

disease. That form dependent on malarial infection occurs more abruptly, has distinct periodicity, and terminates promptly, if appropriately treated, or assumes some other form. If caused by an aneurism, or tumor, or exostosis, the course is slow but usually uniform, and the pain and hyperæsthesia are excessive; but after a time anæsthesia occurs and the pain declines. In the purely neuralgic form there is no regularity in the paroxysms, and a state of the peripheral nerves is ultimately reached when paroxysms are induced by the slightest movement. In the rheumatic subject, changes of temperature and barometric pressure may determine attacks which can be predicted. The simpler forms may terminate in recovery, but those cases due to exterior pressure on the trunk of the nerve within the cranium are incurable. Severe and protracted cases may terminate in epileptic attacks, or induce insanity, or lead to suicide.

Diagnosis.—To determine the cause of the neuralgia may be very difficult, and to separate the cases purely neuralgic from those due to some intra-cranial growth may be impossible at the outset. There is no difficulty in diagnosticating the seat and character of the neuralgia, apart from the lesion producing it. An intra-cranial growth affecting the nerve will be accompanied by other sensory and motor disturbances—by strabismus, double vision, vertigo, incoördination, paralysis, etc.

Treatment.—In cases produced by some form of infection, syphilitic, rheumatismal, plumbic, or malarial, treatment must necessarily be directed to the underlying cause. In every case in which no explanation is possible of the origin of the disease, it is good practice to prescribe a course of iodide of potassium. For the relief of recent cases, beginning suddenly and with violence, full doses of quinine and morphine (gr. xv—gr. xx of quinine and gr. ss. of morphine) are to be commended. Duquesnel's aconitine in solution, internally, in from $\frac{1}{100}$ grain to $\frac{1}{20}$ grain, even $\frac{1}{10}$ grain very cautiously, has been successful in some cases of pure neuralgia of the fifth. Fluid extract of gelsemium has had a curative effect in some cases, and a palliative effect in others. It should be carried to the point of inducing ptosis, dilated pupil, and muscular languor. To afford relief, there is no remedy comparable to the subcutaneous use of morphine, and this relief may be permanent, but is not frequently so, and the danger of inducing a morphine-habit is very great in a disease of this kind. The combination of morphine and atropine is preferable to morphine alone. Atropine hypodermatically has effected a cure in some cases. These remedies, if continued for a great while, lose their effect, and the pain which they at first relieved seems to be caused by them at last. Injections in the vicinage of the diseased nerve have been used with success. Water has been so used, and has afforded some relief. Of all the remedies thus far proposed none have been so successful as the deep injection of chloroform. This

method is adapted to those cases of neuralgia in nerves superficially placed, as the supra- and infra-orbital nerves, because the chloroform must be deposited about the nerve or in its neighborhood. The author has published some cases showing the extraordinary relief, lasting months, and permanent cures which have thus resulted. The method consists in depositing in the neighborhood of the nerve from five to ten minims of pure chloroform by means of the hypodermatic syringe. The constant galvanic current, by the polar method, always affords great relief to the pain, and may in purely neuralgic cases bring about a cure. Daily applications of a few minutes should be kept up for a long time if improvement continues. Means to promote the nutrition of the body are important, for in neuralgia the vital forces are usually depressed. If anæmia exists, iron is necessary. Arsenic is one of the most powerful of the so-called nerve-tonics, and is particularly serviceable when indigestion exists. The phosphates and cod-liver oil are highly useful in the tic-douloureux which succeeds to lactation, or in all conditions of bodily depression. Nerve-stretching in this as in other forms of neuralgia is an expedient which should be tried when milder means fail.

CERVICO-OccIPITAL, CERVICO-BRACHIAL, INTERCOSTAL, AND LUMBO-ABDOMINAL NEURALGIA.

