least in my own experience, no cause at all can be found. The influence of exposure to cold and of overexertion of course has here also been thought to be of ætiological significance without there being any grounds for such an assumption; on the other hand, there is no question but that certain infectious diseases—e. g., intermittent fever, pertussis, typhoid fever—may be followed by a paralysis agitans, a connection, however, which, although certain in its existence, is still obscure in its nature. Nothing definite is known about the influence of age and sex.

Diagnosis.—After what has been said little needs to be added with regard to the diagnosis, which is almost always easy. It is certainly not hard to avoid mistaking paralysis agitans for multiple sclerosis or chorea, and chronic alcoholism is easily excluded if we take into account the characteristics of the tremor, its continuance during sleep, and the whole course of the disease. It may be sometimes difficult to differentiate a shaking palsy from the ordinary tremor senilis if the latter occurs as early as the forties, at a time of life during which paralysis agitans is not rare, and it is the more necessary to be careful, since the number of the oscillations in both affections is about the same—that is, ranges between four and six per second. The muscular weakness, the peculiar rigidity which accompanies the movements, the characteristic facial expression, the posture, the "propulsion," etc., will in most cases be sufficient to clear up the diagnosis. Oppenheim has observed that the so-called traumatic neurosis may present the picture of paralysis agitans (Pseudo-Paralysis Agitans; Charité-Annalen, 1889, xiv, p. 418).

Treatment.—The treatment is entirely fruitless. We have not as yet seen any results from any of the therapeutic measures employed. Neither with baths nor with massage (Berbez, cf. lit.) nor with galvanism has anything been achieved, and all internal medicines are of no avail. It is impossible to give particular indications for the treatment, and it must therefore remain for the physician in every case to treat alternately with baths, massage, and electricity, according as he sees fit. As long as he does not do the patient any harm, it does not matter much which mode of treatment he decides to use. Lately Erb has recommended the muriate of hyoscine injected subcutaneously or taken internally. This is said to exert a very good influence upon the tremor, but whether this effect is lasting, and whether the bad after-effects which occasionally appear after a prolonged use of the drug are not a grave objection to its administration, is not as yet decided. My own experiences with it were not favorable. Charcot's "vibration treatment," by which a quieting or even benumbing effect is aimed at, was further studied by Gilles de la Tourette (Progrès méd., 1892, 35). This author has constructed a special apparatus in the shape of a helmet. Five thousand to six thousand vibrations a minute are said to produce a hypnotizing effect and to diminish the tremor. I am inclined to think that the result is chiefly due to suggestion.

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B. AFFECTIONS IN WHICH THE SENSORY NERVES ARE CHIEFLY IMPLICATED.

The only affection which can at present be assigned to this group is one which deserves a good deal of attention, on account not only of its frequency, but also of the obscurity which still exists with regard to its pathogenesis. It is a malady which never seriously endangers the patient's life, but nevertheless produces grave, almost unbearable, suffering.

Migraine (*Hemicrania*).

The disease manifests itself in attacks, while in the intervening periods the patients are usually perfectly well and in no way give evidence of the severity of the affliction of which

they are the subjects. The paroxysms are usually preceded for several hours by prodromal symptoms, general lassitude, chilly feelings, a tendency to yawn, buzzing in the ears, and the like. If the regular attack is going to begin in the morning, the patient wakes up repeatedly during the night, and is thus able to predict with certainty that the headache is coming on. The pain is sometimes confined to one side of the head, and, according to statistics, the left seems to be the one more commonly implicated; but the seat often changes during the attack, so that the patient complains now of the left, now of the right side of the head. Sometimes a distinct pallor is noticeable on one side during the attack, associated with dilatation of the pupil and increase in the salivary secretion, while in other instances one half of the face is flushed and hot, the arteries pulsating strongly, and the pupil contracted. In the first case we designate the hemicrania as spastic (sympathico-tonica, connected with stimulation of the sympathetic); in the latter as paralytic (connected with paralysis of the sympathetic). The former has been described by Du Bois-Reymond, the latter by Möllendorf, in both cases after observations made upon themselves. But these conditions are not constant either, and if one has seen many attacks of migraine he knows full well that the patients often change color—they are now pale, now flushed, now complain of a feeling of heat in the head, now of cold.

If the pain is very violent the patient shows general constitutional symptoms. In a bad attack he lies for hours completely apathetic, meeting every question and every source of disturbance with unmistakable signs of disgust. He refuses nourishment entirely, owing to a feeling of utter discomfort and an almost uncontrollable desire to vomit. Only after copious vomiting of bile-like mucoid masses does his condition gradually improve, the amelioration beginning with a violent desire for food and a polyuria following the attack, which is finally ended by a refreshing sleep. When vomiting does not occur the patient suffers for a longer period. Sometimes the eyes participate, and photophobia, flitting scotomata, even hemianopia, have been observed during the attack. These are instances of the type which Féré, Galezowski, Dardignac, and others have described as *migraine ophthalmique*. In place of the flitting scotomata, visual hallucinations are observed in exceptional cases (Weir Mitchell, Amer. Jour. Med. Sci., 1887, October, p. 415).

