fibres are wasted and largely replaced by connective tissue and fat. In the primary atrophic form wasting of the fibres, increase in the interstitial tissue, and the development of fat are the most marked features. Except in the peroneal type, about which there is still doubt, no affection of the nerves or cord has been determined.

Diagnosis.—The primary myopathies can usually be readily distinguished from the cerebral, myelopathic, and neuritic forms.

(*a*) In the cerebral atrophy loss of power usually precedes the atrophy, which is either of a monoplegic or hemiplegic type.

(*b*) In the myelopathic or spinal muscular atrophy the distinctions are clearly marked. *Polio-myelitis anterior chronica* begins in the small muscles of the hand, a situation rarely if ever affected by the primary myopathies, which involve first those of the calves, the trunk, the face, or the shoulder-girdle. In the myelopathic atrophy the reaction of degeneration is present and fibrillary twitchings occur in both the atrophied and non-atrophied muscles. In many cases in addition to the wasting in the arms there is a spastic condition in the legs and increase in the reflexes. The myelopathic atrophies come on late in life; the myopathic forms develop, as a rule, early. In the primary muscular atrophies heredity plays an important *rôle*, which in the myelopathic is quite subsidiary.

(*c*) In the neuritic muscular atrophies, whether due to lead or to trauma, the general characters and the mode of onset are distinctive. In the cases of multiple neuritis seen for the first time at a period when the wasting is marked there is often difficulty, but the absence of family history and the distribution are important features. Moreover, the paralysis is out of proportion to the atrophy. Sensory symptoms may be present, and in the cases in which the legs are chiefly involved there is usually the *steppage* gait so characteristic of peripheral neuritis.

The outlook in the primary myopathies is bad. The wasting progresses uniformly, uninfluenced by treatment. Erb holds that by electricity and massage the progress is occasionally arrested. The general health should be carefully looked after, moderate exercise allowed, frictions with oil applied to the muscles, and when the patient becomes bedfast, as is inevitable sooner or later, care should be taken to prevent contractures in awkward positions.

III. THOMSEN'S DISEASE; MYOTONIA CONGENITA.

Definition.—An hereditary disease characterized by tonic cramp of the muscles on attempting voluntary movements. The disease received its name from the physician who first described it, in whose family it has existed for five generations.

Etiology.—All the typical cases have occurred in family groups; a few isolated instances have been described in which similar symptoms

have been present. The disease is rare in this country and in England; it seems more common in Germany and in Scandinavia.

Symptoms.—The disease comes on in childhood. It is noticed that on account of the stiffness the children are not able to take part in ordinary games. The peculiarity is noticed only during voluntary movements. The contraction which the patient wills is slowly accomplished; the relaxation which the patient wills is also slow. The contraction often persists for a little time after he has dropped an object which he has picked up. In walking, the start is difficult; one leg is put forward slowly, it halts from stiffness for a second or two, and then after a few steps the legs become limber and he walks without any difficulty. The muscles of the arms and legs are those usually implicated; rarely facial, ocular, or laryngeal muscles. Emotion and cold aggravate the condition. In some instances there is mental weakness. The sensation and the reflexes are normal. The condition of the muscles is interesting. The patients appear and are muscular, and there is sometimes a definite hypertrophy of the muscles. The force is scarcely proportionate to the size. Erb has described a characteristic reaction of the nerve and muscle to the electrical currents—the so-called myotonic reaction, the chief feature of which is that normally the contractions caused by either current attain their maximum slowly and relax slowly, and vermicular, wave-like contractions pass from the cathode to the anode.

The disease is incurable, but it may be arrested temporarily. The nature of the affection is unknown. There is an extraordinary increase in the size of the voluntary fibres. According to Hale White,* who has recently treated the subject in an exhaustive and critical manner, the fibres may be more than double the width of those of the normal muscles. The nuclei and the interstitial tissue may be increased and some of the fibres contain vacuoles. No post-mortem has been made. No treatment for the condition is known.

IV. PARAMYOCLONUS MULTIPLEX.

An affection, described by Friedrich, characterized by clonic contractions, chiefly of the muscles of the extremities, occurring either constantly or in paroxysms.

The cases have usually been in males and the disease has followed emotional disturbance, fright, or straining. The contractions are usually bilateral and may vary from fifty to one hundred and fifty in the minute. Occasionally tonic spasms occur. It is not accompanied by any sensory or motor disturbances. In the intervals between the attacks there may be tremors of the muscles. In the severe spasms the movements may be very

* Guy's Hospital Reports, 1889.

violent; the body is tossed about, and it is sometimes difficult to keep the patient in bed. In a case which I saw at the Bicêtre the patient was perfectly quiet so long as his legs were tied down with a sheet, but as soon as this was removed the clonic spasms occurred in the legs and muscles of the back and tossed the body about in the bed from side to side. The patient uttered a curious expiratory grunt. The nature of the disease is unknown.

SECTION X.

THE INTOXICATIONS, SUN-STROKE, OBESITY.

I. ALCOHOLISM.

(1) **Acute Alcoholism.**—When a large quantity of alcohol is taken, its influence on the nervous system is manifested in muscular incoördination, mental disturbance, and, finally, narcosis. The individual presents a flushed, sometimes slightly cyanosed face, a full pulse, with deep but rarely stertorous respirations. The pupils are dilated. The temperature is frequently below normal, particularly if the patient has been exposed to cold. Perhaps the lowest reported temperatures have been in cases of this sort. An instance is on record in which the patient on admission to hospital had a temperature of 24° C. (ca. 75° F.), and ten hours later the temperature had not risen to 91°. The unconsciousness is rarely so deep that the patient cannot be roused to some extent, and in reply to questions he mutters incoherently. Muscular twitchings may occur, but rarely convulsions. The breath has a heavy alcoholic odor.

The diagnosis is not difficult, yet mistakes are frequently made. Persons are sometimes brought to hospital by the police supposed to be drunk when in reality they are dying from apoplexy. Too great care cannot be exercised, and the patient should receive the benefit of the doubt. In some instances the mistake has arisen from the fact that a person who has been drinking heavily has been stricken with apoplexy. In this condition the coma is usually deeper, stertor is present, and there may be evidence of hemiplegia in the greater flaccidity of the limbs on one side. The subject has already been considered in the section upon uræmic coma.

(2) **Chronic Alcoholism.**—In moderation, wine, beer, and spirits may be taken throughout a long life without impairing the general health.

According to Payne, the poisonous effects of alcohol are manifested (1) as a functional poison, as in acute narcosis; (2) as a tissue poison, in which its effects are seen on the parenchymatous elements, particularly epithelium and nerve, producing a slow degeneration, and on the blood-vessels, causing thickening and ultimately fibroid changes; and (3) as a checker