Pathogeny and Symptoms.—The *cervico-occipital neuralgia* is situated in the region innervated by the four upper cervical nerves. The pain is felt in the occipital region to the vertex and ear, the neck downward to the clavicle, and upward and forward to the cheek, but chiefly in the distribution of the occipital nerve. The pain may occur on one side or both, but usually on one, is deep, heavy, and tensive, or sharp and lancinating, is paroxysmal, severe, and is increased by every movement, so that the head is held rigidly in one position. The course of the occipital nerve is tender. Hyperæsthesia of the skin and cramps in the cervical muscles occur, and attacks of herpes are common.—*Cervico-brachial neuralgia* arises under the same conditions as the other forms. The pain is very severe, of a boring, burning, heavy, and tensive character, and is usually very severe at night. The pain is accompanied by a sense of numbness, and weakness of the arm and hand, and is most severe in the shoulder and arm, but it extends down as far as the inferior angle of the scapula, and is often very strong in the mamma of the same side. The cervical plexus is very tender, and painful points are felt behind the acromion process, at the outer part of the insertion of the deltoid, over the median and ulnar, etc. The spinal apophyses, corresponding to the origin of the nerves implicated, are tender. Besides the pain developed by pressure, the skin of the arm at various points is hyperæsthetic, notwithstanding the numbness.

The arm feels heavy and useless, and power is actually impaired. At the outset, the arm is swollen somewhat, hot and rather red, but in an advanced case it shrinks from disuse, becomes pale, the skin glossy, dry, and harsh.—*Intercostal neuralgia* is produced by causes besides those of the other forms of neuralgia. Aneurisms and tumors of the chest cause very violent attacks of pain. Diseases of the vertebra and ribs have the same effect. The pain is of two kinds—a feeling of soreness with fatigue, and an acute lancinating pain. As in the other forms of neuralgia, the pain is paroxysmal, remits and even intermits. Pain in the left side, usually referred to the sixth or seventh intercostal space, is very common in women, and is apparently due to ovarian and uterine irritation. Intercostal neuralgia not unfrequently takes the form of *herpes zoster* or shingles. The author has seen eight cases in which the herpes seemed to be due to arsenic, and others have made the same observation, so that the assumption, that, when zoster accompanies intercostal neuralgia, neuritis is the cause of both phenomena, seems hardly justified. In young persons there is not much neuralgia with zoster, and, in the old, the neuralgia precedes and succeeds the eruption. In most cases there is a burning pain which comes on just as the eruption is about to appear, and also acute lightning-pains shooting through the chest.—*Lumbo-abdominal neuralgia* includes the ileo-hypogastric nerve, the ileo-inguinal, and the external spermatic nerve supplying the hypogastrium, integument of the hip, the inner face of the thigh, and the scrotum or labium, but neuralgia of these nerves is rather uncommon.

SCIATICA.

Definition.—The sciatic plexus is made up of the fourth and fifth lumbar and the first two pairs of sacral nerves. The term *sciatica* is applied to a neuralgic affection of the sciatic nerve. Sciatica is, next to *tic-douloureux*, the most important of the neuralgic affections.

Pathogeny and Symptoms.—Constitutional predisposition and heredity have less to do with sciatica than with any of the other forms of neuralgia. The disease occurs much more frequently in men than in women. Direct injury to the nerve in certain positions—sitting, especially if the form of the seat is such as to direct the weight of the body on the nerve; by prolonged walking; by constipation, the bowel being distended with hardened feces—is the most influential cause. To these must be added exposure to cold and dampness, as, for example, prolonged sitting on a damp stone, fatiguing work in the standing posture in water, etc. These causes are the more influential if the system is predisposed by rheumatism and other cachexiæ and by the neuropathic constitution. It may be stated, in general terms, that sciatica is produced by the same causes, constitutional, immediate, and