It is not uncommon for the attacks not to reach their full development; in which cases only certain symptoms—flitting scotomata, vomiting, vaso-motor disturbances, or the like—may appear. Such isolated symptoms may be called "hemicranic equivalents" (Möbius).

The duration of the attack varies from a few hours to a whole day; it rarely lasts longer, and if it does, this fact should always make us doubtful as to the diagnosis. In the intervals the patients as a rule feel well; still, if the attacks are very severe and frequent, occurring, for instance, as often as once or twice a week, the after-effects may be so lasting that the sufferers never enjoy perfect health. Indeed, the attacks may occur with such frequency that we have what Féré calls *état de mal migraineux* and Möbius *status hemicranicus*, a condition in which transitory psychoses may develop (Zacher, Berliner klin. Wochenschrift, June 11, 1892). Fortunately, such a rapid succession of the seizures is uncommon. Once a month or six or eight times a year is the rule, not counting slight, abortive attacks.

The course of migraine is always extremely tedious, sometimes lasting through a whole lifetime. In women the climacteric period occasionally, but by no means always, exerts a beneficial influence. At the time of menstruation the attacks seem to be especially apt to occur; and even if no definite attack makes its appearance, women who are subject to migraine complain of more or less severe headaches at such periods. Not infrequently the disease has an unfavorable influence on the disposition and appearance of the patients; they become peevish and ill-tempered, and even in the intervals between the attacks are by no means amiable or sociable. They are wont to restrict themselves considerably in their social intercourse—for one reason, because they are rarely able to make engagements for definite times on account of the possibility of the occurrence of one of their attacks. The trophic disturbances which are sometimes superadded, as, for instance, the premature gray hairs, make such patients look older than they really are; on the other hand, there are individuals who, notwithstanding the severity of the attacks, retain for a long time their youthful freshness and vivacity.

With regard to the pathological anatomy and the pathogenesis we know scarcely anything; it appears not unlikely that the brain cortex more especially and its sensory elements are primarily the seat of the affection, and it seems more and more

probable that, besides the influence which must be attributed to heredity, here too, as has been claimed for certain cases of epilepsy, auto-intoxication is to be regarded as a not improbable factor. But it must be admitted that this is only a supposition, and that we are without any certain knowledge on this point.

Recovery, if it ever occurs, is certainly very rare, and can probably never be regarded as the result of treatment. If aphasia or motor disturbances are persistently associated with hemicrania, the latter is to be regarded merely as a symptom of an underlying organic disease, and nothing definite can be said with regard to the prognosis. In this connection must be mentioned the case of Oppenheim, in which a thrombus of the internal carotid artery was found to be the cause of the headache and of the other symptoms (Charité-Annalen, xv, Jahrg.). The prognosis is relatively favorable if in the intervals between the attacks the patient enjoys sound and healthful sleep. Unfortunately, in the majority of cases they are deprived of this, and in order to procure it are forced to resort to artificial means, of which the bromides are the most popular. It is not always easy to understand the cause of the sleeplessness (*agrypnia*) in migraine, and for that matter in all nervous diseases ; it is especially difficult to do so when this is the only symptom and absolutely nothing else can be detected, when individuals otherwise healthy are wholly or almost wholly deprived of sleep for weeks; and yet it is just the discovery of this primary cause that is of the greatest importance, as it will guide our action in the treatment; and only when this is found can we reasonably hope for improvement from our efforts. Sometimes we have to deal with a gastric catarrh which until this time has been overlooked, a hyperæmia of the liver, and the like, and after the successful treatment of these by Carlsbad water, etc., sleep, which in spite of all bromides and morphine has in vain been sought, returns of its own accord. Sometimes a marked grade of anæmia may lie at the bottom, easily recognizable by the pallor of the skin, the small pulse, and the cold extremities. In such cases cod-liver oil, iron, and quinine are more serviceable than the usual hypnotics, which are rarely well borne. In all nervous patients suffering from insomnia it is advisable to examine the thoracic and abdominal as well as the sexual organs, and only to treat the sleeplessness symptomatically when repeated examinations have given negative results. This symptomatic treatment consists above all in the careful use of

