fusa, all serve the same purpose, to wit, to produce a severe cutaneous irritation, with as profuse subsequent suppuration as possible.

That the antiphlogistic method of treatment has been employed with various degrees of vigor, and in every stage, is well known. Leeches have been applied to the temples, behind the ears, on the nape, at the anus, between the thighs, and large or small venesections in the arm, foot, and jugular vein. Ligature of the carotids even has been proposed, but I am not aware of its ever having been performed.

The application of cold has also been tried in various ways. The ordinary cold-water compresses are constantly kept on the sheared or shaved scalp, a bladder filled with ice is laid upon the head, the head is washed or douched two or three times in the hour with cold water, and an apparatus even has been invented for the purpose of keeping up an uninterrupted irrigation. To the first measures there is nothing objectionable, but the irrigation plan is an altogether too elaborate for practice.

"For this purpose," according to *Bouchut*, "the neck of the child is wrapped around by a water-proof cloth, which communicates with a gutter on each side of the bed. A thin stream of water is allowed to flow down upon the head of the child from a reservoir suspended over it, and is carried off in the gutters above mentioned." Whether hydrocephalic children will quietly submit to be thus showered, is not stated, but to me it appears extremely improbable.

Among the remedies capable of bringing about an absorption of the deposited exudation, mercury and iodine rank first, and the diuretics next. Of mercurial preparations, blue ointment, corrosive sublimate, and calomel, are most frequently resorted to; the last two are given in large doses, so as at the same time to operate on the bowels. Even tartar emetic, as high as several grains daily, has been administered as a general alterative remedy. Phosphorus also has been tried, on account of forming one of the component parts of the brain. Of the diuretics, nitre, digitalis, squills, and juniper—of the antispasmodics, assafœtida, camphor, moschus, castoreum, have been used. In restless, delirious children, opium has been given with marked tranquillizing effect, but the majority of physicians dread the paralyzing action of this remedy, and too readily believe that the steadily-increasing deterioration of the patients is in part caused by the opium. But he, who has seen a number of such cases perish without narcotics, will administer opium, or, still better, morphine, without timidity and without suffering any compunction of conscience, in cases of great restlessness and severe headache.

The short but extremely sad *résumé* of the whole treatment then is, that at first the treatment, as for a simple, non-tuberculous meningitis, is mildly antiphlogistic, with small doses of calomel, blue ointment, and cold ablutions of the head, and perhaps also by the application of moderately-active cutaneous irritants, and nervous excitement is tranquillized by morphine. Torturing, violent applications are to be avoided entirely, for their inefficiency has often enough been made evident, and it is admitted that methods of treatment which torture are only permissible when there is any hope of benefit. And yet, in a disease that is universally regarded as fatal, all possible therapeutic experiments are practised.

(2.) Meningitis Simplex, Purulenta, and Encephalitis—(Simple Inflammation of the Meninges and the Brain).—Although chronic hydrocephalus very naturally ranges itself with the acute, still a few words may be said here of simple meningitis, on account of the many analogies between it and the preceding disease.

It is a much rarer affection than acute hydrocephalus, and occurs no oftener in children than in adults. In this disease, portions of the brain proper in proximity with the meninges almost always are involved, and, as inflammation of the meninges cannot be clinically distinguished from congestion and inflammation of the cerebral substance proper, it is, therefore, best to describe these different morbid processes in one clinical discourse.

Etiology.—Occasionally the causes of this disease can be ascertained with great accuracy. The usual causes are traumatic—cerebral concussion, which, on account of the liveliness and awkwardness of the child, often enough occurs, injuries acting directly upon the cerebral substance, great heat and cold, insolation, immoderate mental exertions, and the propagation of inflammation from adjacent organs. The most frequent cause in this respect is otorrhœa; less frequently the meningitis takes its source from an ozœna, or from an inflammation within the orbital cavities. Meningitis also occurs after erysipelas, but, in the majority of instances belonging to this class, the erysipelas seems to be of a traumatic nature, and hence a purulent absorption through the osseous vessels must be assumed. Those cases of meningitis following metastases, repercussed cutaneous eruptions, suppressed epistaxis, etc., are mostly problematical, though even for these some very reliable vouchers are found in medical literature. At certain times this disease has been seen to appear in an epidemic form.