remote, that other forms of neuralgia are, but that it is much more likely to be developed by local and mechanical than by systemic and constitutional causes. The only pathological alterations proper to sciatica are those of neuritis. As a result chiefly of disuse, the affected limb wastes more or less in severe cases. The disease develops slowly. In most of the cases observed by the author, an attack of lumbago preceded the sciatica, and the pain gradually became fixed in the sciatic. In several cases (four) the pain began in the heel. In other cases the first symptom noted was a feeling of pain and soreness in the hip. A feeling of stiffness, numbness, formication, heaviness of the limb, and other abnormal sensations have been noted. In what way soever the disease begins, soon severe pains occur in distinct paroxysms. The pains are lancinating, tearing, grinding, and they shoot with lightning-rapidity along the direction of the principal nerves. Now they are felt with greatest intensity in the hip behind the joint, again in the calf of the leg, now in the ankle, again in the heel, or the pain flies from one to another of these parts, or shoots through them all at the same time. The paroxysms last a variable period from an hour or two to twenty-four or more hours, sometimes for several days, there being brief remissions only. The pain is almost always worse at night. In the interval between the paroxysms the limb is heavy, movements excite pain, and there is a tensive, throbbing sensation which threatens severer suffering. Exercise usually increases the pain, and unguarded movements may bring on a paroxysm. The trunk of the nerve behind the trochanter is sensitive to pressure, also in the popliteal space; there are tender points at the head of the fibula, behind the inner malleolus and also behind the outer malleolus, and there is tenderness of the lumbar apophyses. The pain often radiates into the lumbar nerves, into the sciatic of the opposite side, and into the scrotum and testes. Hyperæsthesia and cramps occur at first, and in old cases diminished sensibility, lowered temperature, and wasting are observed. The appetite is impaired, there is little sleep in bad cases, and hence the bodily forces decline. At first the limb is used awkwardly, the patient limps, then crutches are resorted to, and finally the bed is the only resource. The pitiable state to which a man can be reduced by a severe sciatica is told by a sufferer, himself a physician, Dr. Lawson: * "The pain persisted for more than six months; it first reduced me to the employment of crutches, and then absolutely prevented locomotion; the limb became permanently flexed and terribly wasted; nearly every remedy in the Pharmacopœia, and many out of it, were tried in vain; . . . for six months I had hardly known what sleep was, notwithstanding the administration of opiates three or four times a day. Appetite was utterly lost; physical power

* "Sciatica, Lumbago, and Brachialgia, etc.," by Henry Lawson, M. D., London, 1872, p. 7.

was prostrate; mind, through long suffering, was enfeebled to that degree that I look back upon that period of my existence with astonishment and horror." Of course, not all cases are so severe as this of Dr. Lawson, but in every mild case suffering is experienced, the sleep is broken more or less, but the general health does not suffer any considerable deterioration.

Course, Duration, and Termination.—After the first acute symptoms, when the case begins with lumbago and a feverish state, the course is chronic and like the usual pattern. When the symptoms develop slowly, the disease reaches its maximum in a few days, or a week or two. If the treatment be appropriate, a termination in health may take place in two or three weeks. The cases often continue months and years, in varying condition, now improving, then getting worse. In the author's experience, there are two climatic states which exercise an unfavorable influence—variable cold and damp weather and continued high temperature; while uniform dry cold has a favorable effect. Quite irrespective of climatic changes, sciatica has a strong tendency to relapses. Some cases gradually subside without any properly directed treatment, and get well in a year or two. Many do not recover entirely, although there may not occur any acute paroxysms; the limb continues weak and a halting gait persists, because of imperfect combination of the muscles. Cases occurring in old subjects, whose symptoms present the evidences of senile degeneration, may continue during life.

Diagnosis.—Ordinarily a case of sciatica does not offer any difficulties for careful consideration. It may be confounded with muscular rheumatism, with the first stage of hip-joint disease, and with hysterical joint. Muscular rheumatism differs from sciatica in the lesser severity of the pain, in the absence of distinct paroxysms, and in the diffusion of the symptoms, the distress in the one being distributed over the principal muscles, in the other confined to the nerve-trunks and to certain painful points. In incipient joint-disease there may be much sciatica, so that the distinction must rest on the changes in the shape of the hip, in the gluteal fold, and in the position of the foot, which, with the history, ought to indicate the existence of hip-joint disease. The hysterical joint is differentiated by the absence of any evidence of suffering, by great tenderness in the skin, and yet, when the attention is withdrawn, by entire lack of tenderness in the nerve-trunk or in tender points, and by the evidences of hysteria present.

