

with hereditary predisposition, its main promotive causes appear to be, exposure to cold and wet, depressing mental influences, and venereal excesses, particularly self-abuse.

Morbid Anatomy and Pathology.—The posterior columns of the spinal cord are characteristically altered (*sclerosis of Charcot*) in locomotor ataxy. With atrophy and degeneration of the nerve-filaments, increase in the bulk of the connective tissue gives a gray and semi-transparent appearance to the structure; especially in the dorsal and lumbar portions of the cord. The posterior *nerve-roots* (Vulpian) are similarly affected. So are, also, the cranial nerves, at first apparently at their peripheral ends, and progressively toward the centres. The 5th, 7th, and 8th pairs of nerves are not reported as having been found subject to the same lesions. Dr. James Tyson¹ found, in one case, softening of the lumbar enlargement of the cord, with partial sclerosis of the antero-lateral column, higher up. Examination of the ganglia and nerves of the sympathetic system has seldom been made in connection with this disease. Dr. Gull believes the brain to be frequently involved.

Although physiological considerations suggest a *cerebellar* as well as spinal seat for this disorder, in which loss of muscular co-ordination is so prominent a symptom, this view does not seem to be confirmed as yet by observation. The difficulty would appear to lie rather in the *perceptive* apparatus by which the natural stimulus of the motor centres is afforded and their functions maintained. Much is likely, however, to be yet added to our knowledge of this subject, by the attention now devoted to it.

Treatment.—Hopeless of cure, the life of a sufferer from this malady may be prolonged, and his discomfort lessened by the best hygienic management, as to food, atmosphere, clothing, and rest, aided by tonics, electricity (especially the constant current), and perhaps the careful use of strychnia, hypodermically (Drinkard) or by the mouth. Dujardin Baumetz² recommends phosphorus, in $\frac{1}{75}$ grain doses, in almond oil (F. 252). Dr. S. Weir Mitchell advises *rest* as an important portion of the treatment.³

INFANTILE PARALYSIS.

Under this name is designated what Handfield Jones would call *paresis* of some of the nervous centres, extending so far as, in infancy, to arrest nutrition, as well as to abridge power in the limbs. Adams points out the following characteristics of the affection. 1. The paralysis is usually partial, single muscles or groups of muscles only being affected. 2. Sensation in the paralyzed parts is generally perfect, or nearly so. 3. The bladder and rectum are commonly not distinctly implicated. 4. The paralyzed muscles are not rigid at any stage. Dissipation or bad health in the parents will predispose to this disease in children. No violent symptoms attend the onset of the attack, although it sometimes comes on quite suddenly. In fatal cases, Rosenthal, Duchenne and Damascina have found an atrophic malformation of the anterior cornua

¹ Phila. Med. Times, Jan. 31, 1874, p. 286.

² Bulletin Gén. de Thérapeutique, Jan. 15, 1868, *et seq.*

³ Am. Journal of Med. Sciences, July, 1873.

of the spinal cord; with enlargement and thickening of the blood-vessels; the latter being regarded as the primary change.¹ Spinal congestion is thought by many observers (Heine, Fliess, Laborde, Radcliffe), to be an early condition in this disease. Roth, of Bâle, has proved that, sometimes, there must occur myelitis of the anterior horns of the gray substance of the cord. Barwell considers it characteristic that the loss of power comes on suddenly, without other premonitory or attendant symptoms. But, since paralysis does actually occur during infancy, sometimes with and sometimes without evidences of spinal congestion, there is need of some farther addition to our terminology to make clear the discrimination among such cases. (*Lancet*, Feb. 24, 1872.) Duchenne considers that a disorder identical with "atrophic paralysis of youth" may occur even as late as forty-five years of age. Anton Frey also refers to a "temporary paralysis" of adults, similar to that of infants, consisting in acute myelitis of the anterior cornua of the cord. The attack, in adults, is described as commencing with feverishness, delirium, deafness, and sometimes convulsions. Mostly its duration is but one or two months; if more prolonged, the prognosis becomes unfavorable. Mostly, with care, this affection in infants tends to recovery. But want of knowledge or attention may allow *deformity* to result from it; especially club-foot. "Talipes equinus" (in which the heel will not touch the ground), says Dr. Taylor,² "is the first, and simplest, and most natural sequence of the paralysis—the weight of the foot being all that is necessary to produce it—and no other form of talipes is likely to occur while the patient lies in bed. The bending of the ankle outward (talipes varus) is the result of weight on a foot with a shortened tendo-Achillis; bending inwards (talipes valgus) of the ankle is the result of weight *partially* overcoming the gastrocnemius, soleus, etc., and talipes calcaneus (where the toes are raised so as to be unable to touch the ground at the same time with the heel) of weight entirely overcoming those muscles." The author just quoted concludes, from special experience, that all such deformities are *preventable*, by proper care as to the position and use of the limbs and muscles of all parts of the body during the paralytic or paretic state. The *treatment* of club-foot is a subject for surgical treatises.³

In some cases fatty degeneration of the muscles takes place to such an extent as to render the case almost or quite incurable. Brodie observed that a case is likely to recover, in which, when the child is lying on the back, there is power to draw the limbs up by flexing the thigh towards the body.

