stant irregular movements of the arms are not uncommon. The child has great difficulty in grasping an object. The spasm and weakness may be more evident on one side than the other. The mental condition is, as a rule, defective and convulsive seizures are common.

Associated with the spastic paraplegia are two allied conditions of considerable interest, characterized by spasm and disordered movements. A child with spastic diplegia may present, in an unusual degree, irregular movements of the muscles. In attempting to grasp an object the fingers may be thrown out in a stiff, spasmodic, irregular manner, or there may be constant irregular movements of the shoulders, arms, and hands, with slight incoördination of the head. Cases of this description have been described as *chorea spastica*, and they may be difficult to separate from multiple sclerosis and from Friedreich's ataxia.

A still more remarkable condition is that of *bilateral athetosis*, in which there is a combination of spasm more or less marked with the most extraordinary bizarre movements of the muscles. The condition, as a rule, dates from infancy. The patient may not be able to walk. The head is turned from side to side; there are continual irregular movements of the face muscles, and the mouth is drawn and greatly distorted. The extremities are more or less rigid, particularly in extension. On making the slightest attempt to move, often spontaneously, there are extraordinary movements of the arms and legs, particularly of the arms, somewhat like though much more exaggerated than athetosis. The patients are often unable to help themselves on account of these movements. The reflexes are increased. The mental condition is variable. The patient may be idiotic, but in two of the four cases which I have seen the patients were intelligent. Massalongo,* who has carefully studied this condition, describes three cases in one family. I have collected fifty-three cases from the literature, thirty-three of which occurred in males and twenty in females. There have been three autopsies. In Kurella's case there was pachymeningitis and bilateral lesions of the motor convolutions. Déjérine's patient had atrophy of the convolutions on both sides, while in my case the brain macroscopically presented no changes.

III. Spastic Paraplegia.

This condition, which is more fully described under the section upon the spinal cord, is in reality a cerebral affection, and may be due to conditions similar to those found in spastic diplegia. Indeed, it may at first be difficult to determine whether the arms are involved or not. The evidence of the cerebral origin of the affection is based upon the frequent coexistence of idiocy, imbecility, and nystagmus, and the occurrence of cases of spastic diplegia, in which the paraplegic symptoms are identical. All grades are met with, from pure spastic paraplegia with perfect use of the

* Dell' Atetosi Doppia, Collezione Italiana di Letture sulla Medicina, Series V, N. 3

arms to the most extreme bilateral spasm. There have been, so far as I know, only two autopsies in this disease: the case of Förster, in which there was a moderate grade of general cortical sclerosis with slight dilatation of the ventricles, and the recent case of Sachs, in which there was a meningo-encephalitis with atrophy and descending degeneration of both lateral columns.

Treatment.—The possibility of injury to the brain in protracted labor and in forceps cases should be borne in mind by the practitioner. The former entails the greatest risk. In infantile hemiplegia the physician at the outset sees a case of ordinary convulsions, perhaps more protracted and severe than usual. These should be checked as rapidly as possible by the use of the bromides, the application of cold or heat, and a brisk purge. During convulsions chloroform may be administered with safety even to the youngest children. When the paralysis is established not much can be hoped from medicines. In only rare instances does the paralysis entirely disappear. The indications are to favor the natural tendency to improve by maintaining the general nutrition of the child, to lessen the rigidity and contractures by massage and passive motion, and if necessary to correct deformities by mechanical or surgical measures. Much may be done by careful manipulation and rubbing and the application of a proper apparatus. In children the aphasia usually disappears. The epilepsy is a distressing and obstinate symptom, for which a cure can rarely be anticipated. Prolonged periods of quiescence are, however, not uncommon. In the Jacksonian fits the bromides rarely do good, unless there is much irritability and excitement. Operative measures, which have been carried out in several cases, have not been successful. The liability to feeble-mindedness is the most serious outlook in the infantile cerebral palsies. In many cases the damage is irreparable, and idiocy and imbecility result. With patient training and with care many of the children reach a fair measure of intelligence and self-reliance.

V. SCLEROSIS OF THE BRAIN.

General Remarks.—The connective tissue of the central nervous system is of two kinds—one, the neuroglia, special and peculjar, derived from the ectoderm, with distinct morphological and chemical characters; the other, derived from the mesoderm, identical with the ordinary collagenous fibrous tissue of the body. Both play important parts in indurative processes in the brain and cord. A convenient division of the cerebrospinal scleroses is into degenerative, inflammatory, and developmental forms.

The *degenerative scleroses* comprise the largest and most important subdivision, in which provisionally the following groups may be made: (*a*) The common secondary degeneration which follows when nerve-fibres