due to profound troubles of the kidney, and particularly to renal lithiasis. You are aware that in these renal cases of persistent neuralgia it has been proposed to remove, or to open the kidney; in a word, to perform nephrectomy or nephrotomy, as Professor Leon Le Fort and Le Dentu have done. I pass by gastralgia, hepatalgia and the greater part of the abdominal neuralgias, only referring you to what I have already said in regard to them while treating of diseases of the stomach, liver and intestines, and I come now to intercostal neuralgia.[4] This is a very common neuralgia, and all delicate, nervous women suffer from it more or less. Peter, in his remarkable lessons on *pains in the side*, insists that intercostal neuralgia is always limited to the left side; I do not quite agree with him in this. It is true that the far greater part of painful intercostal affections are on the left side. You will nevertheless now and then see hysterical patients whose painful sensations and whose anæsthesia are exclusively right-sided. On which-

scrotal or labial branch. The pain, as in all other neuralgias, is permanent, dull, or contusive, or is paroxysmal. The attacks are spontaneous or provoked by walking, sudden movements, pressure over the nerve, etc., and remain limited to the bones, the flank, and the inferior part of the hypo-gastrium, or are propagated to the groin and to the testicle, or labia-majora, according as the scrotal or labial branch is or is not affected. Irritable testicle, painful testicle of Sir Astley Cooper, is an ilio-scrotal neuralgia. Valleix has described the following foci of pain: 1. A lumbar point, seated a little outside of the first lumbar vertebra. 2. An iliac point a little above the crest of the ilium. 3. A hypogastric point above the inguinal ring and just outside of the linea alba. 4. An inguinal point about the middle of Poupart's ligament. 5. A scrotal or labial point at the inferior part of the testicle or in the substance of the labia majora.

[4] Intercostal neuralgia is very common, especially in females. It is unilateral or double, and is seated generally on the left side; several intercostal nerves being almost always affected at the same time. Its causes are multiple; impression of cold, contusion of the thorax (a zona often accompanying it); neuritis, neuroma, lesion of neighboring organs as the lungs, pleura, vertebral column, tumors of the mediastinum, aneurisms of the aorta, cardiac affections, neuritis of the cardiac plexus, mammary tumors, etc. This neuralgia may be reflex and accompany catarrh of the digestive tube, cancer or ulcer of the stomach, or utero-ovarian diseases. Intercostal neuralgia may depend on disease of the spinal cord such as acute or chronic myelitis. It is also observed in hysteria, chlorosis, anæmia (in this case its seat is always on the left side), malaria, lead poisoning, syphilis, and rheumatism. Michel Peter in his lessons on "pain in the side" defines the pain of pneumonia as a pleuritic pain, and the latter as nothing but an intercostal neuropathy. The pains in the side observed in phthisical patients at the apex of the lungs are neurites which recognize for cause, inflammation of the lungs and pleura. In tuberculous neuritis it is the first, second and sometimes third intercostal spaces that are the seat of pain. In the neuralgia of chlorosis and anaemia it is the fourth, fifth and sometimes sixth intercostal spaces, and the pain is most severe on a level with the fourth dorsal vertebra. Intercostal neuralgia ordinarily develops slowly and gradually. The pain is dull persistent, but subject to exacerbations which manifest themselves by pangs shooting through the intercostal space, or limited to only a part of it. These shootings of pain may come on spontaneously and provoke a passing dyspnœa or anguish. Generally they are caused by movements of inspiration, attacks of coughing, pressure, by simply raising the arm, etc; they frequently radiate toward the neck, shoulder, forearm, mamma. The pain in intercostal neuralgia is almost always circumscribed. This enables us to distinguish it from the diffused pain of pleurisy or pleuritic rheumatism (pleurodynia). The fixed points described by Valleix are three in number: 1st, A vertebral point at the posterior part of the intercostal space a little outside of the spinous process; 2d, a lateral point about the middle of the intercostal space; 3d, an anterior point corresponding to the sternum (between the costal cartilages), for the upper nerves (*point sternal*), to the epigastrium, for the inferior nerves (*point epigastrique*).

On making pressure over these different points the seat and nature of the pain is recognized.

Intercostal neuralgia has often a long duration; it is very rebellious in some persons, and subject to relapses.



ever side it may occur, this neuralgia is obstinate, and resists not only morphine injections but also revulsive treatment. Hydrotherapy, applied in the form of douches to the painful region, seems to me one of the best means of combating this rebellious intercostal neuralgia.

I shall finish this lecture by a brief consideration of the neuralgias of the fifth nerve.