Treatment of infantile paralysis should consist of general recuperative management, including tonics (strychnia in some cases, with care) and cod-liver oil, salt bathing, passive exercise of the affected limbs, and galvanism; especially the constant current. The latter must be cautiously conducted in children. Local application of *heat* is advised by Drs. Taylor and Hammond. The

¹ Centralblatt f. d. Med. Wissenschaften, No. 11, 1872.

² Infantile Paralysis, p. 83.

³ *Adhesive plaster* has lately been successfully used for gradually rectifying congenital club-foot, in early infancy.

former prefers dry heat; seating the child before a fire and thrusting its legs through a screen, so as to be thoroughly warmed for hours together. Dr. Hammond immerses the paralyzed limb in hot water at 140°–160°. The hot sand-bath might be employed. Dr. Dio Lewis has proposed for analogous cases a *sun-bath*. Dr. Jacobi¹ recommends small doses of ergot, internally, in the early stage of the disease, when spinal congestion is believed to exist.

EPILEPSY.

Definition.—Periodical convulsions, with unconsciousness during the attack.

Varieties.—*Grand mal* and *petit mal* of the French; the latter is the *eclampsia minor* of some writers; in which unconsciousness occurs with scarcely any convulsion.

Symptoms.—*Premonition* occurs in a minority of cases before an attack; headaches, dizziness, terror, spectral illusions, or the epileptic *aura*. This is a creeping or blowing sensation, like that of a current of air or stream of water, beginning in a hand or foot, and extending toward the trunk. It (if it occur) immediately precedes the paroxysm. Then, often with a scream, the patient falls down, and is violently convulsed. Foaming at the mouth, grinding of the teeth, and biting of the tongue are common; the face is flushed, the eyeballs roll, the pupils are unaffected by light, sometimes vomiting or involuntary urination or defecation takes place; and respiration may be very laborious.

Epilepsy is sometimes counterfeited. Among the best tests for a genuine case (Delasiauve, Trousseau) is a *deadly pallor*, immediately preceding the fall of the patient in the attack.² Huppert (Virchow's Archiv, LIX, 3 and 4) asserts that *albuminuria* is a constant concomitant of epileptic attacks.

The fit lasts on an average from five to ten minutes. The interval between the attacks may be from several months down to a few hours. Old cases may have two or three paroxysms daily. They vary much even in the same individual.

The condition after the attack is also various. Generally, drowsiness or deep sleep follows it; or headache, debility, or delirium; sometimes maniacal frenzy. Homicide has been committed in this state; for which, of course, the person is not criminally responsible.

Anatomy and Pathology.—Epilepsy is not often the immediate cause of death. Autopsies of epileptics (Schreder van der Kolk) have shown changes, especially in the medulla oblongata; dilatation of the bloodvessels being prominent. Exaggeration of reflex motor excitability, with loss of the controlling power of the brain over the spinal axis, would seem to be part, at least, of the morbid condition. Marshall Hall's idea of "trachelismus," or temporary partial asphyxia from spasm of the muscles of the neck, has been exploded. Brown-Séguard's opinion of the importance of the *aura*, as indicating a peripheral irritation at its seat, has, after causing tentative amputation of a few limbs, suffered the same fate.

¹ N. Y. Medical Record, Oct. 1, 1870.

² C. B. Radcliffe; Croonian Lecture, Lancet, April 12, 1873.

Diagnosis.—From *hysterical* convulsions, which also may be periodical and violent, those of epilepsy are distinguished by the total loss of consciousness—which is partially retained during the hysterical paroxysm. Curability belongs much more to the latter than to the epileptic disease.

Prognosis.—Few cases of genuine epilepsy recover. The younger the patient, and the longer the interval, the more hope. Life may last indefinitely with the disease. Gradually, in most cases, the mental faculties are impaired. Yet several great men have been epileptic: Cæsar, Mahomet, Petrarch, Napoleon, Byron. Canon Liddon maintains the probability that the Apostle Paul was subject to epileptic attacks.

Causes.—Hereditary transmission of this disease is common. Intemperance, venereal excess and self-abuse, blows on the head, and fright, are among the most frequent exciting causes.

Treatment.—During the paroxysm, when *habitual*, little or nothing is to be done. Place the patient so that he cannot strike his head or limbs against anything hard; loosen the clothing about the neck to favor free respiration and circulation; and insure fresh air about the patient; that is all. An *occasional* convulsion requires treatment; of that more will be said hereafter. (See *Convulsions*.)

