

the forehead can not be corrugated. The corner of the mouth can not be elevated, the lips can not be pursed up in the attempts to whistle, and in smiling the affected side remains motionless, while the sound is acting strongly. The saliva escapes from the mouth, and the labials can not be pronounced, whence the speech is rather mumbling and indistinct. Mastication is difficult and the alimentary bolus accumulates in the cheek of the paralyzed side. Not unfrequently the sense of taste on one side of the tongue is abolished, and the secretion of saliva lessens. When this is the case, the chorda tympani, which Schiff has shown is the nerve of taste to the anterior half of the tongue, is affected, and it therefore follows that the seventh is damaged at the point of origin of this nerve. The uvula is often affected also, and hangs paralyzed, deviating toward either side. When this organ is affected, the speech is nasal, swallowing is difficult, and liquids come through the nose. This paralysis of the uvula is necessarily due to implication of the superficial petrosal nerve. The ear is usually unaffected, although noises are heard. The sensibility of the paralyzed side is normal. The reflex movements are entirely abolished when the disease occupies any part of the trunk of the seventh from its origin outward. In case of hemiplegia the reflex excitability is preserved. In the mildest cases the electro-sensibility and contractility are perfectly normal. In the more severe cases the muscles may not respond to a faradic current, yet do respond to a slowly interrupted galvanic current; but the nerves themselves lose their excitability to both currents during the period of regeneration. The muscles may ultimately lose their galvanic excitability when they have undergone advanced changes. When this is the case, the prognosis is unfavorable.

**Course, Duration, and Termination.**—When the external branches of the seventh only are affected, and by such a simple cause as exposure to a current of cold air, the duration will be short, and recovery effected in two or three weeks. The more severe cases may require twice the time of the former. In those cases characterized by loss of faradic and retention of galvanic excitability of the muscles, the duration will be several months, even a year may elapse before restoration. In these cases, after a time, the muscles become rigid and retract somewhat, and they may be affected by spasmodic contractions resembling tic. In traumatic paralysis, the amount of recovery depends on the extent of injury to the nerve. Usually restoration in the most favorable cases is incomplete. The same observations may be made of paralysis from pressure of the nerve, the degree and curability of injury determining the result.

**Diagnosis.**—The diagnosis is reached by mere inspection, but to ascertain the seat of the injury to the nerve is more difficult. Whether peripheral or central is arrived at by attention to the following points: in peripheral paralysis, the eye is wide open even in sleep, and reflex movements of the lids are abolished, which is not the case

in cerebral paralysis; the abolition of faradic and the retention of galvanic excitability and the degeneration of the muscles—symptoms not present in the cerebral form; in the latter are observed various cerebral symptoms. The position of the disease in the trunk of the nerve may be determined as follows: paralysis of the muscles of the face, without involving taste, indicates with other symptoms disease of the nerve anterior to the origin of the *chorda tympani*; paralysis of the muscles, no reaction to faradic but response to galvanic current, paralysis of uvula, indicate lesion of the nerve at the origin of the large superficial petrosal nerve which goes to the sphenopalatine ganglion. When there is alternating paralysis, the lesion is most probably in the pons. If partial paralysis exist, the velum palati being affected at the same time, and if the reflex and electrical excitability are preserved, the lesion is in the opposite hemisphere of the brain or its crus.

**Treatment.**—The cause of pressure on the nerve within the cavity of the cranium, or disease of the ear, should be removed if practicable. In all doubtful cases a course of iodide of potassium should be prescribed. If the attack is of the rheumatic variety—so called—blisters to the mastoid and the internal use of pilocarpine are the most effective measures. The application of electricity, the galvanic current preferably, should be begun at once, and continued faithfully until a cure is effected or discovered to be unattainable. The application should be made by one pole—the anode—on the mastoid, and the cathode passed over the terminal filaments of the nerve as distributed to the muscles.

## VASO-MOTOR AND TROPHIC NEUROSES.

### HEMICRANIA—MIGRAINE.

**Definition.**—By the term *hemicrania* is meant a unilateral pain in the head, irregularly periodical, and accompanied by nausea and sometimes vomiting, and excited by certain reflex disturbances. By the French writers it is termed *migraine*, which has been naturalized to a large extent in our country, and it is known in common language as *sick-headache*.

**Causes.**—Regarded by Romberg as an hyperæsthesia of the brain, the localization of the disturbance in the vaso-motor system was first distinctly affirmed by Du Bois-Reymond, who maintained that the cause of the affection is a contraction of the arterioles on the affected side of the head—a fact determined by observation on himself. An opposite view of the state of the sympathetic was taken subsequently by Möllendorff, who maintained that the vessels are relaxed. As is often the case, the truth probably lies between these extremes, as Eulenberg

maintains. Females are more liable than males, and in early life the disease first manifests itself. It is distinctly inheritable, or at least the neuropathic constitution.