Pathological Anatomy.—The dura mater participates in the inflammation in traumatic cases only, and in these the morbid process always remains circumscribed, and produces a flat, fibrinous, or purulent layer of exudation upon that membrane. In chronic cases, which in

children are very infrequently observed, the dura mater becomes markedly thickened, and thrombi form in one or the other of its sinuses. In simple meningitis the inflammatory exudation is located between the arachnoid and pia mater, and penetrates deep into the convolutions and depressions of the brain. As an important distinction from tuberculous meningitis, it is never found so diffused over the base of the brain as upon the upper surfaces of the hemispheres. It, however, extends down over the spinal cord, and thus adding meningitis spinalis. The exudation is yellow, yellowish green, fibrinous, or purulent, and is scarcely ever more than a line in thickness. It is either bathed in a large quantity of turbid, opaque serum, in which it often liquefies, and then becomes converted into a flocculent, greenish, glittering fluid, or it is poor in serum and rich in fibrin, so that, when the arachnoid is pulled off, this false membrane partly remains hanging on to the arachnoid membrane and partly to the brain. The peculiarity is also worth mentioning, that acute hydrocephalus never occurs in combination with simple meningitis, but invariably supervenes upon tuberculous basilar meningitis. This is due undoubtedly to the fact that in the former the direct continuation of the pia mater into the cerebral cavities is free; in the latter, on the contrary, only the base of the brain becomes the site of the gelatinous mass of exudation. The outer stratum of the brain-substance may be involved and softened, or it may be in a perfectly normal condition.

This simple meningitis, which occurs in an extremely acute form, though generally terminating fatally, cannot, we may judge from the distinct traces of resolution occasionally found, be regarded as a hopeless disease. In the favorable cases the exudation becomes transformed into a fibrous structure, the pia mater into a milk-white, firm membrane, and becomes united with the cerebral cortex on the one side, and with the arachnoid on the other.

Symptoms.—Simple meningitis, when it is not of a traumatic origin, or is the result of an otorrhœa, attacks almost exclusively well-nourished, robust children, which bear no trace of scrofula. In cretins, who are not infrequently victims of this disease, the autopsy exhibits, conjointly with the old hypertrophies of the meningitis, a freshly-deposited exudation, so that the fatal disease in such case must be regarded as a relapse of the former meningitis. The commencement of the disease is extremely acute, and, by the second or third day, the process has already attained to its climax. All the prodromata that have been described in connection with hydrocephalus acutus are totally absent here. But a hydrocephalus that has already reached its acme can no longer be diagnosticated from a meningitis

of the hemispheres, and only the course of the two diseases furnishes the requisite data for a differential diagnosis.

In simple meningitis, as well as in the tubercular form, vomiting without retching, constipation, slow pulse, unrhythmical respiration, violent headache, retracted abdomen, and the whole train of nervous disturbances which have been more minutely detailed in the preceding section, occur. The following distinctions, however, may be made available: The course of meningitis simplex is more rapid, for death usually ensues between the third and sixth day after the invasion of the disease, and the temperature of the skin, particularly on the head, is correspondingly more elevated. The delirium is extraordinarily severe, even furious; the face has a wild, confused expression, and the convulsions and contortions of the body are of extreme severity. The pulse is less retarded than unrhythmical, the vomiting is not so constant, and may even be entirely absent.

When such children do not succumb to the meningitis in the first few days, the symptoms will abate very gradually, and recovery may be hoped for; but, as the diagnosis between the disease under consideration and acute hydrocephalus is difficult, recovery must continue extremely doubtful. A marked emaciation supervenes, and a mental weakness is liable to follow, a result which I have twice witnessed in my own practice. The great similarity in the termination of meningitis and of hydrocephalus makes the assertion, that acute hydrocephalus is sometimes curable, quite excusable, for it is indeed possible, although very improbable, that children of tuberculous parents may exceptionally acquire a simple meningitis, from which perchance they may recover.

Treatment.—In this disease, a mercurial treatment is decidedly effectual, the two children which I saw recover having been treated exclusively with mercury internally and externally. For this purpose, a drachm of blue ointment is rubbed in daily upon the sheared head, and gr. ss. of calomel is given every hour. In both children the disease had reached a most critical degree, as evinced by cerebral vomiting, unrhythmical pulse, retracted abdomen, and convulsions. Severe stomacace supervened, however, on the third day, and, immediately upon that, a gradual abatement of all the symptoms followed. Cold affusions of the head, repeated every two or three hours, exercise a very favorable influence upon the delirium. These are best performed by wrapping the breast and arms of the child in a shawl or cloth, the head is then held over a basin, and cold water is poured upon it from a moderate height for one or two minutes. A mitigation of the cerebral symptoms, although only temporary in its duration, always follows this proceeding.