To break up the recurrence of the fits is the problem, for which a vast number of remedies has been tried in vain. To name them would be to go over almost half the materia medica. Prominent, since nitrate of silver was abandoned as useless in this disease, have been belladonna, arsenic, valerianate of zinc, digitalis, and bromide of potassium. I have known valerianate of zinc to postpone the paroxysm for considerable periods. Beginning with one grain twice daily, it may be gradually increased to three or four times that amount. A case of recovery occurred under my knowledge in which rather large doses of digitalis were persevered in for several months. Bromide of potassium¹ is now the favorite medicine with many; upon the belief that it is a direct sedative to the excito-motor susceptibility of the medulla oblongata and other nerve-centres. From ten to twenty grains twice or thrice daily may be given, and continued for an indefinite length of time. Dr. Echeverria found it powerless in 104 out of 486 cases.² *Bromide of ammonium* (dose 10 grains) is spoken favorably of by some who have used it. *Strychnia* is lauded by Walter Tyrrell, of London.

Dr. Weidener, of Jena, reports the cure of a case by the hydrate of chloral, given in full doses shortly before the times of the expected paroxysms. Drs. Echeverria and MacDonald have found *conium* to act beneficially.³ Dr. Pollock,⁴ of Charing-Cross

¹ In this country, at least, the introduction of bromide of potassium as an antiepileptic may be credited to Dr. C. E. Brown-Séguard. It was first used in medical practice by Dr. Williams, in England, for treatment of enlargement of the spleen.

² Philadelphia Med. Times, Nov. 23, 1872.

³ Philadelphia Med. Times, April 15, 1871. The preparation used was, in some cases, the English *succus conii* (from the green fruit), in $\frac{1}{2}$ ounce doses or more; in others, Squibb's fluid extract, from the fresh unripe fruits, in thirty minim doses.

⁴ Lancet, August 21, 1869.

Hospital, cured one case, which had resisted bromide of potassium, with half drachm doses of tincture of assafetida three times a day.

Dr. S. Weir Mitchell reports the warding off of attacks in two cases (with premonitory *aura*) by inhalation of *nitrite of amyl*.

Self-management is very important to the epileptic. Temperance, with *nutritious* diet, as the disease is one of *asthenia*, is necessary. Regularity of the evacuation of the bowels is a *sine qua non*. Abundant exercise in the open air, short of exhaustion, does good; systematic gymnastics have even *cured* some cases. They are worth trying always. Avoidance of, or the extremest moderation in, sexual intercourse must be insisted upon. Self-abuse will make recovery impossible. Tobacco ought not to be used, unless by smoking only a single pipe or a segar or two in the day. Coffee has not been generally recommended; but Dr. Echeverria, on the basis of extensive experience, asserts that coffee is beneficial to epileptics.

It has been already implied, in referring to pathological views, that *tracheotomy*, suggested by Marshall Hall, and amputation of the limb in which the *aura* is felt, are useless although severe measures in epilepsy.¹

A seton kept in the back of the neck is well worth trying in every case. I have known it to promote recovery.

CATALEPSY.

This is a periodical disease, in which the attack is marked by unconsciousness, and fixed rigidity of all or many of the voluntary muscles. It is rare. The attack generally lasts but a few minutes. Sometimes, in lunatics, a semi-cataleptic state of the muscles is permanent.

I am not aware of any special treatment appropriate for this affection. Management like that suitable for the epileptic will be in place also in catalepsy. Both are now so well understood to be asthenic disorders, with impaired *hæmatosis* (blood-making), as an important element, that all reducing measures are properly omitted from their treatment. This must be essentially tonic and *analeptic* or restorative.

CONVULSIONS.

These may be classified as, principally, **infantile, epileptic, parturient and puerperal, hysterical, and occasional** convulsions.

During infancy, causes which in an adult would cause delirium produce convulsions; excito-motor action having in early life the predominance. They are, usually, of less serious prognosis in the infant than in the adult.

The *exciting* causes of infantile convulsions are numerous. Constipation of the bowels; indigestion; worms; irritation of the gums in teething; and excitement of the brain, as by fright, are the most frequent. Many acute and chronic diseases of infancy (*e. g.* scarlet fever, meningitis, hooping-cough, etc.), have convul-

¹ Another operation, *clitoridectomy*, practised by Baker Brown, of London, in certain cases in females, has not met with favor in the profession.

sions among their occasional symptoms or complications. Sudden drying up of eruptions on the scalp may bring them on, also. Bouchut has shown that *cerebral thrombosis* (obstruction of the veins by coagula) is often the pathogenetic cause of convulsions in the chronic diseases of childhood.