**Symptoms.**—The disease is irregularly paroxysmal, and in the interval between the attacks there is no pain or other disturbance. The paroxysms may or may not be preceded by prodromal symptoms, such as weariness, hebetude of mind, etc., but the onset of the attack is usually announced by chilliness, nausea, yawning, and general muscular soreness. The pain comes on most frequently on the left side, and is felt in greatest intensity in the supra-orbital ridge and in the eye, but it may be felt nearly equally over the whole side, and even extend over beyond the median line; usually there is a region of greatest severity of pain. Tenderness is felt when the cervical ganglia—upper and middle—are pressed on, and tenderness is also experienced when the spinous processes of the last cervical and first dorsal vertebræ are subject to pressure. The sense of touch is more acute than normal over the whole area of the hemicrania. In many subjects nausea and vomiting precede the attack of hemicrania; in others the pain continues for some time before nausea is experienced, and vomiting often ends the attack. Light is hurtful to the eyes, and noises to the ears. Rings of light and *muscæ volitantes* float before the eyes, and there are noises in the ears. The circulation, temperature, and secretions of the affected part are altered. There are, as Eulenberg insists, and as the author has repeatedly observed, two kinds of disturbance in the circulation: contraction of the vessels, and anæmia of the affected part, as shown in pallor of the face, shrunken eye and dilated pupil; dilatation of the vessels, flushed and red face, the conjunctivæ injected, and the pupil contracted. The two forms may coincide, but this is rare, and there may be cases in which no disturbance exists in the sympathetic ganglia.

**Course, Duration, and Prognosis.**—The paroxysms may last for a few hours or a day or two. They may occur every few days, every week, or every month, or at longer intervals. Women are especially liable to attacks about the menstrual period. In many they are induced by errors of diet. As the pneumogastric nucleus lies alongside of the nucleus of the fifth, it is easy to understand the transference of sensations. Usually the susceptibility to attacks declines with the advance in life and disappears after fifty. The author has frequently observed that the disappearance of hemicrania has been coincident with the occurrence of cerebral hæmorrhage. Otherwise, the disease must be regarded as entirely free from danger to life, while its chief importance lies in the fact that few cases are permanently cured.

**Treatment.**—The most important point is a careful regulation of the diet in that large proportion of cases originating in stomachal disorder. An easily digested aliment of the nitrogenous kind, with

decided diminution of the farinaceous and saccharine elements, is the kind of diet required. In these cases the best results are obtained from the use of arsenic—two drops of Fowler's solution before each meal, kept up for months. In the other group of cases, nervous in origin, the best remedies are *coca*, guarana, *caffein*, and bromide of potassium. The last mentioned is adapted to those cases dependent on contraction of the arterioles, and is very effective if administered just before the onset of the paroxysm, in a sufficient dose (3 ss. — 3 j), and repeated several times. The other remedies mentioned are better fitted to give tone to the sympathetic ganglia in the interval between the paroxysms. When there is anæmia, a chalybeate course is highly serviceable. When the moral surroundings are such as to cause attacks, change of scene is highly necessary. If the disposition to the malady is inherited, the prophylaxis is very important and should include diet, exercise, clothing, and the avoidance of all those conditions which tend to develop an abnormal excitability of the nervous system. The best results have been obtained from galvanization of the superior ganglia of the sympathetic; the positive pole over the ganglion and the negative on the epigastrium in the tetanic form; and the poles reversed in the paralytic form. Frommhold\* has obtained the best results from the faradic current.

#### ANGINA PECTORIS.

**Definition.**—A neurosis of the heart, in which there occur paroxysms, characterized by pain in the præcordial region, extending usually into the left shoulder and down the left arm, and accompanied by a feeling of constriction of the thorax, and a strong sense of impending dissolution. It is sometimes called neuralgia of the heart.

**Causes.**—A predisposition to this affection seems to be inherited. It is often associated with chronic cardiac changes, as arteritis of the coronary artery, calcification of valves, etc. It is, as Trousseau first pointed out, sometimes a masked epilepsy, and again angina pectoris may alternate with epileptic attacks. It may occur in hysteria, and may precede an outbreak of mania. Males are greatly more liable to it than females, and, although it is more frequent in advanced life, it may occur at any age. Excessive smoking by young and nervous subjects may cause it at a comparatively early age.

**Pathological Anatomy.**—Various changes in the heart are found, but these are accidental. The pathological changes which stand in a causative relation to the attacks are those of the cardiac plexus of the phrenic and of the pneumogastric nerves. Pressure of enlarged lymphatics, inflammation of parts of the cardiac plexus, with changes in the coronary artery, seem to be the most constant (Eulenberg).

\* "Die Migraine und ihre Heilung durch Electricität," Pesth, 1868, p. 115.

