CHAPTER III.

PARALYSIS AGITANS—SHAKING PALSY—PARKINSON'S DISEASE—CHOREA PROCURSIVA.

AMONG the diseases of which we are treating in this part paralysis agitans is the gravest, but happily also the rarest, for, according to statistics of my own cases, only about 0.43 per cent, or one in two hundred and twenty-nine, of all affections of the nervous system were instances of paralysis agitans. Within the some sixty years which have passed since Parkinson's description appeared, certain symptoms of the disease have, it is true, been studied more carefully, but our knowledge of the ætiology, the anatomical seat, the treatment, etc., has not improved to any extent, and in fact our progress has been unsatisfactory.

Symptoms.—The first thing observed by the patient is a feeling of weakness in the extremities, followed soon after by a slight tremor, which at first only occurs temporarily. It is more marked in the upper extremities, especially in the right arm, yet it is also noticeable in the legs, and exceptionally in the head. The old idea that the head is always exempt from the tremor of paralysis agitans, and that this exemption is, *cæteris paribus*, characteristic of the affection, is untenable. In rare instances the tremor is confined to one half of the body, whereas the other remains quiet.

The tremor consists of uniform oscillating movements, the oscillations being rather few in number, not more than from four and three quarters to five and a half per second (Cramer), whereas the tremor of Graves' disease, for example, presents from nine to nine and a half oscillations per second (Marie). The lengths of the oscillation waves have been studied by Marie, Cramer, and others, and the handwriting of the patients has generally been utilized for such observations. The oscillations were recorded on paper by means of a Marey's drum or rubber ball,

which the patient was made to hold loosely in his hand. Repeatedly with perfect regularity of the wave lengths a variability in their height could be demonstrated, the physiological cause for which is not entirely clear. It is not infrequently seen that the tremor increases on forced attempts at motion, and passes into a regular "shake," so that the patient, although not entirely helpless, becomes very awkward in feeding himself. It is a fact of considerable diagnostic importance that the

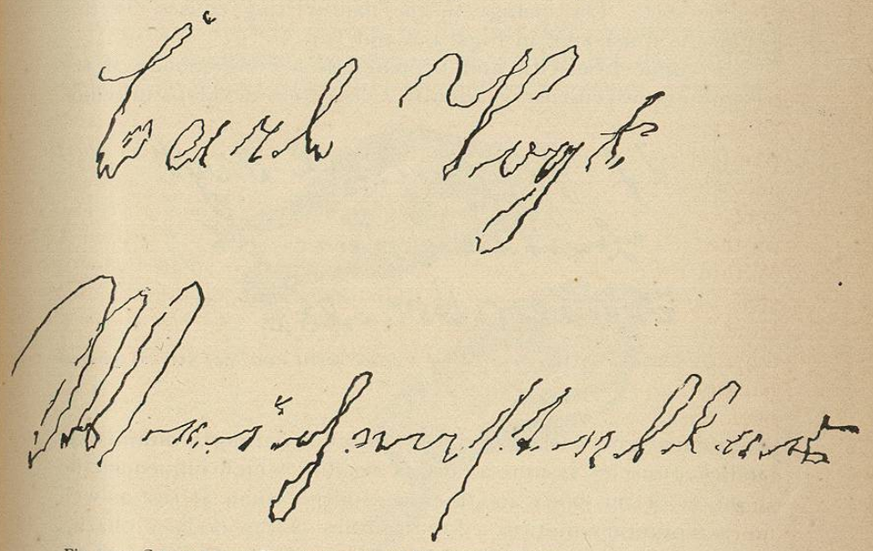

Fig. 150.—SPECIMEN OF HANDWRITING OF PATIENT WITH PARALYSIS AGITANS (personal observation).

movements during rest in bed do not cease, but continue and hinder the patient from getting to sleep, and (in contradistinction to what we find in chorea) do not disappear even during sound slumber. Indeed, the intensity of the tremor may remain undiminished in bed, and I know of instances in which the patients procured for themselves iron bedsteads in order to avoid the annoying creaking of the wooden bed caused by the violent shaking. In other cases the condition improved upon lying quietly in bed, and falling asleep was facilitated by the use of certain artifices. Thus Eichhorst relates of one of his patients that he always carried a little twig between his teeth so as to keep his jaws quiet, and one of my own cases only

could obtain comfort and a certain amount of rest in his fingers and arms by rolling small objects—for instance, little wooden balls which he had made for the purpose—between his fingers and thumb. With the aid of these he also could go to sleep. If by accident he left these balls at home, he unconsciously picked up other objects which might be lying before him, such as matches, or he rolled bread pellets, and so on, and only felt comfortable when his fingers were occupied with something of this sort. The change in the handwriting caused by this tremor is illustrated in Figs. 150 and 151.