Premonition of a fit is often observed in the child's fretfulness, or restlessness, or gritting of the teeth in sleep. When a fit comes on the muscles of the face twitch, the body becomes rigid at first, then in a state of twitching motion; the head and neck are drawn backward, the limbs violently flexed and extended. Sometimes these movements are confined to certain muscles, or are limited to one side. Nurses call by the name of "inward fits" cases in which the limbs move but little, but the countenance is affected, the eyes are unnatural in expression, or roll spasmodically, and the body is more or less rigid. During a fit, consciousness is absent. The eye shows no sign of sight, though open; a finger passed over it does not make it wink. The pupil is immovably contracted or dilated; the ear is insensible even to loud sounds. The pulse is small and very frequent; breathing hurried or labored; skin wet with perspiration, often cold and clammy. After this condition has lasted a few minutes it mostly gives way. The child falls into a quiet sleep; or it becomes conscious and bewildered; or gradually resumes its ordinary healthy state; or dies in the fit. Sometimes one attack is followed by another, with intervals of conscious or unconscious quiet between, for many hours. These are the most serious cases, although recovery often happens even from them. *Salaam* convulsions, or nodding convulsions of infants (*eclampsia nutans*), are a rare form of disease, usually the precursor of epilepsy.

Treatment.—Ascertain, if possible, the *cause* of the convulsion. If the gums are swollen, or have been tender and irritated, at the time of teething, lance them freely; dividing the gum with a sharp gum-lancet down to the coming tooth.

This practice, formerly universal, has been objected to by Trousseau, and scarcely sustained by Rilliet and Barthez. Marshall Hall strongly urged it, in accordance with the theory of *reflex irritation* which explains the convulsions of abnormal dentition. Dr. C. West says "the circumstances in which the use of the gum-lancet is really indicated are comparatively few." If this be true, I believe that they are, nevertheless, very important. Dr. A. Jacobi (*Dentition and its Derangements*, p. 171) testifies that he has seen, once or twice, the instant cessation of convulsions upon lancing the gums. Dr. J. Finlayson¹ has collected reports of a number of fatal hemorrhages following the operation. Others assert injury to the growth of the teeth, cicatrices, etc. All these objections do not, in my mind, outweigh the frequent and manifest advantage which I have seen in practice, from clean, free incisions (not gouging or laceration) of the gums, when they are *congested* or *inflamed*, or when, with *tension* without congestion, they are *evidently a source of nervous irritation* to the child. I have several times known a child, after the experience of relief obtained, ask

¹ *Obstet. Journal of Great Britain*, Dec. 1873, and Jan. and Feb. 1874.

for the use of the lancet. In a very extensive practice, lasting for half a century, my father, the late Dr. Joseph Hartshorne, met with no accident from lancing the gums, and retained his confidence, to the last, in its frequent utility.

If the bowels have not been moved, or if the abdomen be swollen and tense, give at once an enema, of castor oil, soap and molasses [F. 141], or some other laxative material, with warm water. When the head is hot, apply cold water all over it, by wet cloths, renewed every two or three minutes. If the fit lasts long enough for it, place the child in a warm bath; supporting, of course, the head while the body is immersed. Then mustard plasters may be applied, to the back, epigastrium, and legs, at once, or successively.¹

Bleeding from the arm is to be recommended only in a child of known vigor and fulness of system, the attack being severe, and not habitual. But a moderate amount of blood should be taken. Cupping the back of the neck, in doubtful cases, where time is allowed by a protracted fit, may be resorted to. Pressure upon one or both carotid arteries is said, by M. Favez, to have promptly succeeded in checking convulsions.

Etherization, so much used by some practitioners in puerperal convulsions, requires certainly more caution in its use in infants. I regard it as justifiable in an obstinate case at any age; watching its effects.

Convulsions of Pregnancy.—Probably about one pregnant woman in fifty has more or less albuminuria,² principally from the pressure of the womb upon the renal veins producing congestion of the kidneys. About one in ten of these will have epileptiform convulsions, either during gestation, while in labor, or after delivery.

Pathology.—All convulsions of pregnant women are not uræmic; this has been proved. There are (putting aside instances of Bright's disease already existing) several conditions possible; 1. Uræmia, as above stated; 2. Cerebro-spinal reflex irritation, of uterine origin; 3. Cerebro-spinal (apoplectic) congestion; connected especially with the bearing-down efforts of labor itself. According to Traube, cerebral œdema and consequent anæmia.

Treatment.—It is important, particularly during gestation: 1. That plethora should be avoided; 2. That free action of the kidneys, as well as regularity of the bowels, should be maintained. For the first, care of the diet is proper, that, in women of full habit, it be not too highly animalized or stimulant. If headache, with a full, hard pulse, occur, a mild cooling laxative may be given; if not relieved, cups to the nucha or bleeding from the arm will be a safeguard. When urination is not free and copious, even if no albumen appear in the urine, cream of tartar, a teaspoonful or more every day or two, or acetate of potassium, may be a useful prophylactic, by favoring free excretion from the kidney.

When convulsions actually occur, in the pregnant or puerperal

¹ The objections urged by Dr. Hammond and some others to this usual practice do not appear to me to be well founded.

