possess the cartilaginous feel observed in carcinoma, and under proper treatment they disappear.

"*Pathology.*—The disease consists of a deposit of tubercular matter in the cellular membrane, immediately subjacent to the adherent surface of the cutis vera. My reasons for entertaining this opinion are the following:—The white, or straw-coloured, or pink elevations, which resemble other scrophulous tubercles; the solidity of the tumours; the removal of the specific deposit by absorption; the puckering and inversion of the integuments observable after the subsidence of the disease, which resemble those appearances found in the lungs after the thinner portions of the tubercular deposit has been absorbed; and the scrophulous diathesis manifested in those afflicted with this rare complaint who have come under my notice. This deposit of tubercular matter under the skin is probably the result of a previous, inflammatory condition of the blood, which in scrophulous constitutions is prone to generate that morbid product. In one instance, where incipient pulmonary phthisis was arrested by timely depletion, I discovered a small mass of tubercular matter in the blood, ready to be deposited, and the same fact has been noticed by Magendie and others.

"The pain and smarting accompanying the growth of these indurations, seem to proceed from the distension of the skin.

"*Treatment.*—The most efficacious mode of treatment, consists in the internal and external use of iodine. Various other remedies have been tried in vain: as, local bleeding, blistering, mercury, compression, sedative plasters, and extirpation. In a case which occurred in the practice of Dr. Warren, surgeon to the Massachusetts General Hospital, the morbid parts were twice extirpated with the knife, and the disease returned after each operation, and ultimately destroyed the patient.* In this, as in other varieties

* "Surgical Observations on Tumours." By J. C. Warren, M.D. Boston: 1837.

of scrophula, although mercurial preparations are generally inadmissible, the proto-ioduret of mercury will be occasionally found useful. The cases adapted for this medicine are those in which the disease assumes the tubercular form.

"*Case.*—Feb. 27, 1837.—E. K., a girl, ætat. five, was admitted a patient of the Bridgnorth Infirmary. She had been afflicted during fourteen days with a disease in the skin of the abdomen, resembling the cicatrix left by an extensive burn. It was quite elevated above the adjoining parts, of a whitish-brown colour, of irregular figure, felt hard and dry, and was accompanied with much itching. Its circumference was well defined by a hard, white ridge. The fore-arm, wrists, and hands, were also affected and contracted with the disease. To take daily, four drops of the solution of hydriodate of potass with iodine, in cold water.*

"March 11th.—Porrigo favosa on the head. Continue solution; calomel, one grain every night; ammonio-chloride of mercury ointment for the head.

"20th.—Porrigo much better; schirroide on the abdomen more flat and pale.

"Several circular, flat, elevated tubercles, nearly white, a fourth of an inch in diameter, appear in front of the chest and abdomen, at a distance from the original disease. They resemble the scirrhous tubercles found on the breasts of cancerous patients. The wrists and hands more flexible, and less indurated, and the skin covering those parts has assumed a pink colour, and affords some resemblance to lichen urticatus. Mouth a little sore; porrigo nearly well; several smaller eruptions on the abdomen. The original disease greatly relieved. Omit hydrarg. chlorid.

"Nov. 14th.—The patient having been removed from the infirmary, I had no opportunity of seeing her till to-day, when I found the iodine had been discontinued, and the disease had made rapid progress; both wrists and hands had been rendered helpless by the deposit of tubercular matter beneath the skin; two of the fingers were contracted immovably on the palm; and one foot was swollen with a scrophulous abscess occupying its entire, upper portion, and extending towards the ankle. Seven or eight eruptions, resembling the cicatrices of burns, appeared on the chest, abdomen, and one shoulder, and the child was unable to rise from bed.

"I recommended the practitioner in attendance to administer half a grain of hydriodate of potash, twice a-day.

* For this preparation, the following is the formula:—iodine five scruples; solution of potash, one ounce. Mix and agitate the fluid until the iodine is dissolved.

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the cancellous structure of the bones, produced by defective assimilation. The process of primary dentition in delicate children, is accompanied with a remarkable excitement in the nervous and vascular apparatus, destined at that period to construct the teeth, and superimpose their enamel. (See the article, " Dentition.") Both this nervous and arterial impetus are derived from the nervous centres, intended to support the digestive, assimilative, and peristaltic processes in the alimentary canal. In robust children, all these functions proceed without interruption, while the excitement from dentition is proceeding. In children whose stamina are feeble or imperfect, the customary action and secretions of the stomach and bowels are suspended during the dental erethism, and the blood is deprived of some of its proper, constituent elements. Hence the separation and absorption of calcareous particles, the elements of which abound in the farinaceous food of children, are interrupted, and the bones are deprived of the material which constitutes in health their solid fabric. Hence, also, the process of digestion is imperfect, in consequence of the deficiency of gastric secretion; the whole digestive tube is paralysed by the want of nervous energy; and not only the osseous, but the general, economy, is impaired by the defective alimentation. The enervate condition of the intestines interferes with the functions of the lower, as well as of the upper or the chylopoietic, portion of the alimentary canal; and large collections of offensive fæces, deposited within the cells of the colon, still further retard the natural evacuation of the canal, and often lay the foundation of one form of remittent fever. The intestinal discharges in these cases are either white, if recent, from deficiency of bile, or from the cause mentioned at p. 222; or almost black, and emitting a smell resembling rotten cheese, when they have been long delayed within the colon. Chronic, follicular muco-enteritis, or chronic erythematous muco-enteritis, is occasionally the primary cause of rickets. In the former case, the discharges from the bowels consist principally of muco-purulent matter, which is evacuated in great quantity; and, in the latter, the evacuations consist of serum, intermixed with small portions of lymph.