In connection with, and probably as a consequence of, the trembling movements, gradually a condition develops in which

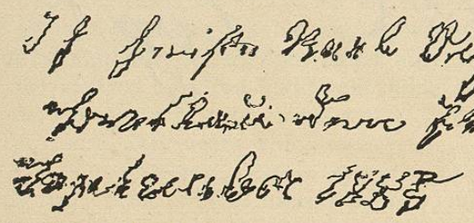

Fig. 151.—Specimen of Handwriting of Patient with Paralysis Agitans (personal observation).

the patient gets easily tired, the muscular strength diminishes, and the muscles assume a certain rigidity which influences the position of the body and the extremities when at rest as well as on voluntary motion. The position of the body is characteristic. Not only the head, which affords a good deal of resistance to passive movements, but also the whole trunk is somewhat bent over, and it appears as if the patient was at every moment ready to fall forward. The arms, which are bent at the elbows, are in close apposition to the trunk, the thumb rests against the fingers, so that the hand assumes some such position as it would in writing, the fingers themselves being flexed in the metacarpal joints (Fig. 152). The knees are so close together that the trousers are rubbed against each other by the trembling movements, and walking is not a little interfered with. The legs are usually slightly flexed at the knee joints, while nothing remarkable can be noticed about the joints of the toes. The patient impresses one as being in a constant state of uncertainty and perplexity, an impression which is only diminished to a certain degree by the very characteristic facies. The rigidity being also marked in the muscles supplied by the seventh nerve, the face has an expression of majestic calm, nay, even of sublimity. The patient seems inaccessible to psychical emotions. His smile is hardly perceptible, since the lower portions of the face more especially are almost immobile. Only the wrinkling of the forehead is somewhat more marked. Sometimes the patients have a peculiar piping voice, such as an actor assumes when playing the part of an old man on the stage.

We have already alluded to the fact that voluntary movements are somewhat impeded. This is due not only to the tremor, but also to the already-mentioned general weakness.

Fig. 152.—Position of Hands and Fingers in Paralysis Agitans (as if holding a pen). (After Eichhorst.)

He is, therefore, helpless, and needs some one to assist him if he wishes to sit up in bed or even to change his position. If he is in a sitting posture rising is difficult, sometimes impossible. The act of walking is not normally performed, for besides the bent position, which in walking becomes even more exaggerated than in standing, the patient once started has an irresistible tendency, owing to the displacement of his centre of gravity forward, to hurry ahead: his steps, at first short and tripping, become quicker and longer, and so great may be the force with which he involuntarily rushes forward that if there is no one there to stop him he falls on his face with great vio-

lence. The same phenomenon, which is called "propulsion," may sometimes be artificially produced by pulling the patient forward by the coat while he is walking quietly. He then goes faster and faster, and finally breaks into a run alarming to the bystanders. Much more rarely do we find a similar condition in the backward motion ("retropulsion"), so that the

Fig. 153.—Position of the Body in Paralysis Agitans (personal observation).

patient if pulled from behind walks backward faster and faster, to fall over in a short time. Charcot looks upon these phenomena as forced movements, a view which has, however, never been substantiated. They may possibly be explained on purely physical grounds as being due to the displacement of the centre of gravity of the body (Strümpell).

Trophic changes, with the exception perhaps of the transient appearance of purpuric spots symmetrically on the arms and legs ("senile purpura"), are not met with. Changes in the electrical excitability of the muscles do not occur, or are, at any rate, not the rule. Sensation and reflexes remain entirely

normal, and bladder as well as rectal symptoms are not present. An increase in the body temperature can never be demonstrated objectively, although patients complain at times of subjective feelings of increased heat and a disagreeable tendency to sweat a good deal, which is especially pronounced when lying in bed, so that they often sleep uncovered or with but little over them. If any cerebral or spinal symptoms make their appearance these have to be regarded as complications. They do not belong to the clinical picture of paralysis agitans as we know it now.

Cases in which muscular weakness and rigidity, with all their inconvenient consequences, were present, in which, also, the so-called propulsion was marked, but the tremor was absent, have been reported (Amidon, New York Medical Record, 1883, xxiv, 21), but such are rare.

The nature of the disease is not yet understood. We do not even know whether to refer it to the brain or to the muscles. Much less, of course, do we know where the exact seat should be sought for in the nervous system. Before the labors of Charcot and Ordenstein, paralysis agitans was often confounded with multiple sclerosis, and various anatomical lesions were then described as underlying the paralysis agitans. Later the error was cleared up, and even to the present day we are not acquainted with any anatomical basis for the disease.

Ætiology.—In this respect also our knowledge is very incomplete. Of course here, as in all other nervous diseases, heredity and the importance of a neuropathic family history must be spoken of, yet the rarity with which the affection occurs shows that this factor alone is seldom sufficient to cause the disease. Hence other exciting causes must come into play, but it is a fact difficult to understand why the same factors which so often give rise to chorea so rarely produce a shaking palsy. The causes for all these diseases are always the same, or at least similar, and it is here also in the first place that psychical emotions of fright and anxiety are of moment. The French physicians have at no time seen develop so many cases of paralysis agitans as during the time of the siege in 1871, and for years after the relative frequency of the trouble in the Paris hospitals, particularly in the Salpêtrière, acted as a reminder of the terrible hours which the besieged must have gone through. In private practice we also have occasion to find that psychical causes bring about the disease; more frequently, however, at

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