² A different reaction with oxide of copper and potassa has been observed in the albumen of Bright's disease, from that of the albuminuria of pregnancy.

state, the question is to be considered—are they reflex, uræmic, or simply congestive or apoplectic?

When they come without previous signs of cerebral disturbance, but in a woman of delicate and impressible nervous organization, and without much heat of head, or snoring respiration, the pulse being rapid and feeble, it is probable that *reflex irritation* is the nature of the case. Counter-irritation, by dry cups to the spine and sinapisms to the epigastrium and limbs, and *etherization*, may be here used.

Inhalation of *nitrite of amyl* (a few drops) sometimes relieves.¹ Where the convulsions are repeated, hydrate of chloral, in full dose, has been given (A. Milne). Conderau has found advantage in using a hypodermic injection of three-fourths of a grain of muriate of morphia, followed in a few minutes by a large dose (a drachm or more) of chloral hydrate. In convulsions before labor, Fordyce Barker combines the hypodermic use of morphia with the inhalation of chloroform. Dr. Fearn² and others report excellent results with large doses (half a drachm or a drachm of Norwood's tincture, or one-half as much of Squibb's extract) of *veratrum viride*. This remedy, so powerfully depressing under ordinary circumstances, can surely be adapted only to *sthenic* cases; especially in vigorous women, where the pulse is hard or firm as well as rapid. Some unfavorable results under its employment have been reported. Still, in desperate cases, it is well worthy of further trial.

When plethora has existed before, and the head is hot, its vessels distended, the coma profound, with snoring respiration, and full, rather slow pulse, either uræmia or simple congestive apoplexy is to be concluded upon. In either case, but especially in the latter, bleeding from the arm, or by cups from the back of the neck or temples, will be advisable. Laxative enemata may also be used. After bleeding, if the convulsions be protracted, while the coma is less intense, careful inhalation of ether or chloroform may be tried; but it is less hopeful here. The prognosis of the apoplectic convulsion is always one of great danger. The *uræmic* condition, if labor be survived, generally passes off spontaneously, soon after delivery.

The signs commonly interpreted as indicating plethora during pregnancy are by some (Cazeaux) ascribed to *hydræmia*, with (Frank, Munk) increased arterial tension. If this view be correct, as it may be, probably, with regard to some cases, we may still expect moderate venesection to be a useful mode of treatment; only, the support of the patient ought to be afterwards provided for, by strong, concentrated nourishment.³ Prof. J. Carson, in an elaborate article⁴ on puerperal eclampsia, asserts the belief that the tendency to the convulsions during pregnancy depends upon "altered nutrition of the nervous centres."

¹ W. F. Jenks, Philadelphia Med. Times, Aug. 1872.

² N. Y. Medical Record, March 16, 1874. D. Fearn's first paper on the subject was published in 1869.

³ See Fordyce Barker on Bloodletting in Obstetric Medicine; D. Appleton & Co., 1871.

⁴ Am. Journal of Med. Sciences, April, 1871, p. 465.

Upon the idea of "oedema of the brain" Jaquet, of Berlin, advises the *wet pack* (sheet wrung out of cold water) for diaphoresis.

Occasional convulsions in adults, from whatever cause, should be studied and treated upon the same principles, essentially, as those just laid down for the convulsions of pregnancy. *Hysterical convulsions* will be considered under *Hysteria*.

CHOREA.

Synonym.—*St. Vitus's Dance*.

Symptoms.—Incessant and irregular movements of the voluntary muscles, over which the will has but partial control. Walking, in severe cases, is difficult or unsafe; the hands cannot be regulated enough to write or work; speech may be affected; the muscles of the face often twitch grotesquely. During sleep all these movements cease. The pupil is, in some cases, unnaturally dilated; palpitation of the heart may occur; and also constipation and indigestion. The urine is of great density. A cardiac murmur is often heard on auscultation, which Sir William Jenner affirms¹ to be owing to irregular action of the muscular apparatus of the mitral valve; sometimes with irregular contraction of the heart itself.

Prognosis.—The mean duration of chorea is about four weeks; but it may last for several months. Recovery, if the attack be uncomplicated, may always be anticipated. Dr. J. W. Ogle, however, has reported the details of sixteen fatal cases.²

Complications.—Endocarditis and pericarditis have been observed in connection with chorea in a number of cases. Generally, however, the affection of the heart precedes the chorea; both probably depending upon the same cause, *rheumatism*. Mental derangement sometimes accompanies chorea. Drs. Kirkes, Hughlings Jackson, and Broadbent believe the disease to be often dependent upon embolism of the cerebral arteries; especially those of the corpus striatum and thalamus.

Paralysis complicating chorea increases greatly, of course, the seriousness of the case. Although it *may* be of the transient, hysterical form, yet the danger exists that it may be the result of organic lesion (as softening) of the brain or spinal cord.