Five children I treated with leeches, but all succumbed to the disease. As sudden blanching of the lips and rapid pulse followed the loss of blood so directly, they were regarded as the effects of this procedure. On the other hand, in those two children which recovered, no leeches were employed, and therefore, according to my own experience, I have to regard the treatment without leeches as the correct one. The stomacace and salivation, occurring as the effects of mercury, cannot be regarded as critical, though they may appear in cases which terminate fatally on the second day. Generally, it is easily recovered from by the administration of chlorate of potassa, of which a drachm, dissolved in several ounces of water, may be consumed every day.

Some maintain that, in cases of great excitability, opium should be used in combination with mercurials, but I am unable to approve of this; on the contrary, my experience leads me to consider narcotics as contraindicated in this terrible disease, which rapidly destroys by paralysis. I am the more opposed to the use of narcotics, that we possess in cold such a valuable remedy against the excitability.

Compression of the carotids with the thumb and index-finger against the spinal column, or the lateral walls of the larynx, for a minute or two, repeated several times a day until the head symptoms abate, has been highly recommended in France.

That this compression, when feebly executed, is only an illusory remedy, and when forcibly performed is apt to compress the jugular vein rather than the carotid artery, and thus in the end do more harm than good, has been conclusively proved by *S. Lewis*. This measure, therefore, has nothing but an historical interest.

The marked emaciation, which is the result of a meningitis, must be treated by a nourishing diet, by stimulants, iron, quinine, etc. For the mental weakness, which this disease in most cases leaves behind, there is no other remedy, to my knowledge, than mental rest, along with a tranquillizing, psychical treatment.

(3.) Insolatio—Sunstroke.—Insolation may next engage our attention, very properly ranking next to purulent meningitis, although the pathological anatomy exhibits no direct connection between the two diseases. In the former no purulent effusion is found upon the meninges, only intense injection, a slight augmentation of the reddish contents of the ventricles, and softening of the cerebral substance.

Symptoms.—Children who, with uncovered heads, have exposed themselves for some time to the direct rays of the sun, return to the house with flushed face, reddened neck and arms, and soon complain of an intense headache. The red color of the parts of the skin mentioned does not disappear, as after simple overheating, but remains for many days in the shape of small, elevated erythematous spots. After

several hours delirium comes on, often of a violent nature, with the development of an excessive muscular power, flushed face, injected eyes, contracted pupils, strong pulsation of the carotids, hot skin, dry tongue, and intense thirst. With this array of symptoms, a severe meningitis may well be suspected, but the pulse is very much accelerated, and, in the majority of cases, rhythmical, while in the purulent meningitis it often becomes retarded, and sometimes is unrhythmical. Vomiting also is absent, unless undigested food exist in the stomach.

The course of insolation is quite different from meningitis. After a half a day to at most two days, all these symptoms disappear. The child, at first, falls into a restless, then into a profound sleep, and wakes from it with complete consciousness, and, at the end of two or three days more, the health is fully reëstablished. But instances have occurred where death took place at the very commencement of the attack. These cases, however, form the exception, and are rarely met with in our moderate climate.

Treatment.—Venesection, it is true, produces some abatement of the symptoms, but, in consequence of the furious delirium, it is impossible to perform the operation, and the use of leeches is opposed by the same condition. The best and quickest means is always to cut the hair as short as possible with a few sweeps of the scissors, and then apply the cold douche to the head every hour. This procedure invariably produces a decided moderation of the furious symptoms. Ice may be applied to the head, sinapisms to the extremities, calomel and jalap may be given internally, and stimulating clysters administered. Almost all children recover from this seemingly extremely dangerous condition.

(4.) Hydrocephaloid and Irritatio Cerebri.—*Marshall Hall* found some resemblance between acute dropsy of the head and the symptoms originating in atrophic children due to anæmia, and on that account called the latter condition hydrocephaloid disease. This disease, although in no way based upon pathological anatomy, has been admitted into all the text-books, and I shall therefore also give it a brief discussion here. Although it is not a distinct disease, but rather a termination of such, still, the name deserves to be retained, if it were only for the sake of convenience, in order to describe a whole group of symptoms by one word. By irritatio cerebri, therefore, is understood almost exclusively those cerebral symptoms which commonly supervene in consequence of interrupted nutrition, or of atrophy, so that the symptoms of hydrocephaloid and of irritatio cerebri may, with the utmost propriety, be considered together.