Odontalgia,[5] I need not tell you, is one of the most common of painful affections, and every one has at some time experienced the atrocious pain of toothache. This neuralgia is often determined by alveo-periostitis, or by a carious tooth, which affects the terminal portion of the dental nerve. There exists a ready means of relief for this pain in arsenious acid, which destroys the dental pulp, a method which Tomes, Magitot, and Combe have advised. A paste is recommended (to be applied on cotton to the cavity of the tooth), consisting of two parts of white arsenic, two of morphia, one of gum tragacanth, and one of glycerine. Among the numerous measures which have been employed against odontalgia, Bouchaud has counselled electricity. His method is to place the positive pole over the diseased nerve, and the negative pole a short distance from it, and to pass a mild continued current.

[5] Redier of Lille has given several formulæ which apply particularly to the treatment of toothache. As a calmative application he advises the following:

℞. Tinct. benzoin..... 3 i.
Fluid ext. opii.....
Chloroform.....
Creasote .....ää 3 ss.

M.—Introduce into the carious tooth on a little cotton. The whole may be covered by another cotton wad saturated in the following mixture:

℞. Gum benzoin .....
Alcohol..... ää equal parts.

To destroy the pulp, he employs the following paste:

℞. Acid arsenious, morphia..... ää 3 ss.
Pulv. acaciæ, glycerine..... äa gr. xv.

M.—Apply to the pulp cavity and let it remain twenty-four hours. It is generally necessary to renew the dressing two or three times. (*a*)

(*a*) Rediér in Bull. Gen. de Ther., t. CIII, p. 357, 1882. Tomes, A Course of Lectures on Dental Physiology, London, 1848. Magitot, Treatise on Dental Caries, Chandler's translation; Boston, Houghton, Mifflin & Co., 1880. Combé, Bull. Gen. de Ther., t. XCIX, p. 485, 1880.

A word now about facial neuralgia,[1] properly so called. These neuralgias affect sometimes the supra-orbital nerve, sometimes the infra-orbital branches; these last are the most obstinate. As I have already told you, they often yield readily to treatment by aconitina, or to sulphate of quinine when of an intermittent character. They sometimes defy all treatment, and have been known to involve the facial nerve, as well as the fifth. Without discussing the question of recurrent neuralgia—a subject which has of late been treated in a brilliant manner by Cartaz—you all know that neuralgia is often accompanied by painful contractions, and that to this syndrome the name has been applied of epileptiform neuralgia, or tic douleureux of the face. It is the most atrociously painful affection that has ever afflicted humanity, and instances have been known where it has driven its unhappy victim to suicide.

It is in these cases that surgery steps in, with its nerve-stretching and neurectomy; here, too, the advantages of galvanism have been lauded. If you

[1] Facial neuralgia tic douleureux (André); prosopalgia (Simon); neuralgia of the face (Halliday); trifacial neuralgia (Valleix) comes by order of frequence after sciatica and intercostal neuralgia. It may be divided, according to the seat of the pain, into 1st, neuralgia of the opthalmic branch; 2d, neuralgia of the superior maxillary branch; 2d, neuralgia of the sensory part of the inf. max.

It is about as frequent in men as in women; is ordinarily unilateral.

*Causes:* Cold when the individual is sweating; carious teeth; contusions, wounds of the face; compression of the nerves by foreign bodies; neuromata; tumors of the petrous bone, aneurisms of the internal carotid; tumor of the pons; fungus of the dura mater.

It may come on in the beginning or during the course of locomotor ataxia; it may depend on visceral affections, fibrous tumors of the womb, gastro-intestinal troubles, malaria, poisoning by opium, lead, mercury; may supervene during rheumatism, gout, syphilis, anæmia; may show itself after suppression of the menses, of a hemorrhoidal flux, of a habitual exanthem; after a severe emotion.

It does not generally come on suddenly, but gradually. At first limited to several nerve branches, it only gains the others progressively. The patients experience dull, contusive, persistent pain, or paroxysmal pain which may be spontaneous or provoked by some movement, and even by penetrating odors.

During the attack the patients suffer atrocious pains, often of a lancinating character, which call forth outcries; they toss about on their bed and smite their head; the muscles of the affected side of the face are the seat of rapid contractions, convulsive shocks, multiple distortions succeeding each other at very short intervals. All the muscles are not affected, and often the contractions are limited to the frontal portion of the occipito-frontalis to the zygomatici, to the inferior maxillary muscles.

The face becomes turgescent, there is often photophobia, lachrymation, buzzings in the ears, then the paroxysmal shocks diminish in frequency and intensity, and all becomes calm; the storm has passed, to be renewed again under the same form in a time not far distant.