Causation.—From six to sixteen, in both sexes, especially often, however, in girls, chorea occurs. Nervous debility is nearly always present before the attack. Fright is a frequent cause. Over-fatigue, or mental excitement, blows or falls may produce it. Rheumatic fever is sometimes followed by it.

Treatment.—Good diet, salt-bathing, and systematic gymnastic exercises (light gymnastics or calisthenics) will suffice for mild cases. Where marked anæmia exists, iron (citrate, phosphate [F. 142], or pyrophosphate, tincture of chloride, syrup of iodide) is important. Obstinate cases may be treated with Fowler's solution of arsenic, in small doses, gradually increased. *Cimicifuga* has been a good deal used, perhaps with benefit. Cod-liver oil should be given if great debility exists. *Calabar bean* has recently been

¹ Lancet, Nov. 5, 1870.

² Brit. and Foreign Medico-Chirurg. Review, Jan. 1868.

introduced as a remedy in chorea; fʒss of the tincture, or from gr. j to gr. vj of the powder thrice daily. Dr. C. West confides in the *sulphate of zinc*. Dr. Hammond has used the *sulphate of manganese* with success. Ether-spray applied to the spine, four or five minutes at a time, every day, is reported to have been curative in the hands of Dr. John Rose¹ and Perroud of Lyons.² Bromide of potassium has been tried, without, so far, much advantage. Chloral ought to be of service in this disease. Trousseau used strychnia; if employed, it ought to be with great caution. Electricity has sometimes done good.

It is well to separate a child having severe chorea from other children; both because of the annoyance of their curiosity, and because *sympathetic irritation* sometimes extends the affection from one to another. This has been repeatedly observed.

TETANUS.

Definition.—A disease characterized by continued tonic contraction of the voluntary muscles.

Symptoms.—Stiffness of the muscles of the jaws commonly begins the attack. This extends to the throat and neck, face, trunk, and lastly to the limbs. Though never ceasing entirely, the spasm of the muscles is paroxysmally increased. Sometimes *opisthotonos* occurs, *i. e.*, arching of the body upon the back and heels, the abdomen projecting; or *emprosthotonos*, arching forward, the face approaching towards the toes. *Pleurosthotonos*, or lateral curvature, is much more uncommon.

Chewing of food is impossible; swallowing nearly or quite so; respiration becomes very difficult. The patient suffers dreadfully, and cannot sleep; but delirium scarcely ever occurs. Death in most cases takes place within a week.

Varieties.—These are, 1. tetanus from cold (idiopathic), 2. traumatic tetanus (from an injury), and 3. *trismus nascentium*, or tetanus of infancy. The first is the least certain to be fatal.

The third, *tetanus neonatorum*, is rare in Philadelphia, somewhat less so in the tenement houses of New York; common in Iceland, the Hebrides, and some tropical countries. It was formerly not very uncommon among the negroes of the plantations of the Southern States. Its chief cause is *close, unsanitary living*. Some foundling hospitals have suffered great mortality from it. The time for its occurrence is mostly within the first two weeks after birth; and death usually occurs within two or three days. In *symptoms*, this form of tetanus differs from that of adults chiefly in the frequent occurrence of *clonic* spasms of the voluntary muscles, or of *paroxysms* of extreme rigidity. These are produced by slight causes; as a sudden sound, a flash of light, a breath of air. Recovery from the attack is scarcely to be looked for in any case. Yet recoveries have been reported; by Drs. Gaillard and De Saussure, with *cannabis indica*; by Dr. G. Troup Maxwell and others, with chloral.

Much the greater number of cases, after infancy, results from

¹ Lancet, Dec. 10, 1870.

² Phila. Med. News, Feb. 1870

lacerated and punctured wounds; but amputations and other operations may be followed by tetanus. Irritation (not inflammation) of the ends of sensitive nerves, transmitted to the spinal cord, produces the reflex spasm, whose general extension and continuance prove fatal. Strychnia, in poisonous doses, causes a very similar state. While there can be no doubt that the spinal marrow is the seat of the disease, no *characteristic* organic change has been found in it; sometimes not even congestion. Dr. Allbutt has recently¹ reported softening of the cord in four traumatic cases.

Causation.—This is principally included in the above account.

Treatment.—In two cases which I have seen to recover, opium and brandy were the remedies used. A tablespoonful of brandy or whisky (to an adult) every two or three hours, with milk or beef-tea, and a grain of opium every three or four hours, may be given. The opium may be, if needful, increased to a grain every hour at night, and every two hours through the day. Beyond that I would not go. Hypodermic injections of morphia will answer the same purpose.