Treatment.—The only rational treatment of rickets, consists in restoring the healthy functions of the digestive tube, which is the proper elaboratory for replenishing the blood, and originating its primary elements. This will be best accomplished by the exhibition of one or two grains of chloride of mercury, and from three to six of jalap, every second or third morning, until all the stagnant collection of fæces is removed, and the discharges resume their natural smell and appearance. When the disease is con-

nected with chronic, follicular inflammation, one drachm of castor-oil should be administered every morning; and chronic, erythematous muco-enteritis should be treated by the administration of two grains of hydrargyrum cum cretâ, one-fourth of a grain of ipecacuanha, and three or four grains of sesquicarbonate of soda, every night, until the discharges from the bowels have acquired a proper colour and consistence. It was formerly the fashion to prescribe phosphate of soda, and preparations of lime, for this disease, on the supposition that the digestive and assimilative are chemical instead of animo-chemical processes. Passive exercise in the open air, and a residence on the sea-coast, contribute to effect a cure, and should, if possible, be enjoyed as soon as the regular action of the bowels and the digestive function have been restored. When the disease is discovered, and treated in due time in the manner I have pointed out, permanent deformity may be prevented, and even considerable curvature of the legs will be found to undergo a spontaneous cure, while the restoration of the general health is proceeding. Some cases will, however, occur, which will be greatly assisted by the use of an iron splint fastened to the shoe, to which straps are attached, for the purpose of affording support to the soft and flexible bones. Some practitioners, who have probably not witnessed cases of extreme distortion of the lower extremities relieved by art, reprobate the use of all instrumental assistance. Drs. Maunsell and Evanson, in particular, condemn the use of all instruments.* My own repeated observation convinces me that they are valuable adjuvants, when applied under the direction of such professional gentlemen as make that department their particular study.

SYPHILIS.

The venereal disease may take place in the fœtus during his uterine existence, or be acquired by inoculation from his mother or his nurse. It is now a well-known fact, which was first published by Mr. Hey, of Leeds,† that the fœtus in utero may be impregnated with this disease by his mother's blood, although she may not have manifested any symptoms during pregnancy. Many instances have occurred to my own observation of children being born in a putrid state, in consequence of the fatal effects produced by this disease, which has lain dormant in the mother. One woman produced sixteen dead children in succession prematurely, all of whom had been contaminated by this poison, although she had never manifested any symptom after her apparent cure. In many cases the poison appears to be pro-

* "Diseases of Children," p. 530. † "Medico Chir. Trans.," vol. 7, p. 541.

gressively exhausted from the mother by successive fœtus, and her offspring are ultimately produced in a sound state. The disease first appears in such of these infants as are born alive at the end of a week or fortnight, with inflammation about the anus and the external parts of generation. In a short time the specific inflammation attacks the mucous membrane of the larynx, producing a squeaking noise when the infant attempts to cry. To these symptoms succeed ulceration in the Schneiderean membrane and ozæna, and finally, copper-coloured eruptions on the nates, and afterwards on the face, chest, and other parts of the body. In some cases the first symptoms are a general desquamation of the epidermis and a brown colour of the skin, attended with emaciation and constant crying. The eruptions are at first moist, but soon become dry and scaly, and when unrelieved, they terminate in thick scabs. The skin becomes now universally copper-coloured, and the lips fissured. In a few cases I have found condylomata accompanying the inflammation at the anus.

The above marks of syphilis are so characteristic as to present no difficulty in forming a diagnosis.

When the disease is communicated by suckling, it first appears in the mucous membrane of the mouth, in the form of chancre or aphthoid ulceration. The secondary symptoms afterwards correspond with those I have just described.

Treatment.—No disease gives way with so much certainty to medicine as this to the different preparations of mercury. All that is generally required is to give two or three grains of hyd. cum cretâ, or half a grain of chloride of mercury twice a day, and to continue the medicine two or three weeks after all the symptoms have disappeared, to prevent a relapse, which otherwise is apt to follow. Sometimes a minute dose of tincture of opium is required to restrain the action of the medicine on the bowels. The condylomata may be speedily cured by the application of the following lotion twice a day:—

R—Hyd. Bichloridi . . . . . gr. ij.
Aquæ . . . . . ʒ j.—M

When the disease is congenital, both parents should undergo a gentle and continued mercurial course.

SCORBUTUS. (See "Purpura.")

CANCER.

As infants are subject to other specific diseases, there seems to be no reason why they should be exempt from carcinomatous affec-

tions; yet in an extensive practice of forty years, I have only met with the following instance:—

Case.—1833, August 13. Eliz. Perry, aged seven months, was brought to me for advice. She had a carcinomatous tumour in a state of ulceration, situated between the apex and frænum of the tongue. It was of the size of a crow-fig, ragged on its surface, exceedingly indurated, and so painful that the child was rapidly losing her flesh and vigour, and almost constantly crying. I passed a double ligature under the tumour, and tied it on each side. At the end of four days the dead parts were cut away, and as soon as the ulcer had healed, the child recovered her appetite and health.

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