massage, which should be supervised by the physician, a practice from which we have obtained very gratifying results. Next comes the systematic galvanization of the brain, for the technical details of which the reader is referred to my book on electro-diagnosis, pp. 186 *et seq.* As a last resort we have the administration of quieting, calming, and sleep-producing drugs, among which, notwithstanding all the new hypnotics, morphine still holds the first place. Besides this, chloral, paraldehyde, urethan, hypnone, coniine, lupuline, sulfonal, and amylene hydrate (tertiary amyl alcohol), which has recently been recommended by von Mering, may be tried. The last is best given in doses of three and a half to four grammes (℥l–lx) in one dose once in twenty-four hours, and seems often to have a favorable action. On account of the bad taste of this drug the addition of correctives—for instance, the oil of peppermint, which somewhat masks the taste—is to be recommended. (Amylene hydrate, 7.0 (℥cv); aq. menth. pip., 40.0 (℥x); ol. menth. pip., 1.0 (℥xv); syrup. simpl., 30.0 (℥j). Sig.: Half to be taken at night.) The sleep after it is deep and quiet, and unpleasant after-effects are rare. Nevertheless, it is well to be careful in its administration, as symptoms of intoxication may appear, as Dietz has reported (Deutsche Medicinal-Zeitung, 1888, 18). Trional has been recommended by Schultze (Therap. Monatsch., 1891, October); its effect has also been studied by Brie (Neurol. Centralbl., 1892, 24), who has found it very useful in doses of from 1 to 2 grammes (15 to 30 grains), without noting any bad after-effects. The reports with regard to methylal and chloralamid are still conflicting (cf. lit.).

The medicinal as well as the general treatment of migraine is, on the whole, the same as that of habitual headache, which has already been discussed on page 65. It may be added that the so-called migränin, a combination of antipyrin, citric acid, and caffein, in certain proportions, prepared by Overlach, is deserving of further trial (Deutsche med. Wochenschr., 1893, xix, 47).

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C. AFFECTIONS IN WHICH THE TROPHIC NERVES ARE CHIEFLY IMPLICATED.

Our acquaintance with the few affections to be described under this head is of very recent date. Since their pathogenesis and their seat are as yet obscure, and since we have to confine ourselves to the description of the most striking symptoms, it is impossible to say whether the place here assigned to them is correct or not.

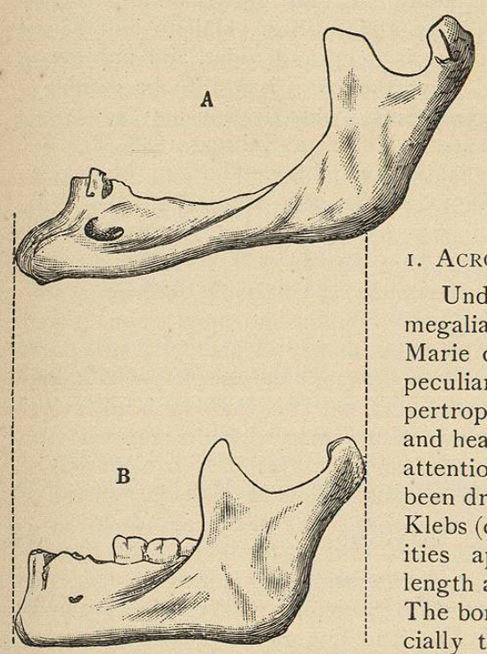

Fig. 154.—*A*, the lower jaw of a patient under the care of Professor Marie, in Paris. *B*, a lower jaw which normally would correspond to the size of the patient.

1. Acromegaly (*P. Marie*).

Under the name of acromegalia (ἄκρον, extremity) Marie described, in 1886, a peculiar non-congenital hypertrophy of the hands, feet, and head, to which affection attention had previously been drawn by Fritsche and Klebs (cf. lit.). The extremities appear increased in length as well as in breadth. The bones of the face, especially those of the cheeks and the lower jaw, present considerable enlargement (cf. Fig. 154), and the measurements of the skull are above normal. In the same way the lips, ears, nose, and tongue are found enlarged, whereas all the muscles are feeble. The skin appears yellowish and pale, but is otherwise normal. The thyroid gland was almost always very atrophic in the cases observed up to the present time.

Fig. 155.—Case of Acromegaly. (After P. Marie.)

In spite of their gigantic appearance the patients are feeble and without strength. The sexual functions are lost early and completely (Freund, cf. lit.).

The onset of the disease dates back to early childhood, and it has to be regarded as an abnormity in development (Freund) "which, probably beginning as early as the cutting of the second teeth, certainly sets in energetically at the period of puberty, and consists in a rapidly developing enlargement of the facial part of the skull, which by far exceeds the physiological limits of growth. This increase is especially marked in the lower jaw and also in the extremities, with their girdle attachments, while the rest of the skull and the trunk are only secondarily altered." The observation of Gerhardt, whose patient was perfectly well up to his sixtieth year, does not agree with this view (Berliner klin. Wochenschr., 1890, 52).

A relatively large number of cases have come to autopsy