Symptoms.—After various exhausting diseases, generally such as

diarrhœa, abstraction of blood, etc., children under one year of age are seized with a class of cerebral symptoms which, at first sight, without due reflection, might certainly give rise to the thought of a material alteration, an exudation in the brain. The most striking of these symptoms is an incessant rubbing to and fro of the head, or a boring of it into the pillow, by which the occiput is wholly deprived of hair, and small abrasions of the scalp, loss of epidermis, and furunculosis often result. Many children also pluck the head with their hands, pull the hair and ears, and scratch their faces until they bleed, and cease to notice the objects by which they are surrounded. The eyelids are half closed, and, in the majority of cases, the globe is rolled upward. The upper extremities are in a constant state of rigid flexion. The thumbs are drawn into the palms, and the fists closed so firmly that considerable strength is requisite to open them, and the palms of the hands become denuded of epidermis. This latter sign is especially observed in children who frequently handle the fermenting sugar-teat. The lower extremities are likewise rigid, either extended or contracted, and the muscles of the nape of the neck are so firmly contracted that, if the child be laid upon his side, the body will curve far backward. Occasionally, particularly toward the latter end, tetanic spasms supervene. Almost all these children vomit immediately after food or drink has been administered—a fact which gives this disease a resemblance to an exudative cerebral affection. It is also true that this vomiting occurs without retching or exertion (as is generally the case in young children), but it has its foundation in an irritable state of the gastric or intestinal mucous membranes. On examining the heads of children, who, in consequence of profuse diarrhœa, have become atrophic, and in whom these cerebral symptoms have appeared, the temperature will be found to be elevated, the anterior fontanel depressed, the cranial bones overlapping each other; in short, all the signs of such an extremely aggravated state of cerebral atrophy that we are enabled with the utmost certainty to prognosticate a fatal termination. Constipation is of more frequent occurrence than diarrhœa; but, should the latter exist, it is never copious; the appetite, in most cases, is slight, though sometimes a wonderful greediness comes on, and continues almost till death. The pulse, unlike that in genuine hydrocephalus, is extremely rapid, and the respiration, although unrhythmical, still almost always perceptibly accelerated. At first, the child will cry incessantly for several days and nights; toward the end it is only able to utter a low groan, or single abrupt cries.

Autopsy.—The brain is found softened and watery, the gray substance pale and not sharply defined, but passes gradually into the white portion. The meninges are infiltrated with serum, and in the ventricles only the normal amount of fluid is found. It is probable that the quantity of fat in the brain has become decidedly diminished, and in this manner the cerebral symptoms may be explained. I am not aware that any chemical investigations have been instituted in this direction.

Treatment.—Every thing that has already been recommended in the treatment of intestinal catarrh and enteritis folliculosa is applicable here; and the reader is therefore referred to that section. To counteract the continuous crying and sleeplessness, cold ablutions of the head, applied by the naked hand, the keeping of the body dry and warm, are, as yet, the only means worthy of recommendation. After the ablutions, rest for one or more hours usually ensues. The only active remedy capable of restoring such an extremely prostrated nutrition is, the breast of a healthy wet-nurse, the only precaution necessary to take being, not to wean the wet-nurse's child until the sick child is able to suck, which will often take several days. The necessary consequence of neglecting this precaution would be to subject the wet-nurse to sickness, a mastitis, or a suppression of the milk.

(5.) Hydrocephalus Chronicus (Chronic Dropsy of the Head).—Theoretically, an *external* and an *internal*, a *congenital* and an *acquired chronic dropsy* of the head are distinguished. Practically, however, these forms cannot be separated from each other, for it is impossible to assert, especially as regards the latter distinction, whether the child came into the world with a small effusion which subsequently increased markedly, or whether it was first formed perfectly normally, and only latterly became hydrocephalic. The external dropsy of the head is almost always congenital, and usually complicated with hernia of the brain, and on that account will be returned to further on.

Pathological Anatomy.—The most extensive effusion into the ventricles takes place in the fœtus, and the delivery often becomes impossible till perforation has been resorted to. In congenital dropsy of the head, the quantity of the water may increase to several pounds, according to some authors even to ten pounds. The ventricles are distended into large sacs, and their upper walls so attenuated that they rarely measure a line in thickness, or they may be reduced to so thin a covering that it is impossible to dissect it off. The convolutions of the cerebrum are faintly marked on the upper surface of the brain, may be perfectly smooth, and the meninges extremely attenuated. The deformity of the cranium corresponds with the quantity of water within it. The ossification of the cranial bones, naturally, is very much retarded, the sutures become wide enough to admit a finger, and the anterior fontanel attains a diameter of several inches.

