conduction? The increased resistance offered by the fibers of small caliber to the motor impulse may prevent the impulse from reaching the cells in the spinal cord in toto, and thereby cutting off, partially at least, the influence of the high inhibitory centers. This was offered as a possible explanation.

Dr. Leopold said that while the hypothesis of paralysis as the result of improper conduction through small fibers may be correct, there is another way in which this condition may be interpreted, and that is from small lesions occupying the pyramidal tract in which they cause no degeneration below, in this manner the conduction is cut off by almost microscopical lesions. He said that he had a case in point which he has been studying; he has found a very small lesion in the pons. The case presented hemiplegia of some duration. Grossly no lesion was discovered, but careful microscopical study demonstrated it. Undoubtedly the conduction was cut off as the result of this small area of softening, causing hemiplegia, and yet below it there was no degeneration.

Dr. A. A. Eshner said he understood Dr. Rhein to say that only the lower extremities were involved in the spasticity. In that event the case differs from the ordinary instances of cerebral spastic paralysis that one commonly sees.

Dr. Gordon said with reference to Dr. Rhein's very interesting and very curious findings that he wanted to recall the history of a case that he himself reported at the last meeting of the Neurological Society. A child of seven years was brought to him for epileptic seizures. The history showed that she had had an attack of hemiplegia at the age of two, and she still presented hemiplegia. She had a hemiplegic gait, a Babinski sign, but no rigidity or contracture of the muscles, and the knee-jerk on the paralyzed side had almost entirely disappeared; there was complete flaccidity on the hemiplegic side. It was difficult to explain this peculiar symptom-complex. In literature he found only one similar case reported, by Long in the *Revue Neurologique*; there were no contractures, no rigidity, no degeneration of the pyramidal tract, but the brain was portencephalic.

Dr. G. E. Price said in reference to the theory advanced in Dr. Rhein's case, that it could be more readily accepted were it not for the fact that the upper extremities were uninvolved. To accept this theory we would have to believe that the conductivity of the fibers for the upper extremities was preserved, while that for the lower extremities was lost.

THE CLINICAL PICTURE OF MULTIPLE SCLEROSIS WITH THE PATHOLOGICAL FINDINGS OF ARTERIOSCLEROSIS

By Charles K. Mills, M.D., and William G. Spiller, M.D.

One of the speakers (Dr. Spiller) showed some years ago in connection with Dr. Camp that a mistaken clinical diagnosis may easily be made regarding multiple sclerosis, as the symptoms in a case of cerebrospinal syphilis were sufficiently like those of multiple sclerosis to justify the diagnosis of the latter disorder. More recently he has demonstrated with Dr. Woods, what has also been proven by others, that areas of sclerosis produced by syphilis may exist without any symptoms sufficient to lead to a diagnosis of multiple sclerosis. Dr. Mills and he had recently had another case in which the symptoms of this latter disease were so

distinct that the diagnosis of multiple sclerosis seemed assured until a microscopical examination revealed the error. There are few diseases in which errors of diagnosis are more likely to occur, and therefore clinical data deduced from purely clinical examinations are likely to cause mistakes, if too sweeping conclusions are drawn from them. The authors cautioned therefore against wide-reaching conclusions relating to multiple sclerosis when necropsies are wanting.

The case reported is as follows:

Bridget D., was admitted to the Philadelphia General Hospital, Dec. 19, 1892. The history is somewhat uncertain, but it is probable that the symptoms began at some period before her admission to the hospital. She had done hard work, such as washing. She was a white woman, past middle life. She had coarse tremor of the face, arms and hands. The tremor of the head developed later, as well as the halting speech. The tremor of the head was a combination of vertical and rotary movement. Speech required considerable effort, and there was hesitation before the utterance of each word. Festination was not present, although the patient had a stooping posture. The patellar reflex of the right extremity was normal, but that of the left was almost lost. Romberg's sign was not present. There was no appreciable loss of voluntary power or of sensation. When the patient stood the entire trunk was in tremor, the upper and lower limbs vibrating. There was a coarse intention tremor of the hands and head, in the latter a lateral as well as an up and down movement. The station was worse by closing the eyes. The tremor was less when the patient was lying down, but did not entirely cease.

A note made in 1907 states that the patient had shown signs of mental failure, she had an abnormal appetite, and frequently stole her neighbor's meals, at other times she secreted other patients' clothing beneath her bed, until she had five or six dresses concealed there. She answered questions correctly.