Chloroform and other anæsthetics, by inhalation, have been tried, with variable effect; nearly always without success. Belladonna, conia, aconite, hydrocyanic acid, cannabis indica, tobacco, woorara, and quinine, are among the many medicines favored by different practitioners. Demmé is said to have cured eight cases out of twenty-two with curara. Drs. E. Watson, of Glasgow, and Frazer, of Edinburgh, use Calabar bean, one grain at a dose; or 5 drops of the tincture.² In so desperate a disease it is excusable to give them all further trial. Dr. Joseph Hartshorne used vigorous counter-irritation all along the spine, by the decoction of cantharides in turpentine (linimentum cantharidis). Lately *chloroform* has been locally used in the same way. Perroud, of Lyons, has employed successfully the application of *ether-spray* to the spine; Demarquay, the *hot air bath*. *Chloral* has been used, with recovery in some, though not in all cases, by Verneuil, Dufour, Denton, Lavo, Beck, Coryllos, and others. It has proved to be especially beneficial in *trismus nascentium*.

When, after severe local injury, the nerves of the part appear to be involved and tetanic symptoms occur, Key and Bryant approve of amputation. In 1845, Key performed this operation successfully on account of tetanus following unreduced dislocation of the astragalus. Several other cases seem to justify the practice in analogous instances.

HYDROPHOBIA.

I have known a physician of distinction and of many years' practice to deny the existence of hydrophobia because he had not seen it; asserting that the cases so called were tetanus. I have seen two cases of it; and no one who has observed it can fail to perceive the wide distinction between it and tetanus.

¹ Med. Times and Gazette, Feb. 18, 1871.

² Dr. W. W. Keen (Phila. Med. Times, March 1, 1871) gave the tincture of Calabar bean (*physostigma venenosum*) in doses of *one or two hundred minims*, in a case in which recovery occurred. Of 18 cases (collected by Dr. E. Watson) in which *physostigma* was used, 10 recovered.—*Practitioner*, Sept. 1869.

Symptoms.—A month or more after the bite of a mad dog or other rabid animal, the wound having healed, irritation is felt in it. Nervous restlessness also exists; which increases (in most cases) to violent, angry delirium. Then difficulty of swallowing occurs, from spasms of the muscles of inspiration (gaspings) taking place at the moment of deglutition, making the patient choke. The same spasmodic gasping is brought on by any sudden impression; as of sound, a flash of light, or even a current of air passing over the face. Insomnia exists; the patient grows prostrate, and must die for want of food and drink, even if the affection of the cerebro-spinal axis were not itself fatal. There is intense thirst, and no dread of water, except that the attempt to swallow it causes distress. Death occurs in from four to eight or ten days.

I have not met with satisfactory evidence that a case of genuine *rabies canina* or hydrophobia has ever been cured. By statistics, however, only one in eleven (some say one in five¹) of those bitten by mad dogs have the disease, even when no precaution is taken.

Morbid Anatomy.—Dr. C. Allbutt² has recorded the *post mortem* appearances in two cases. There were evidences of vascular congestion, serous infiltration, and granular degeneration; worst in the medulla oblongata; next, in the spinal cord; thirdly, in the cerebral convolutions; lastly, in the central cephalic ganglia. The poison causing the disease appears to act primarily upon the cerebro-spinal system. Dr. Hammond made a similar observation in a fatal case in New York, in 1874. Bruckmüller, of Vienna, discovered *œdema* of the brain in a number of cases; cerebral hyperæmia in all.

In dogs, Rudnew, of St. Petersburg, found the *kidneys* always severely affected; affording the conditions favoring *wremia*.

Treatment.—If we cannot cure, what can or should we do? We may certainly promote at least *euthanasia*, by allaying the wretched sufferings of the patient. In the case of a boy of eight years of age under my own care, I administered chloroform freely by inhalation, continuing it nearly all the time (with short intervals and equally short applications) for two days and nights. It mitigated the spasms and quieted the delirium. That it did not itself cause death (as might have been suspected from the quantity used) was proved to my satisfaction by the fact that after the chloroform was finally withdrawn, the boy was made to gasp spasmodically by waving the hand to and fro over his face. Reflex excitability of the medulla oblongata was thus shown still to exist.

Hypodermic injection of atropia or morphia might, perhaps, more effectually quiet the suffering, and even afford a possibility of cure, than inhalation of anæsthetics. The hot-air bath, prolonged or repeated, has lately been proposed for the treatment of hydrophobia. Haschisch (*cannabis indica*) is asserted by Polli, of Milan, to be its best palliative, although not curative.

Prophylaxis.—The only perfect safety to one who is bitten by a

¹ Bouley (Arch. Générales de Méd., June, 1870) found that of 320 persons bitten, 129, or 40.31 per cent., had fatal hydrophobia.

² Trans. of Pathological Society, 1872.

rabid animal (and the bite of a much *enraged*¹ dog, not rabid, is said to have also caused *hydrophobia*) is in immediate and total excision of the part. While awaiting this, forcible suction will aid in removing the poison, and ligation with any kind of bandage above the part will retard the absorption of it. When excision cannot be safely performed or is refused, cauterization is the next best thing. Free application of lunar caustic or of a red hot wire, or the explosion on the part of a small quantity of gunpowder, is recommended. Even if the person bitten is not seen until a day or two afterwards, excision or the use of the caustic is to be recommended, as lessening the danger of this horrible disease. Marochetti and others have asserted the presence, during the incubation, of vesicles or pustules near the frænum of the tongue (*lyssi*), the cauterization of which will prevent the disease. This requires confirmation, however.