Should life last for several years, an ossification finally takes place; it is effected by the bones sending out from their borders long radiating projections toward each other till they become united, and thus form excavated shallow sutures between them; or, finally, they may be united by a number of ossa triquetra becoming developed in the fontanels and between the separated bones. As these forms of union never proceed uniformly, one suture becoming closed on one side earlier than upon the other, marked malformations of the skull result, to which *Virchow* in particular has directed his attention. The most common abnormalities deserving to be mentioned are, the immoderately long, broad, high, round skull; the blunt, quadrangular cranium; and the cranium that slopes in the direction of the transverse or longitudinal diameter. The effused fluid acts no less strikingly upward than it does downward. The corpus striatum and optic thalami are flattened and forced asunder by the dilatation of the third ventricle, while the floor of the latter is very much attenuated and has become transparent. The corpora quadrigemina, through the same cause, are flattened, the commissures mangled and attenuated, the crura cerebri forced asunder, and the septum ventriculi broken through in many places. The cerebellum is diminished, out of proportion to the cerebrum, and flattened; also the pons Varolii and the pineal gland.

In *acquired hydrocephalus*, or that variety which develops itself in children who, from several months up to many years of age, enjoy a perfectly normal physiological development of the skull, the morbid alterations are less striking. The quantity of the serum in these cases depends upon the formation of the cranial bones; whether any and which sutures are ossified; and whether, at the commencement of the accumulation of fluid, a divergence of the bones can take place. The quantity of serum in these cases does not generally amount to more than from three to six ounces, and the alterations of the shape of the skull and brain, of course, never become so marked as in the congenital dropsy, which, after birth, continues to grow rapidly. The description of the external forms of the skull will find a more appropriate place in the section on Symptomatology.

Among the causes of chronic hydrocephalus, neoplasms in particular deserve to be mentioned, by which a sinus is made impermeable, and thus the accumulation of the serum is produced. Certain other complications, which could be brought into direct connection with hydrocephalus, tuberculosis particularly, so common in the acute form, do not here exist.

The chemical analysis of the effused fluid has taught us that the dropsical serum possesses very similar properties to that of acute dropsy of the head. Its reaction is alkaline, a trace of albumen is found, and the proportion of potassium to sodium is different from that found in the blood-serum. This subject is treated in detail at page 341.

Symptoms.—On examining the skull, marked deviations from the normal form are found. The earlier the hydrocephalus begins, the larger will the cranium become; it is largest where the process begins *in utero*, and smallest in the cases occurring after closure of the sutures. The earlier the exudation, or, more correctly speaking, the augmentation of the physiological exudation of the fluid contents of the cerebral cavities, occurs, the more pronounced will be the globular form of the skull; the later this happens, the less will be the deformity. If some of the sutures have become ossified, while others are still in a distensible condition, the skull will always be *elongated* in the direction of the *closed suture*. For the purpose of making the case complete, it is well to institute measurements of the enlarged skull, by which the largest circumference (that which passes over the frontal prominences), the distance from one ear to another, and from the protuberantia occipitalis externa to the root of the nose, may be ascertained. Practically these measurements have but little value, for the arching of the forehead and the attitude of the temporal bones furnish sufficiently accurate data by which to judge of the degree of the abnormal enlargement. They may, however, serve to instruct us as to the rapidity with which the disease progresses, for thereby it is strikingly seen that the distention of the cranium does not take place uniformly and gradually, but by fits and starts, the disease often being at a stand-still for long intervals. If the anterior fontanel is still ununited, as is the case in most instances, it will become distended to a great vault of several inches in diameter, will fluctuate distinctly, and feel tense. This arching and tension always continue until death, even when the body in general is very much emaciated. The synchronous rising of the fontanel with the pulsation of the radial artery can be very strikingly noticed, while its elevation and depression with the respiration are totally abolished. Great attention has been for some time bestowed upon the auscultation of the anterior fontanel, and it has certainly been clearly shown that a slight breathing or blowing murmur is perceived over various places on the skull, particularly over the large fontanel of rachitic children, but never heard in hydrocephalus. It is very easy to understand why these blowing murmurs disappear in cases of hydrocephalus, as they most probably originate in the unequal sinuses of the dura mater, and these must become seriously compressed by the increasing quantity of the water within the skull. The best index is the position of the temporal bones. While, in the healthy child, they stand perpendicularly, in the hydrocephalic