Every attack has not, it is true, this intensity; sometimes the lancinating pangs are of short duration (epiliptiform seizures). According to the branches affected, certain phenomena present themselves; photophobia, injection of the eyes, lachrymation, passing amaurosis in neuralgia of the opthalmic; odontalgia, pituitary secretion in neuralgia of the superior maxillary; painful deglutition and mastication, exaggeration of the salivary secretion in neuralgia of the inferior maxillary nerve. Commonly facial neuralgia occupies the entire trifacial nerve.

The tender points (points douleureux), according to Valleix, are as follows:

1. Supra orbital, over supra orbital foramen.



employ electricity,[2] you must never exceed a certain intensity (two or three milliampères, for instance); you must also, as Apostoli enjoins, make use of rheostats, and interpose a certain resistance to the current, to avoid the *photopsias* which are produced with each modification of the current. It is understood that the positive pole must be placed over the painful point, and as for the duration of the *sèance*, it ought to be continued till the pain disappears.

I must, before finishing, say something about migraine,[3] which (therapeu-

2. The palpebral.
3. The nasal. Internal and superior part of the nose.
4. The ocular.
5. The infra orbital.
6. The malar.
7. The superior dental.
8. The superior labial.
9. The palatine.
10. The pituitary.
11. The temporal.
12. The temporo maxillary.
13. The mental.
14. The lingual.
15. The inferior labial.

Facial neuralgia has a variable duration, and is subject to relapses. When it lasts a long time, it is not rare to observe trophic troubles of the skin, which may become hypertrophied, or of the hair, which may have an exaggerated growth, may fall out or turn white. The patients fall into a state of languor and become "used up;" others, in the worst forms of tic douleureux, seek in suicide a release from their sufferings.

[2] Letourneau has much employed cephalic electrization, which acts on the vaso motors, diminishing the cephalic congestion and even preventing the cerebral neoplasms which often follow repeated attacks of hyperæmia. The cerebral anæmia provoked by the constant currents explains the vertigo which the patient experiences under the influence of electricity, and the unconquerable somnolence which always follows these electrical seances. (*a*)

[3] Migraine is a painful affection, which has from time immemorial exercised the sagacity and skill of physicians. It is still almost as difficult to treat as it ever was.

This disease, which used to be attributed to certain diatheses (arthritism, herpes, gout, etc.,) has been referred to a variety of causes, as disorder of the frontal sinuses (Deschamps) neuralgia of the 5th and 7th pairs of nerves (Chaussier and Pinel), compression of the trifacial by the engorged, cavernous sinuses (Auzias Turenne).

Some authorities consider it as a symptom of lesions of the nervous system, central or peripheral; others (as Hervez and Liveing) as a discharge from the nervous system too charged with fluid. According to Piorry it is an ascending neuralgia, taking its departure from the nervous fibres of the iris. Du Bois Reymond thinks that migraine originates in the cilio-spinal center.

The causes of the attack are multiple and various: indigestion, constipation, exposure to the open air and sunshine, fatigue of the sight or the hearing, too prolonged watching, absorbing intellectual labors, changes in the hour of meals, too much or too little food; privation of an habitual stimulant (tea, coffee, etc.); all may provoke an attack, It is the same with changes of habit, and errors of hygiene, suppression of a hemorrhoidal flux, etc.

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(*a*) Letourneau, On Cephalic Electrization (Congrés pour l' avancement des sciencés, 1878, p. 913).

tically at least) belongs to the neuralgias. You are not ignorant of the discussions which have arisen over the pathogeny of migraine, some considering it simply a neuralgia of the trifacial, others as a special neurosis of the same nerve, or even as a neuralgia of the brain itself, a cerebralgia, as Romberg maintains. There are still others who assert, as does Du Bois Reymond, that the principal seat of migraine is the cervical portion of the great sympathetic. This is the view generally held in France, especially by Gubler and Jaccoud. It is, in fact, probable that migraine is not a simple neuralgia, but a complex neurosis, affecting alike the cerebrum, the trigeminal nerve, and the cervical portion of the sympathetic.

Whatever its pathological nature, migraine is a very distressing affection and you will often be consulted in reference to it. You ought always, if possible, to ascertain the first cause, and as far as this is concerned, this is what you will discover: in nine cases out of ten migraine is a diathetic affection, and for my part I have frequently observed it in hemorrhoidal, arthritic, and asthmatic subjects. Your treatment, then, should be directed to the arthritic diathesis, of

In women it is not rare to see migraine coincide with the menstrual epoch, cease with it, reappear with the next period, and cease altogether at the menopause.

Everything in fact in the case of a person predisposed may provoke an attack ; even a slight blow on the head, breathing a peculiar odor, mental emotion, etc.

Attacks vary according to individuals. Sometimes there are prodromes the evening before ; too keen an appetite, cerebral excitation, or somnolence. Oftener the patient goes to bed well, but wakes up in the morning with a feeling of lassitude, torpor, and inaptitude for work. Others wake up feeling more active, more lively, but there are at the same time certain indescribable sensations known only to the migrainous, which announce the impending paroxysm.