Treatment.—Existing causes should be removed. If the attack depends on impaction at the flexure or cæcum, active purgatives should be prescribed. A particular chair or habit of sitting may be responsible, and should be changed. If the attack begin by lumbago, warm baths, Russian or Turkish, may soon effect a cure. Dr. Lawson, whose shocking experience has been referred to, after six months of

unavailing treatment, was at once relieved and speedily cured by the hypodermatic injection of morphine. His little work, written to advocate this treatment, contains numerous cases illustrating its utility. Morphine (gr. $\frac{1}{4}$ to gr. $\frac{1}{2}$) and atropine (gr. $\frac{1}{200}$ to gr. $\frac{1}{100}$ to gr. $\frac{1}{50}$) are more effective in combination than morphine alone. The injection is somewhat more effective when inserted in the neighborhood of the affected nerve. There can be no doubt that this treatment is sufficient in itself in many cases, but it can be aided by other measures, local and systemic. The author has witnessed remarkable cures of chronic cases by the deep injection of chloroform. This practice consists in the injection of five to ten minims of chloroform, thrown deeply in the neighborhood of the nerve near to the point of its emergence from the pelvis. The injection should also be practiced at those points where the pain has been severe. But few injections are necessary. Ether may be used also, but it is more irritating and less effective. The author has cured many cases by stable applications of galvanism alone. A large sponge electrode should be applied over the nerve near the point of exit from the pelvis, and the other electrode below. Strong currents are more effective and, indeed, indispensable for curative results. Successive portions of the nerve should be included in the circuit, by applying the anode over the painful points and the cathode below, according to the method of Remak.* Eulenberg,† Erb,‡ and Althaus, are fully agreed as to the success of the galvanic current in sciatica. Hammond has revived the method of Magendie, and now cures sciatica by inserting an acupuncture needle, insulated to near its end, and passing through it a current from a few cells. Firing is often very successful. The hammer, dipped in boiling water, is applied to produce redness and slight vesication, or considerable burning, according to the duration of the case. Great relief and even curative effects have followed the application of blisters, the raw surface dressed with powdered morphine. Flying-blisters are beneficial. The warm pack and the rubbing pack are of great service in obstinate cases. The pack may be worn all night. In the chronic cases of supposed rheumatic origin, iodide of potassium guaiacum and turpentine are said to be useful, but the author has not seen any good results from them. The other forms of neuralgia referred to above require the same treatment. Any local injury, constitutional condition, or cachexia, must be removed. The most successful remedies are the hypodermatic injection of morphine and the constant current, the curative influence of which few cases resist.

* "Galvanothérapie, traduit de l'Allemand par le Dr. Morpain," Paris, 1860, p. 374.

† "Lehrbuch der functionellen Nervenkrankheiten," *op. cit.*, p. 168.

‡ Ziemssen's "Cyclopædia," vol. xi.

SPASM OF THE FACIAL MUSCLES SUPPLIED BY THE SEVENTH NERVE—CONVULSIVE TIC—HISTRIONIC SPASM.

Definition.—The seventh nerve is distributed to the muscles of expression. The attacks of spasm may occur in all or a part of these muscles. *Convulsive tic* or *mimetic spasm* is the term applied to the former; *blepharospasm* is the name given to spasm of the eyelids.