**Symptoms.**—Angina pectoris is a paroxysmal affection, the attacks occurring irregularly, and in the interval there are no symptoms. The attacks are eminently characteristic. The patient is suddenly seized, it may be in the night, during exercise or while resting, with an intense pain in the præcordial region, accompanied by a sense of constriction and suffocation. He at once assumes a fixed position as if the least movement would cost him his life; his face becomes deadly pale, and a cold sweat bedews the skin. The pain shoots across the chest, upward under the sternum and toward the left shoulder, and down the left arm. The sudden pain and terror may cause syncope, but usually the pain ceases in a few seconds or minutes, and the patient takes a deep breath with a sigh of relief. The respiration may continue undisturbed, may be very much oppressed, or it may be arrested, simply from a fear that the least movement may end life. The pulse is small, the action of the heart weak or arrested, and the arterial tension very high. A decided contraction of the superficial arterioles causes the skin to assume a pallid appearance, and a sudden chilliness with chattering of the teeth occurs. When the attack is over, the circulation becomes active, the skin warm, eructation of gas, sometimes vomiting, occurs, and a quantity of pale, watery urine is passed.

**Course, Duration, and Termination.**—The course of the disease is chronic. The paroxysms have a variable duration—usually lasting a few seconds only, but they may continue, with remissions in the severity of the symptoms, for hours, even days. The return of the attacks is irregular and uncertain; they may appear after an intermission of days, or weeks, or months. It is usually several months after the occurrence of the first seizure until the next appears. The nocturnal attacks are spontaneous in origin, but those occurring during the day are caused by some strong emotion—a fit of anger, chagrin or disappointment—by some active exercise, or by indigestion. The disease may occur irregularly during five to seven years. The importance of angina is largely affected by the cardiac lesions which usually accompany it, and the fatal termination so often observed after two or three paroxysms, rarely in the first, is due to these associated cardiac lesions. Whether symptomatic or essential, angina pectoris is a fatal malady, but the latter form is more amenable to treatment, and offers a longer duration than the former.

**Treatment.**—All causes of disturbance of the cardiac action, as tobacco-smoking, etc., must be removed. Those attacks accompanied by vascular spasm—and this seems to be the case during the paroxysm in all cases—are most promptly relieved by the nitrite of amyl, originally proposed by Brunton. Patients should be provided with the pearls containing three minims, to be broken in the handkerchief, and the vapor inhaled on the instant. This expedient has given relief in a

large number of cases. The solution of nitro-glycerine has been used most successfully in the interval of the seizures to prevent them. Full doses of arsenic (ten minims of Fowler's solution) three times a day, after meals, have a good effect. The hypophosphites and cod-liver oil, continued steadily for months, have done good in debilitated subjects. Where a malarial influence may be presumed to exist, quinine is the proper remedy. When epilepsy is masked under attacks of angina, bromide of potassium affords great relief. Remarkably good results have been obtained from galvanism, stable currents being used—the positive pole at the præcordia, and the negative over the seventh cervical vertebra.

#### EXOPHTHALMIC GOITRE (GRAVES'S DISEASE).

**Definition.**—*Exophthalmic goitre* is a disease characterized by a quaternary of symptoms—exophthalmus, enlarged thyroid, dilatation of the arteries, and palpitation of the heart. It has received a variety of designations. In Germany it is known as *Basedow's disease*; in England, *Graves's disease*, from the names of supposed discoverers.

**Causes.**—Although a variety of causes have been alleged, few are worthy of serious consideration. Heredity, anæmia, and chlorosis, moral emotions, have been considered causative, but of these only the last appears to have exerted any real influence. In the cases seen by the author, fright, chagrin, reverses of fortune, etc., were the causes, but it is probable that the effect produced was really due to some peculiar condition of the nervous system. This disease is more common in women than in men—in the former before, in the latter after thirty, whence it may be concluded that a mobile nervous system is necessary to its origin.

**Pathological Anatomy.**—The changes characteristic of exophthalmic goitre are by no means striking. The veins and arteries of the thyroid show great increase of size and thickness, and the gland itself is unaltered, or in the condition of simple hyperplasia, or cystic; but the last-mentioned state has no relation to this disease. A considerable increase in the fat behind the eye has been observed; the muscles are affected with fatty degeneration (one case); the ophthalmic artery is atheromatous (one case)—but these are probably only accidental changes. Some structural alterations have been found, in a majority of cases, in the sympathetic ganglia, and especially in the inferior ganglion. Both sides may be affected, or one only, and the amount of disease varies greatly. The heart in most, if not all, cases is damaged variously, but these changes are not a part of this disease, and are entirely accidental.

**Symptoms.**—In one of the author's cases the first symptom (protrusion of the eyes) was perceived by the patient on going to the