She died of pneumonia October 28, 1907.

The important symptoms in this case were intention tremor and scanning speech, each of extreme type. The tremor was so intense that when she attempted to put the finger to the nose most violent intention movements would occur, and standing would cause an intention tremor of the whole body. The speech was typically scanning and somewhat explosive, the words were jerked out. The patient was very irritable, and avoided examination. She manifested no other symptom of multiple sclerosis, but the scanning speech and intention tremor were so indicative of multiple sclerosis that the clinical diagnosis of this disease was never questioned by anyone who saw the patient.

A microscopical examination of the brain and cord gives the following results: The vessels of the spinal cord, especially those of the cervical region, show pronounced arteriosclerosis. Some round cell infiltration is found in the pia about the vessels in the medulla oblongata, but this is slight even here, and is insignificant in the spinal cord. The nerve cells of the anterior horns are intensely pigmented in the cervical and lumbar regions. Many amyloid bodies are found in the spinal cord. The condition is such as is observed in certain cases of paralysis agitans or senility, and in no way resembles that seen in multiple sclerosis.

Dr. J. Hendrie Lloyd said he had felt very much interested in the subject of senile tremor for a long time. He does not think we have gotten to the bottom of the subject. The case narrated seemed to him to

have been one of rather aggravated so-called senile tremor. She had, it is true, some hesitation of speech, but no nystagmus, no exaggerated knee-jerks. It is not difficult to distinguish such a case from multiple sclerosis. The more difficult thing is to tell just what causes it. Senile tremor sometimes differs very decidedly from paralysis agitans, at other times it resembles it. We have a head tremor more marked and sometimes the slight impairments of speech. When we consider multiple sclerosis, occurring preferably in young women, with nystagmus and exaggerated knee-jerks, and with symptoms of lateral sclerosis more or less marked in most cases, it does not seem that the differentiation of it from the senile type is so difficult. A woman was in Blockley with symptoms at first consisting of almost primary lateral sclerosis. She is now in bed, for she cannot walk. She has highly exaggerated knee-jerks, with a spastic condition of the lower extremities. She has a slight intention tremor, a little suspicion of nystagmoid movements of the eyeballs, and a little slurring speech. This is one of those cases in which diagnosis is at first difficult. She is 36 or 37 years of age, a little beyond the period in which multiple sclerosis develops as a rule.

That you can have syphilitic disease simulating multiple sclerosis is an undisputed fact. Dr. Lloyd believed the statement had been made by some that in disseminated sclerosis there is no lymphocytosis of the cerebro-spinal fluid, and that this may be used as a means of differentiation from spinal syphilis. Recently Raymond reported a case which seemed to be rather typical of disseminated cerebral sclerosis in which he found marked lymphocytosis; so the point does not seem definitely settled.

Dr. D. J. McCarthy said that he had put on record with Dr. Charles W. Burr, a case at the Home for Incurables of disseminated syphilis giving a typical clinical picture of the classic form of disseminated sclerosis. They also recorded a case with no intention tremor, no scanning speech, no nystagmus, only mental defect. In other words unless you have in disseminated disease throughout the cerebro-spinal axis a certain distribution of it, you will not get these symptoms of multiple sclerosis. Exactly what the position of these foci should be has not been determined, probably the pons and medulla so far as the nystagmus and scanning speech are concerned. Dr. McCarthy agreed with Dr. Lloyd that the thing that leads him to a diagnosis is not so much intention tremor, as the fact that these symptoms are associated with a spastic condition of the lower extremities. There are a sufficient number of cases on record in which this spasticity has not been present, in which the condition of atrophy has been presented with a condition of disseminated sclerosis.

Dr. Spiller said that the difficulty in diagnosing multiple sclerosis from other diseases depends on the diffuseness of the symptoms. Multiple sclerosis is a disease which may affect all parts of the central nervous system. Therefore we can readily understand that we may get similar symptoms from syphilis in certain instances. The charge has been made that we in this country do not know how to diagnose multiple sclerosis, that we wait for typical cases such as Dr. Lloyd speaks of, which anyone can diagnose. Multiple sclerosis is by no means always accompanied by spasticity. The patient reported by Dr. Mills and himself had entered the hospital seventeen years ago, and the tremor was not senile. It is well known that Charcot denied the existence of senile tremor.