It is well to know that canine madness is not restricted to, nor even especially frequent in, hot weather. In regard to its detection in animals, the following lucid instructions have been issued by the Council of Hygiene of Bordeaux:—

“A short time, sometimes two days, after madness has seized a dog, it creates symptoms in the animal which it is indispensable to recognize.

“1. There is agitation and restlessness, and the dog turns himself continually in his kennel. If he be at liberty, he goes and comes, and seems to be seeking something; then he remains motionless as if waiting; then starts, bites the air, as if he would catch a fly, and dashes himself howling and barking against the wall. The voice of his master dissipates these hallucinations; the dog obeys, but slowly, with hesitation, as if with regret.

“2. He does not try to bite; he is gentle, even affectionate, and he eats and drinks, but gnaws his litter, the ends of curtains, the padding of cushions, the coverlets of the beds, carpets, etc.

“3. By the movement of his paws about the sides of his open mouth, one might think he was trying to free his throat of a bone.

“4. His voice undergoes such a change that it is impossible not to be struck by it.

“5. The dog begins to fight with other dogs; this is a decidedly characteristic sign, if the dog be generally peaceful.

“The three symptoms last mentioned indicate an advanced period of the disease, and that the dog may become dangerous at any moment if immediate measures are not taken. It is best to chain him up at once, or, better still, to kill him.”

H. C. Hovey (Am. Journal of Sciences and Arts, May, 1874) states that the bite of the American skunk produces a form of *rabies* (*rabies mephitica*) as fatal as hydrophobia.

Bourrel's proposal to prevent danger from canine rabies by filing or nipping the edges of the incisor and canine teeth of all dogs left at large, does not seem likely to be extensively carried out.

¹ Fleming, an authority upon hydrophobia, denies that this ever occurs.

HYSTERIA.

From its occurring nearly always in females, and from a supposition of its originating in some affection of the womb, this name has been given to a variable disorder, of which the main characteristic is *morbid excitability of the whole nervous system*. Dr. Todd believes it always to depend on disorder of the blood. Dr. Tilt insists¹ that uterine disorders are its most frequent exciting causes.

A “fit of hysterics” is a paroxysm whose nature may vary, from mere uncontrollable laughter or crying to a severe epileptiform convulsion. This last, however, differs from epilepsy, in there being less complete loss of consciousness, and in the curability of the disorder. It is often preceded by a sensation (globus hystericus) like that of a ball rising towards the throat. Charcot's assertion, that hysterical convulsions are *always* announced by definite premonitory symptoms, I can controvert from actual observation. The same author refers to the decided rise of temperature in epileptic attacks as usually distinctive; and states that, in hysterical convulsions, compression over the region of the ovaries will arrest or modify the attack.

Simulation of other diseases, indeed the assumption of severe functional disorders of different organs, is a common trait of hysteria. Thus I have seen hysterical amaurosis; hysterical insanity is not uncommon, nor is hysterical paraplegia or coma rare. Retention of urine, cough, aphonia, etc., are often thus produced. “Phantom tumor” is among the most curious of such things. I had under my care a woman who had been laid out by a surgeon in another city for exploratory gastrotomy, under the supposition that she had ovarian tumor. When she was etherized, however, the tumor altogether disappeared! “*Bed case*” is the name given (Laycock) to the complaint of an hysterical valetudinarian, who believes herself to be ill or powerless, while there is really nothing the matter, except the morbid *neurosis* itself.

Treatment.—Much skill and care will often be required in the management of hysteria, as each case has peculiarities of its own. Generally a tonic regimen is demanded. Dr. Blandford is no doubt right in estimating very highly the importance of *good feeding* in hysterical and other forms of nervous debility.² Iron and cod-liver oil are most often the appropriate medicines. Bromide of potassium is sometimes quite useful. For a paroxysm of “hysterics” assafetida [F. 143] is universally safe and suitable, in pills of 3 grains each, *pro re nata*. Sinapisms and pediluvia are also proper. Guillemin recommends inhalation of the ethereal tincture of valerian. The preparations of valerian, taken internally, may be useful; the fluid extract, tincture, or valerianate of ammonia; and so also may be chloral. Mono-bromated camphor has lately been given with asserted advantage, by Hammond³ and others; two to five grain doses, in pill. A limited trial with it has disappointed me. Menstruation is often irregular in hysterical women; it should be regulated as far as possible. Exercise in the open air

¹ London Lancet, Aug. 12, 1871.

² N. Y. Medical Journal, May, 1872.

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³ Practitioner, June, 1870.