Little by little the attack develops; the headache appears ; at first slight and limited to the forehead, the temples or the orbit ; it changes place, goes to the nucha, darts from right to left to return to the right or *vice versa*. The patient complains of a sort of cranial tension, of oppression over the frontal sinuses, the sensation of a leaden cap or girdle surrounding the head. The least movement exasperates the pain; walking, ascending a flight of stairs, gives a sensation as if the cranium was pounded. The patient seeks darkness, silence, rests apathetic, indifferent to everything, but when there are exacerbations of the pain, twinges in the cranium, in the orbit, he becomes agitated and wild, and only recovers calmness when the anguish is assuaged. The pain is habitually localized on one side (hemicrania), and not rarely there are irradiations to the back and front of the neck, and shoulders of the same side. During this time the skin is pale, or it may be slightly flushed, the features are drawn, the eyes encircled with a ring, the temporal artery beats with force. On the part of the eye there are also certain troubles, such as diplopia, mists before the sight, or dazzling sensations, *muscæ volitantes*, and photophobia ; the eye at the same time seems smaller; the pupils slightly smaller than natural are sometimes animated by fibrillary contractions; and the ball of the eye is tender. There is also in some persons perversion of the hearing (buzzing in the ears); or of the smell, (exaggeration or abolition).

The appetite, abolished in some, is exaggerated in others ; certain drinks, certain articles of food are not supported, but there is an annoying and constant symptom, a sort of seasickness—nausea followed by vomiting, which exasperates the pain, or which may even usher in the end of the paroxysm, or at least the end of the special malaise which accompanies it (rigors, horripilation, cutaneous hyperæsthesia, gaping, eructations).

The cerebral troubles are somewhat rare. Liveing has noted cases of aphasia, and



which the migraine is an expression. At other times you will find the migraine due to causes of a different character, occasional causes to which you should address your therapeutic endeavors. These causes may be ranged in three groups; first, excess of work, and especially brain work during the night-time, and with the aid of too strong a light. Piorry referred all migraines to fatigue of the eyes; to him, migraine was only a manifestation of *irisalgia*. Second, anæmia; the megrim of chlorotics is an example, coming on whenever by any cause the organism is enfeebled. Third, congestive head troubles, instances of which we see in the hemicranias of the gouty or arthritic.

The first class of patients are benefited by rest from mental toil, and by bromide of potassium; the second may require hydrotherapy and morphia; the third will need alkalies, intestinal derivatives, and especially aconitia.

I have finished this long exposition of the treatment of neuralgia, an exposition far from being complete notwithstanding its length. I believe, however, that I have furnished you the general principles which ought to guide you in your practice.

In the combat with pain your therapeutic resources will be taxed to the uttermost, and you can only fulfill your professional duty by the intelligent endeavor *always to relieve, if you cannot cure.*

Charcot has seen similar cases. Gubler and Bordier say that they have observed during the attack a greater facility of the circulation and respiration.

Diarrhœa and constipation are symptoms varying according to the subjects; it is the same with diuresis.

The duration of the attack is variable and often in the direct ratio of its intensity ; from three, four, five and six hours to twenty-four, thirty-six, forty-eight, and even more. The pain in some persons is gradually alleviated during the day, especially during conversation; in others, after a short lull it reappears, and only is calmed when the patient succeeds in going to sleep, after long searching for a place on his pillow which is not too hard for his head. He wakes up restored, or with a weight in his head which little by little goes away, or is only the prelude to another attack.

The attacks, whose intensity is extremely variable, sometimes present themselves in a regular manner, at fixed periods, which gradually become longer and longer with age, and finally the disease disappears altogether, or is replaced by gout, hemorrhoids, asthma, or some cutaneous or other affection.

The baldness seen in some migrainous patients is rather due to *pityriasis capitis* than to the migraine.

After the attack the health is often excellent ; the patient recovers his natural tone and spirits, and experiences a *bien être* which is wanting when by any means the paroxysm is aborted.

Migraine is most common in the female ; it attacks all classes of society. (*a*)

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(*a*) Tissot, Des nerfs et de leurs maladies, t. XI, Paris, 1873. Bouillaud, Nosographie médicale. Pelletan, Coup d'œil sur la migraine et sur ses divers traitements. Du Bois Reymond, Archiv. für Anal., 4e livraison, 1860, p. 461. Gubler et A. Bordier, Dictionnaire encyclopédique des sciences médicales, art. Migraine. Piorry, Mémoire sur la migraine; Trait. med. pratique, t. VIII, p. 75.