child they diverge greatly at the upper part, so that, in extreme cases of serous distention, the auricle is hid from view when looking down upon the head. After the disease has existed for some time, the upper wall of the orbit, through the continuous pressure of the brain, becomes flattened, and, as a result of this, the eyeballs protrude more and more, until the whole cornea, and even the upper segment of the sclerotic is exposed, a condition that gives a peculiar glaring and unnatural look to the features. From the same cause, augmented pressure within the skull, a strong collateral circulation occasionally also forms in the scalp and frontal integument, the distended vessels appearing as tortuous blue cords. This discoloration produces a singular appearance. The face, as contrasted with the dimensions of the vertex, appears extremely diminished, but, aside from that, retains its normal proportions. In most cases in young children, with congenital hydrocephalus, it is very lean, sharp, and has a senile appearance; while in older children it may remain plump and round until death.

The *functional disturbances* are numerous, and vary in almost every case. In the acquired form these symptoms come on either very gradually, or are ushered in by a fever and a few phenomena, such as occur in acute hydrocephalus—outcries, vomiting, headache, gnashing of the teeth, and delirium. The mental capabilities sometimes remain unaffected for a remarkably long time, and it is sad to behold the little sufferer, who, with a monstrous head, suffering involuntary fecal and urinary evacuations, with limbs paralyzed or contracted, yet answers all questions rationally, and even reasons acutely. In some cases, however, mental aberration is among the early symptoms, ending in imbecility. Of the senses, that of vision most frequently disappears first. The pupil becomes moderately dilated and fixed, and the sensibility to light so totally lost that children will gaze for a long time, and sometimes prefer to look directly at the sun. Strabismus is of less frequent occurrence in this form than in the acute hydrocephalus. A nystagmus of one or both eyeballs is oftener observed, and the pupils at times are unequally contracted or dilated. The other senses, in most cases, remain up to a brief period before death; this is especially true of the sense of hearing. The sensibility of the skin is diminished or abolished, especially in the paralyzed extremities. Hemiplegia occurs less frequently than bilateral paralysis, the lower extremities being the most frequently affected. This is followed by an insensibility, then a paralysis of the sphincters of the bladder and rectum, thus making the care of these children extremely laborious. Bed-sores are unavoidable; yet, as they fortunately accelerate very

much the termination of the little patient's sufferings, are blessings in disguise. Contraction of the muscles is of frequent occurrence; convulsions are occasionally observed, and death may occur during a fit. The remainder of the phenomena, which characterize an attack of acute hydrocephalus, as a rule, are absent in the form of disease under consideration. The respiration, which, in the former, is distinguished by the absence of the rhythm, in the latter is normal; likewise the retardation of the pulse is not ordinarily met with here. The digestion may remain perfectly normal, no vomiting and no constipation ensuing; or, if they do occur, they are only temporary. This explains the continuance of a good state of nutrition sometimes for years. If no other disease, such as tuberculosis or intestinal catarrh supervene, the nutrition will not be impaired; the appetite often becomes of a voracious character. The adipose tissue of the body becomes abnormally augmented. The patient complains only temporarily of headache, and febrile attacks are often due more to accidental intercurrent affections than to hydrocephalus *per se*. Acute accessions may cause, for a few days, the very picture of an acute hydrocephalus, still the deterioration does not progress as incessantly as in this latter condition, for a stasis occurs in the critical symptoms, and the disease again assumes its chronic character.

The *course*, as may already have been inferred from the preceding history, is of a chronic nature. Large congenital dropsies of the head are quickest terminated; they, indeed, are exposed to the greatest danger during the delivery, and only very exceptionally endure the injurious effects of pressure during that act. Very moderate effusions, which have been acquired much later, are tolerably well borne for many years, and such persons may attain to a middle age; indeed, a case of hydrocephalus is recorded which died at the age of fifty-four years.

Death may occur as an immediate effect of the cerebral lesions, from convulsions or increasing coma and collapse, where, at the autopsy, fresh meningitis or meningeal hæmorrhage may be found conjointly with the effusion. Bed-sores and their sequelæ, pyemia and exhaustion, may furnish the next cause. The subjects, in the majority of cases, however, die from intercurrent affections, chiefly from intestinal catarrh and enteritis folliculosa, or during dentition, from pneumonia, meningitis, or an acute exanthema. These affections in chronic hydrocephalus oftener terminate fatally than in previously healthy children.

The differential diagnosis in the well-pronounced cases has no difficulties, a diagnostic error being wholly improbable. Small collections of water, on the contrary, by no means furnish very striking