Pathogeny and Symptoms.—Various causes are assigned for the production of mimetic or histrionic spasm. The constant activity and variety of movement in expressing the various emotions render these muscles rather apt to take on abnormal movements. This is seen in tricks of expression imitated from others, and also inherited, but the direct transmission of histrionic spasm is not common. Men are more apt to suffer from this malady than women. It may occur as a secondary symptom in such convulsive disorders as chorea, epilepsy, etc. It may be developed from purely psychical states, as anger or fear, but then a predisposition must exist. It is more apt to arise from direct or reflex irritation of the facial nerve. Tumors, caries of the bones, diseased teeth, periostitis, and remote irritation, as intestinal worms, have set up the spasms. The disease begins in a small group of muscles, and then extends to all the muscles, on one side usually, although both sides may be affected. It consists in a succession of clonic spasms, producing extraordinary grimaces and contortions. If one side, it is all the more striking by comparison with the unmoved state of the unaffected side. The spasms occur in paroxysms, lasting a few seconds or a few minutes. They begin in one group of muscles by a few twitches, and then clonic spasms follow in all the others. It is a rule, however, for the attack to be more decided in some one muscular group, as in the orbicularis palpebrarum and corrugator supercilii, and levator labii superioris et alæque nasi and levator anguli oris. The number of the attacks varies greatly, usually several occurring every hour, and they may persist during the night, but this is not usual. They are excited by attention to them, by talking, by emotion, and by increased irritation of the nerve-trunk. They do not interfere with the normal use of the muscles at other times. Extension of the spasm may take place to the muscles of the tongue and to those of mastication, and in severe paroxysms the muscles of the neck and shoulders may participate. The electro-contraction of the muscles remains unaffected. *Blepharospasm* is the form of the disease attacking the eyelid. This consists of paroxysmal attacks of sudden closure of the lids, with spasms of the annexed muscles, producing extraordinary grimaces of the affected eye. The attacks may occur suddenly without any apparent cause, or be induced by straining or irritation of the eyes, by opening or closing the lids. The conjunctiva is injected, there is a profuse secretion of tears, and an extreme degree of photophobia may

exist. These changes may be the result of blepharospasm, but, in a great majority of cases, diseases of the eye, as serofulous conjunctivitis, corneitis, wounds, by irritating the sensory fibers of the fifth, excite the spasms by a reflex mechanism. In this disease certain so-called *pressure-points* exist, pressure on which will suddenly arrest the paroxysms. These have no fixed position, as the painful points in neuralgia, and can not be indicated beforehand in any case, but must be searched for. They are sometimes found at the supra-orbital foramen, and on various branches of the fifth nerve in the face, the gums, the malar bone, and the mastoid process, and if not detected in these situations may be discovered in the brachial plexus, the spinous processes, or the sympathetic. Pressure on these points exerts an inhibitory influence on the spasms, which may be suspended for some time. On the other hand, the influence of the pressure-points may continue only during the pressure (Erb).

Treatment.—The removal of any cause of irritation, intrinsic or extrinsic, is necessary. As blepharospasm is so often due to strumous diseases of the eye, these must be removed before any influence can be exerted on the spasm. Remarkable results have been obtained from the free use of *succus conii* in this malady; in recent cases, the subcutaneous use of morphine, and morphine and atropine. The hypodermic injection of Fowler's solution has succeeded remarkably in some cases of tic. From two to five drops can be injected daily about the pes anserinus. The constant current (stable) applied to the pressure-points, the positive pole on the point, the negative held on some part of the periphery, has been successful in some cases. The sympathetic, the mastoid process, the vertebræ, etc., are also possible pressure-points to which the current should be applied. Remarkable results have followed the section of the supra-orbital nerve in a few cases.

SPASM OF THE MUSCLES SUPPLIED BY THE SPINAL ACCESSORY—TORTICOLLIS.

Pathogeny and Symptoms.—The trapezius and the sterno-cleido-mastoid are the muscles affected either separately or together, and the attack may be unilateral or bilateral. In unilateral spasm of the sterno-cleido-mastoid, the head is rotated a little, the chin elevated and turned to the other side, and the occiput is brought forward and downward in the direction of the clavicle. If the trapezius is alone affected, the head is drawn down and backward, and the shoulder upward and inward toward the spine. When both muscles are affected, there is a combination of the movements, and they may alternate. In bilateral spasms of the spinal accessory, the head is drawn from one side to the other, and the chin correspondingly turned in the opposite direction. If the sterno-mastoids are alone affected, there occur sym-